



# DOD ODS MILSPEC Database

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## **DOD ODS Specification List**

The Navy CFC & Halon Clearinghouse (Navy Clearinghouse) database consists primarily of Military Specifications (MILSPECs), Military Standards (MILSTDs), Military Handbooks (MILHDBKs), Federal Specifications (FEDSPECs), some Weapons Specifications, some Commercial Item Descriptions (CIDs) and some DoD Documents. For the purpose of this summary, the term specification will address all of these document types. This database does not contain part numbers, technical manuals or industry specifications.

This report lists the **latest revision** of each ODS specification reviewed by the Navy Clearinghouse. If a subsequent revision removes the ODS reference(s), a comment appears beside the Document Number, Primary Ref, or 1<sup>st</sup> Level Ref fields on the report. This report is designed to give the user enough information to determine if their contract refers to the offending portion of the specification. A description of each field in the report is provided below.

### **Explanation of Each Field in the Specification Report**

**Document Number:** The specification number and revision letter followed by the title of the specification.

**Level:** The Documents in the database are classified as primary or level 1 depending on how the ODS is referenced in the specification. The level designations allow you to determine the trail to the offending ODS chemical.

**P:** Primary -- Any specification or standard which is the actual specification for an ODS or contains an ODS as a major component of the formulation.

Examples:       1) O-T-620 is the actual specification for technical Inhibited Methyl Chloroform (1,1,1 Trichloroethane) solvent.  
                  2) MIL-C-85054 contains CFC-113 as a major component in its formulation.

**1:** Level 1 -- Any specification or standard which directly references an ODS or primary specification.

Examples:       1) MIL-P-116J directly references O-T-620 (1,1,1 Trichloroethane) for cleaning.  
                  2) FED-STD-141 directly references the use of carbon tetrachloride as a laboratory reagent in test method 7371.

**Class:** ODS classification of the specification (designated by the Navy Clearinghouse):

**ODS** -- Specification contains a reference to an ODS and does **not** have an alternative listed in the text of the specification.

**ALTAVAIL** -- Specification contains a reference to an ODS and does have an alternative listed in the text of the specification.

**Alternatives Listed in Spec:**

A listing of all Non-ODS alternatives (chemical or process) referenced in the text of the specification.

**ODS Use:**

The use of the ODS as described in the text of the specification (description is exactly as written in the specification). The description includes the page number and paragraph number for each ODS reference.

**ODS CHEM 1&2:** ODS chemical referenced in the document either by specification or name.

**PRIMARY REFS:** Any primary references which are directly called out in the text of the specification. Please note that although only two documents are listed here, ODS specifications may have additional primary references called out.

**1<sup>ST</sup> LEVEL REFS:** Any level 1 documents which are directly called out in the text of the specification. Please note that although only two documents are listed here, ODS specifications may have additional 1<sup>st</sup> level references called out.

**General Comments:** General guidance from the Navy Clearinghouse for the selection of an alternative. This does not reflect official Navy or DoD policy.

These fields will be completed as the information becomes available. The list of documents has been sorted by numerical order. If you have any questions, please contact Marc Wilson or Peter Mullenhard at the Navy Clearinghouse, navyozone@sprintmail.com, (703) 769-1883.

**Document Number:** A-A-0030020 B Beclomethasone Dipropionate Inhalation Aerosol, Oral

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

A-A-0030020 has been Cancelled by Revision B, dated 9 December 1993, and is not superseded by another document.

**ODS Use:** Salient Characteristics: Shall Be A Microcrystalline Suspension Of Beclomethasone Dipropionate-Trichloromonofluoromethane Clathrate In Aerosol Propellants Suitable For Oral Inhalation (Page 1). Note That Aerosol Propellants Suitable For Oral Inhalation Include R-11, R-12 and R-114.

**ODS CHEM 1:** CFC 11

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** A-A-1107                    A                    Extinguisher, Fire, Halogenated Agent

**Level:** 1                    **Class:** ODS                    **Comments:**

**Alternatives Listed In Spec:**                    A-A-1107 has been Cancelled by Revision B, dated 28 October 1993, and is not superseded by another document.

**ODS Use:**                    This Commercial Item Description Covers the Halon 1211 (BCF) Fire Extinguishers of the Following Types and Classes: Types I and II, and Classes 1 and 2 (See Page 1). Extinguishers Shall be Charged With Bromochlorodifluoromethane - Halon 1211, (BCF) (See "Salient Characteristics: Chemical Charge:" on Page 1).

**ODS CHEM 1:**                    Halon 1211                    **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                    Bromochlorodifluoromethane (Halon-1211)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** A-A-1108            B            Commercial Item Description, Extinguisher, Fire, Vaporizing Liquid

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Salient Characteristics on Page 1: Fire Extinguishers shall be charged with bromochlorodifluoromethane -- Halon 1211

**ODS CHEM 1:** Halon 1211            **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Bromochlorodifluoromethane (Halon-1211)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a suitable dry chemical extinguisher having an equivalent UL rating.

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**Document Number:** A-A-2402                              Commerical Item Description, Extinguisher, Fire, Vaporizing Liquid (Heat-Actuated, Halon 1301)

**Level:** 1                              **Class:** ODS                              **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Commercial Item Description Covers the Halon 1301 Fire Extinguishers For Use In Small, Confined Areas (See Page 1). The Fire Extinguishers Shall Be Charged With Monobromotrifluoromethane (Halon 1301) (See "Salient Characteristics: Charge:" on Page 1).

**ODS CHEM 1:** Halon 1301                              **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a halon alternative identified in NFPA standard 2001 (for example FM200, FE13, INERGEN, etc.).

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**Document Number:** A-A-2403 Extinguisher, Fire, Vaporizing Liquid (Heat-Activated/Remote Manual Release, Halon 1301)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

A-A-2403 has been Cancelled by Notice 1, dated 1 April 1994, and is not superseded by another document.

**ODS Use:** This Commercial Item Description Covers the Halon 1301 Fire Extinguishers For Use In Small, Confined Areas (See Page 1). The Fire Extinguishers Shall Be Charged With Monobromotrifluoromethane (Halon 1301) (See "Salient Characteristics: Charge:" on Page 1).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** A-A-279 Hand Cleaner (Waterless: Creame Form: Regular And Antimicrobia)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Asphalt Soiling Medium Shall Be A Commercial Petroleum Asphalt, Having The Following Characteristics: Solubility In Carbon Tetrachloride, Minimum Percent 98 (Note 2. Page 1).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting carbon tetrachloride solubility requirement or replacing with solubility in a non-ODS solvent such as trichloroethylene.

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**Document Number:** A-A-30020      B      Beclomethasone Dipropionate Inhalation Aerosol, Oral

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

A-A-30020 has been Cancelled by Revision A, dated 9 December 1993, and is not superseded by another document.

**ODS Use:** Salient Characteristics: Shall Be A Microcrystalline Suspension Of Beclomethasone Dipropionate-Trichloromonofluoromethane Clathrate In Aerosol Propellants Suitable For Oral Inhalation (Page 1).

**ODS CHEM 1:** CFC 11

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** A-A-50488 Display Case, Mechanically Refrigerated, Reach-In Merchandisers, Glass Door, Low and Medium

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** A-A-50488 has been Cancelled by Notice 1, dated 14 February 1992, and is not superseded by another document.

**ODS Use:** Type I and II display cases shall be designed to use type R 502 conforming to BB-F-1421 and Type III display case shall be designed to use type R 22 (Class II ODS) conforming to BB-F-1421

**ODS CHEM 1:** R 502 **ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421 **Comments:** BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-502 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include R-402A, R-402B, R-404A and R-507.

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**Document Number:** A-A-51281 A Tape, Sealing, Sterilization Indicator (Gas)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Air, Nitrogen or Other Inert Ga

**ODS Use:** The Gas in the Test Chamber shall be Air, N2, Freon or Other Inert Gas (see page 3). Note that Ethylene Oxide Sterilization uses CFC-12 Exclusively, Therefore the Freon listed in the text is Considered to be CFC-12.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of Freon from test method.

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**Document Number:** A-A-51738                      Dichlorodifluoromethane

**Level:** P                      **Class:** Primary                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Commercial Item Description Covers An Aerosol Freezing Spray For Use In Histological And Laboratory Procedures. Shall Be Six 12 Ounce Cans of Dichlorodifluoromethane i.e., (F-12, Freon TM), Aerosol Spray For Instant Freezing Of Tissue Samples For Histological Studies. (See Page 1)

**ODS CHEM 1:** CFC 12                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of CFC-12 with an alternative freeze spray gas such as HFC-134a.

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**Document Number:** A-A-51755          A          Cromolyn Sodium Inhalation Aerosol, Oral

**Level:** 1          **Class:** ODS          **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Salient Characteristics: Shall Be In Micronized Suspension Of Cromolyn Sodium And SorbitanTrioleate, With Dichlorotetrafluoroethane And Dichlorodifluoromethane As Propellants Suitable For Oral Inhalation (page 1)

**ODS CHEM 1:** CFC 12          **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** ODS alternatives for use in Metered Dose Inhalers (MDIs) must undergo extensive testing and receive approval by the FDA. Current ODS alternatives for use in MDIs will not be available until 1996 or later. As such, continued production of ODSs for use in MDIs have been approved by the Montreal Protocol parties. SAO approvals for continued procurement of MDIs should be obtained until such time that FDA-approved alternatives are available.

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**Document Number:** A-A-54305 Ethylene Oxide-Dichlorodifluoromethane Mixture, Filled Cylinder

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

A-A-54305 has been Cancelled by Notice 1, dated 8 April 1994, and is not superseded by another document.

**ODS Use:** This Commercial Item Description Covers a Gas Mixture of Ethylene Oxide and Dichlorodifluoroethane Suitable For Use as a Sterilant (See Page 1). The Mixture Shall Be A Gas Consisting Of Ethylene Oxide And Dichlorodifluoromethane In Accordance With The Requirements Contained Herein (See "Salient Characteristics:" on Page 1).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** AA-F-700 B Frozen Food Cabinets, Mechanically Refrigerated Household

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The refrigeration system shall be designed to conform to type 12 or type 22 (Class II ODS) of BB-F-1421 (See 3.5 on Page 3).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421

**Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, HFC-134a and R-401A.

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**Document Number:** AA-R-00211 H Refrigerators, Mechanical, Household, (Electrical, Self-Contained)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The Refrigeration System shall be sealed and Designed to Operate on One of the Refrigerants: Dichlorodifluoromethane (R-12) or Monochlorodifluoromethane (R-22) (See 3.5.3 on Page 14). See Section 3.5.3.3 on page 15 for requirement to fully charge system with refrigerant.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. A possible alternative for use in home refrigeration units to investigate is HFC-134a. HFC-134a household refrigerators are available under the brandnames of Whirlpool, KitchenAid and Kenmore.

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**Document Number:** AA-R-200 F Refrigerator, Mechanical, Food, Self-Contained, Reach-In and Pass Through

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant shall conform to types 12, 22 and 502 of BB-F-1421 (See 3.4.7 on Page 8).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**Comments:**

**PRIMARY REFS:** BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of references to R-12 and R-502 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, HFC-134a and R-401A (R-12 alternatives) and R-402A, R-402B, R-404A and R-507 (R-502 alternatives).

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**Document Number:** AA-R-211 G Refrigerators, Mechanical. Household (Electrical, Self Contained)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The refrigeration system shall be sealed and designed to operate on one of the refrigerants, dichlorodifluoromethane, (R-12) or on monochlorodifluoromethane (R-22) (3.6.3 page 16).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. A possible alternative for use in home refrigeration units to investigate is HFC-134a. HFC-134a household refrigerators are available under the brandnames of Whirlpool, KitchenAid and Kenmore.

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**Document Number:** AD1092                      B                      MK 29 MOD 0 and MOD 1 Fuze Antenna

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Trichloroethane in Accordance With O-T-620 is Listed as a Required Material (See 3.2(e) on Page 3). Clean Surface To be Bonded of Each Spacer, Shim and Plate With a Cotton Swab or Industrial Wiper Moistened With Trichloroethane (Caution: Trichloroethane is Volatile)(See 4.1.1(a) on Page 4). Clean Two Ferrete Disks, and the Center Conductor With Trichloroethane (See 4.1.2(a) on Page 4). Clean Surface With Trichloroethane or Methylethlyketone Using Industrial Wipers and Air Dry (Caution: Trichloroethane and Methylethlyketone are Volatile Materials That Must be Used Only In Well Ventilated Areas (See 4.5.5(a) on Page 17). Clean Bonding Surface With Industrial Wipers or Cotton Swabs Moistened With Trichloroethane (See 4.5.5(c) on Page 17). Wipe the Edges of the Assembled Antenna With Cotton Swabs or Industrial Wipers Using Only Enough Solvent (Isopropyl Alcohol, Trichloroethane, or MEK) To Remove Excess Adhesive (See 4.5.5(g) on Page 18).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** WS6536                      WS6536 has been Cancelled by Revision E, Notice 2, dated 6 November 1995, and is not superseded by another document.

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AD1236                      A                      Aeronautical Data, Lining of Nozzles used in Rocket Catapults Mark 12 and Mark 18 w/ Inert Material

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:** AD1236 has been Cancelled by Revision A, Notice 1, dated 12 May 1995, and is not superseded by another document.

**ODS Use:** Trichloroethane in Accordance With O-T-620 is Listed as a Required Material (See 3.1.1.1 on Page 2). Degrease Nozzles in Trichloroethane Conforming To O-T-620 or an Acceptable Equivalent (See 3.3.6 on Page 4).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620                      **Comments:** O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon degreasing solvent.  
Example degreasing solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, Acetone, etc.

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**Document Number:** AD261 B Specification, Rocket Motor MK 39 MOD 4 and MOD 7, Processing of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The nozzle and environmental seal bonding surfaces indicated on drawing 2830148 shall be cleaned with a clean cloth dampened with O-T-620 solvent (See 3.9.1.3 on Page 7, revised). The bonding surface of the insulated case shall be scrubbed vigorously with clean, unsize cloth or clean cheesecloth dampened with O-T-620 solvent. The cleaning operation shall be repeated with changeout of cloth between operations or more frequently if needed. An acceptable alternate method of cleaning shall be pressure impingement of O-T-620 solvent on the case insulation with resultant flooding of the bonded surface (See 3.6.1 on Page 5). The abraded surface shall be wiped with a clean lint-free cloth dampened with O-T-620 solvent to remove contaminants and loose particles (See 3.9.1.2(b) on Page 6).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-S-22473

All references to ODSs have been removed from this specification. MIL-S-22473, Revision E, Amendment 8, dated 18 November 1993, deletes the use of 1,1,1-Trichloroethane in the solubility test (Paragraph 4.6.1.4 has been deleted entirely).

MIL-S-22473, Revision E, Interim Amendment 7, dated 30 July 1993, deletes the use of 1,1,1-Trichloroethane for degreasing the surface of parts:

"The Solvent 1-1-1 Trichloroethane is no longer mandated for degreasing the surface parts. Solvent selection is left to the discretion of the manufacturer (See Page 1 of Interim Amendment 7).

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, Acetone, etc.

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**Document Number:** AD262                      B                      Specification, Case Assembly, MK39 MOD 4 and MOD 7 Rocket Motor,  
Insulation of

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The Grit Shall be Removed From the Case By Blowing Dry Air Followed By O-T-620 Solvent Rinse or Wipe (See 3.4.3 on Page 3).

**ODS CHEM 1:**                      Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                      O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**                      TT-C-490                      TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:**                      Recommend replacement with alternative non-ODS hydrocarbon degreasing solvent.  
Example degreasing solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104,  
DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AD3 Restrictor, Floating, Fabrication of (For Rocket Motors MK 38 and MK 39)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Clean Teflon-Coated Male and Female Mold Parts With a Cloth Dampened With Solvent Conforming To O-T-620 To Remove Dust, Oil, and Other Contaminants (See 4.3.1 on Page 3).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AD334                      B                      Rocket motor MK 38 MOD 3 and MOD 4, Processing Of

**Level:** 1                      **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

AD334, Revision B, dated 6 October 1995, has removed all ODS references.

Paragraph 3.6.1: The first sentence has been revised to read "The bonding surface of the insulated case shall be scrubbed vigorously with clean, unsized cloth or clean cheesecloth dampened with isopropyl alcohol, acetone, solvent conforming to P-D-680, hydrocarbon solvent or other suitable cleaning solvent." The reference to O-T-620 in the third sentence has been deleted, now referring only to "the solvent."

Paragraph 3.9.2(b): The first sentence is revised to read "The abraded surface shall be wiped with a clean, lint-free cloth dampened with isopropyl alcohol or acetone followed by solvent conforming to P-D-680 to remove contaminants and loose particles."

Paragraph 3.9.1.3(a): This paragraph has been revised to read "The nozzle and environmental seal bonding surfaces indicated on Drawing 2830148 shall be cleaned with a clean cloth dampened with isopropyl alcohol or acetone followed by solvent conforming to P-D-680 and dried for 15 minutes minimum at room temperature."

**ODS Use:**

The insulated case shall be scrubbed vigorously with clean, unsized cloth or clean cheese cloth dampened with O-T-620 solvent. The cleaning preparation shall be repeated with changeout of cloth between operations or more frequently if needed. An acceptable alternate method of cleaning shall be pressure impingement of O-T-620 solvent on the case insulation with resultant flooding of the bonding surface (See 3.6.1 on Page 5).

The abraded surface shall be wiped with a clean lint free cloth dampened with O-T-620 solvent to remove contaminants and loose particles (See 3.9.1.2 (b) on Page 6).

The nozzle and environmental seal bonding surfaces indicated on drawing 2830148 shall be cleaned with a clean cloth dampened with O-T-620 solvent (See 3.9.1.3 on Page 7, Revised).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, Acetone, etc.

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**Document Number:** AD335                    B                    Specification, Case Assembly, MK 38 MOD 3 and MOD 4 Rocket Motor, Insulation of

**Level:** 1                    **Class:** ODS                    **Comments:**

**Alternatives Listed In Spec:** AD335, Revision B, dated 6 October 1995, has removed the ODS reference. The second sentence of Paragraph 3.4.3 has been revised to read "The grit shall be removed from the case by blowing with dry air followed by rinsing or wiping with isopropyl alcohol or solvent conforming to P-D-680."

**ODS Use:** The Grit Shall be Removed From the Case By Blowing With Dry Air Followed By O-T-620 Solvent Rinse or Wipe (See 3.4.3 on Page 3).

**ODS CHEM 1:** Methyl Chloroform                    **ODS CHEM 2:**

**PRIMARY REFS:** O-T-620                    **Comments:**

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** TT-C-490                    TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AD336 B Specification, Head Assembly, MK 38 MOD 3 and MOD 4 Rocket Motor, Insulation Of

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

AD336, Revision B, dated 6 October 1995, removes the ODS references. Paragraph 3.5.1, first sentence, has been revised to read "Residual sand shall be removed by blowing parts with dry air, followed by a rinse and/or scrubbing as necessary with isopropyl alcohol or solvent conforming to P-D-680 and a clean cloth." Paragraph 3.10.1.2(a), first sentence, has been revised to read "Clean the R-154 rubber compound surface by scrubbing thoroughly with clean cheese cloth wet with isopropyl alcohol or other suitable solvent."

**ODS Use:** Residual Sand Shall be Removed By Blowing Parts With Dry Air Followed By Rinse and/or Scrubbing With O-T-620 Solvent and a Clean Cloth (See 3.5.1 on Page 3). Clean the R-154 Rubber Compound Surface by Scrubbing With Clean Cheese Cloth Wet With O-T-620 Solvent (See 3.10.1.2 on Page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AD639                      A                      Liner, SD-746-2, Premix, Prepolymer, and Diisocyanate Wash Coat Solution, Preparation Of

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** O-T-620 Used To Dissolve Diisocyanate Wash To Ensure Full Polymerization of Liner Surface. Weigh the Required Amount of 1,1,1-Trichloroethane, O-T-620, into a Container (See 4.3.1 on Page 3).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Weigh the Required Amount of Solvent in a Container. Suggested Solvents Include Chloroform (inhibited) or Dichloromethane. The Solvent Shall Not React with Toluene Diisocyanate (TDI) or Ferric Acetylacetonate (FeAA). The Resulting Solution shall Be Clear and Homogeneous. The Solvent shall be Compatible with the Liner and Not Cause Swelling or other Deleterious Effects.

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**Document Number:** AD650                      B                      Motor, Final Processing, Rocket Motor, MK78 MOD 0

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 1,1,1-Trichloroethane, Technical Inhibited (Methyl Chloroform), in Accordance With O-T-620, is Listed as a Required Material (See 3.1 on Page 3). Clean Entire Outside Diameter (OD) Surface of the Chamber and Fin Stabilizer Using Clean Rags and Solvent Consisting of Trichloroethane Conforming To O-T-620 and Lacquer Thinner Conforming To TT-T-266 (See 4.1.1 on Page 4). Remove All Residue Left After Sanding, Using Solvent Consisting of Trichloroethane and Lacquer Thinner (See 4.1.3 on Page 4).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AD876                      A                      Instructions for Lubrication of Ball Bearings

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** A Crest 4-Stage TWD (Freon TWD 602) Ultrasonic Cleaner or Equivalent is Listed as a required Equipment (See 3.13 on Page 4, Version SCN 2). Freon TF, Freon TWD 602 and 1,1,1-Trichloroethane are Listed as Required Materials Under Section 4 (See 4.6, 4.9 and 4.10 on Page 5, Version SCN 2). For Method 1 Immersion Cleaning of Bearings: Spray Clean the Bearing, While it is Still Wet From the Soaking Operation, With Petroleum Ether, Freon TF, Cobehn Solvent, or an Approved Equivalent (See 6.2.2.1.2 on Page 7, Version SCN 2). For Method 2 Immersion Cleaning of Bearings: Place the Bearings in a Wire Mesh Basket and Immerse in Freon TF or Trichloroethane 1,1,1 For 45 Seconds Minimum For Preliminary Removal of Lubricant (See 6.2.2.2 on Page 7a, Version SCN 2). Immerse the Bearings in the First Tank of the Ultrasonic Cleaner (This Tank Contains Freon TWD 602) and Move the Basket Up and Down Keeping the Contents of the Basket Below the Surface of the TWD Solvent For a Minimum of 45 Seconds (See 6.2.2.2.2 on Page 7a, Version SCN 2). Repeat 6.2.2.2.2 For the Remaining Tanks (Which Contain Freon TF) (See 6.2.2.2.3 on Page 7a, Version SCN 2). For Cleaning of Containers and Implements: Step 1 Requires Rinsing With Petroleum Ether, Freon TF (See MIL-C-81302) or Approved Equivalent, and Step 6 Requires Rinsing With Filtered Petroleum Ether, Freon TF or Approved Equivalent (See 5.1 on Page 6).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Freon TF

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting use of freon TF, freon TWD and 1,1,1-trichloroethane. NAVAIR recommends use of trichloroethylene or stoddard solvent in place of freon TF, freon TWD and 1,1,1-trichloroethane.

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**Document Number:** AND10380

Aeronautical Design Standard: Coupling Installations, Standard Conduit,  
Electrical

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

AND10380, Notice 4, dated 6 November 1995, has removed the ODS reference. Requirement 3, first sentence, has been revised to read "Before assembly in a conduit installation, wipe couplings with a dry cloth or soft paper towel to remove excess petrolatum, then dip in an appropriate cleaning solvent, semi-aqueous, or aqueous cleaner."

**ODS Use:** Upon Assembly in a Conduit Installation, Dip Couplings in Thinner Per Specification MIL-C-81302 To Remove Petrolatum (See Section 3, Requirement 3 on Page 2).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** In Lieu of Cleaning Conduit Couplings with Thinner Per MIL-C-81302 as Specified in Requirement 3 of AND10380, a Semi-Aqueous, Hydrocarbon, or Other Suitable Non-Ozone Depleting Solvent Should Be Used. The Alternative Cleaning Material or Process Shall Be Non-Corrosive and Shall Be Compatible with the Parts Being Cleaned. If Aqueous or Semi-Aqueous Solvents are Used, All Parts Shall Be Thoroughly Dried Prior to Assembly and Use.

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**Document Number:** AS2338                      A                      Diisocyanate Wash Coat Solution, Formulation And Process For

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 1,1,1-Trichloroethane, in Accordance With O-T-620, Type I, is Listed as Part of the Formulation For This Wash Coat Solution (See Paragraph 3.1.1(b) on Page 2). Weigh the 1,1,1-Trichloroethane (3.1.1b) Into a Clean, Dry, Mixing Vessel (See Paragraph 3.1.1.2(c) on Page 2). Add the FeAA and TDI to the 1,1,1-Trichloroethane and Blend Until the FeAA is Dissolved (See 3.1.1.2(d) on Page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** AS2369 Specification For Coils and Transformers, Fixed and Variable, Radiofrequency

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Ethyl Alcohol

**ODS Use:** The Solvent For Removal of Grease, Oil, Dirt, Flux, and Stripping Agent Residue Shall Conform To One of the Following: Ethyl Alcohol in Accordance With MIL-A-6091 or MIL-E-463, or 1,1,1-Trichloroethane in Accordance With O-T-620 (See 3.3.7.2 on Page 4).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-F-14256 MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:** Clean Assemblies in accordance with Paragraph 3.3.7.2, Except that Trichloroethane per O-T-620 or Methyl Chloroform Shall Not Be Used. Alternative Solvents Such as Alcohol, Terpenes, Hydrocarbon Solvents, or Other Suitable Non-Ozone Depleting Solvents Should be Used. The Alternative Cleaning Material or Process Shall Be Non-Corrosive and Shall Be Compatible with All Parts Being Cleaned. If Aqueous or Semi-Aqueous Solvents are Used, All Parts Shall Be Thoroughly Dried Prior to Assembly and Use.

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**Document Number:** AS3038 A Rocket Motor Assembly, Mark 79 MOD 0, Processing Of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** AS3038 has been Cancelled by Revision A, Notice 1, dated 12 May 1995, and is not superseded by another document.

**ODS Use:** The First Step in the Installation of Firing Pins is To Degrease the Head Cap Using Trichloroethane Conforming To Type I of O-T-620 (See 10.2.3.1(a) page 6 and Table 10.I on Page 5). For the Assembly of Primers, Clean the Bonding Surfaces of the Screen and Retaining Ring With Trichloroethane Conforming To Type I of O-T-620 (See 10.2.3.2(f) page 7). Degrease the Case ID With Trichloroethane Conforming To Type I of O-T-620 (See 20.2.3.2(a) and 20.2.3.2(e) Page 10 and Table 20.I on Page 9). The First Step in the Preparation of the Case For Lining is To Wipe the ID of the Case With a Clean Cloth Soaked in Trichloroethane Conforming To Type I of O-T-620 (See 40.2.3.1(a) and Table 40.I on Page 20). For Fabrication of the Nozzle, Clean Both Sides of the Foil With Trichloroethane Conforming To Type I of O-T-620 (See 60.2.3.1(b) and Table 60.I on Page 26). The First Step in the Assembly of the Nozzle is To Clean All Parts With Trichloroethane Conforming To Type I of O-T-620 (See 60.2.3.2(a) on Page 27). Clean the Threads and O-Ring Grooves On the OD of the Case, Nozzle Body, Exit Cone Assembly, Head Cap Assembly, and Coupling Using a Clean White Cloth Dampened With Trichloroethane Conforming To Type I of O-T-620 (See 70.2.3.1(a) and Table 70.I on Page 28).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620 **Comments:** O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** NAVAIR has proposed the following changes for use of this specification in contracts:

Paragraph 10.2.3.1.a: Delete the Use of O-T-620, Trichloroethane. Thoroughly Clean the Head Cap By Immersion in Isopropyl Alcohol or Acetone Followed By Solvent Conforming to P-D-680 Type III and Allow to Air Dry for 15 to 30 Minutes.

Paragraph 10.2.3.2.f: Delete the Use of O-T-620 Trichloroethane. Clean the Bonding Surfaces of the Screen and Retaining Ring With Isopropyl Alcohol Followed by Solvent Conforming to P-D-680 Type III and Allow to Air Dry for 15 to 30 Minutes.

Paragraph 20.2.3.2.a: Delete the Use of Trichloroethane. Degrease the Case ID with Isopropyl Alcohol or Acetone Followed by Solvent Conforming to P-D-680 Type III, Each Solvent is Applied as a Liquid Stream with Sufficient Pressure and Flow Rate to Achieve Agitation and Rinsing of Metal Surface. (Do No Immerse Case in Vapors) Thoroughly Air Dry in Vertical Position.

Paragraph 20.2.23.2e: Delete the Use of Trichloroethane. Degrease ID of the Case with Isopropyl Alcohol or Acetone Applied as a Liquid Stream with Sufficient Pressure and Flow Rate of TO Achieve Agitation and Rinsing of Metal Surface. Dry the Case in a Forced Draft Hot Air Oven at 170 Plus or Minus 20 Fahrenheit (F) for a Minimum of 30 Minutes.

Paragraph 40.2.3.1.a: Delete the Use of Trichloroethane. Wipe the ID Case with a Clean Cloth Soaked in Isopropyl Alcohol Followed by a Clean Cloth Soaked in Solvent Conforming to P-D-680 Type III. Change the Cloth When Any Discoloration is Noted. Dry the Case in an Oven 125 to 170 F for a Minimum of 30 Minutes. No Residues Shall Remain on the Surface of the Motor Case Which Will Weaken or Interfere with the Case

Lining.

Paragraph 60.2.3.1.b: Clean Both Sides of the Foil with Isopropyl Alcohol. Air Dry a Minimum of 15 Minutes at 70F Plus or Minus 15F for 1 Hour Minimum.

Paragraph 60.2.3.2.a: Delete the Use of Trichloroethane. Clean all Parts By Immersion in Isopropyl Alcohol Followed by Immersion in Solvent Conforming to P-D-680 TYpe III. Air Dry the Parts for 5 to 10 Minutes as 70 Plus or Minus 15 F.

Paragraph 70.2.3.1.a: Delete the Use of Trichloroethane. Clean the Threads and O-Ring Grooves on the OD of the Case, Nozzle Body, Exit Cone Assembly, Head Cap Assembly, and Coupling Using a Clean White Cloth Dampened with Isopropyl Alcohol Followed by Solvent Conforming to P-D-680 Type III. Clean the Threads with a Wire Brush, as Required. Allow the Parts to Air Dry 15 to 30 Minutes.

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**Document Number:** AS3073                      B                      Rocket Motor Assembly, Mark 80 MOD 0, Processing of

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:**                      Acceptable Substitute

**ODS Use:**                      Degrease All Metal Parts With Trichloroethane Conforming To O-T-620 or an Acceptable Substitute (See 3.3.4.1 on Page 3 and Table I on Page 4).

**ODS CHEM 1:**                      Methyl Chloroform                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                      O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**                      MIL-T-6117

**General Comments:**                      Paragraph 3.3.4.1b: Delete the Use of Trichloroethane. Degrease All Metal Parts With an Acceptable Solvent. Appropriate Solvents Include Alcohols, Ethers, Esters, Ketones, Terpenes, Hydrocarbons, Aqueous or Semi-Aqueous Solvents. The Solvent Shall Be Compatible With the Metal Parts and Shall Remove All Oils, Soils, Residues, Etc. No Solvent Residues Shall Remain After Cleaning. If Aqueous or Semi-Aqueous Solvents Are Used, All Parts Shall Be Thoroughly Dried Prior to Use. Corrosion of Metal Parts is Not Acceptable.

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**Document Number:** AS3078                      B                      WORD Rocket Motor, 673AS101, Assembly Of

**Level:** 1                      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

AS3078, Revision B, Notice 1, dated 17 May 1995, deletes the ODS references. Paragraph 4.1(a), first sentence, has been revised to read "Thoroughly degrease the motor case (673AS111) and rod (673AS116) using a solvent that is compatible with the part being cleaned." Paragraph 4.3(b), first sentence, has been revised to read "Thoroughly degrease the threads of nozzle/igniter assembly with a swab saturated with either isopropyl alcohol (TT-I-735) or aliphatic naphtha (mineral spirits) and allow to completely dry."

**ODS Use:** Thoroughly Degrease the Motor Case (673AS111) and Rod (673AS116) With Trichloroethane Conforming To O-T-620 or an Acceptable Substitute (See 4.1(a) on Page 3). Thoroughly Degrease Threads of Nozzle/Igniter Assembly With a Swab Saturated With Trichloroethane (See 4.3(b) on Page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-S-22473

All references to ODSs have been removed from this specification. MIL-S-22473, Revision E, Amendment 8, dated 18 November 1993, deletes the use of 1,1,1-Trichloroethane in the solubility test (Paragraph 4.6.1.4 has been deleted entirely).

MIL-S-22473, Revision E, Interim Amendment 7, dated 30 July 1993, deletes the use of 1,1,1-Trichloroethane for degreasing the surface of parts:

"The Solvent 1-1-1 Trichloroethane is no longer mandated for degreasing the surface parts. Solvent selection is left to the discretion of the manufacturer (See Page 1 of Interim Amendment 7).

**General Comments:** Delete the Use of Trichloroethane in Paragraph 4.1(a). Use an Acceptable Substitute for Cleaning. These Substitutes May Be One of the Following: Alcohol, Esters, Ethers, Mineral Spirits (Hydrocarbon Solvent), Terpenes, Aqueous, or Semi Aqueous Solvents. Immersion Cleaning of Parts is Acceptable if Vapor Degreasing is Not Compatible with Alternative Solvent. Performance of Alternative Solvent Shall Be At least as Good As Trichloroethane. The New Solvent(s) Shall be Compatible with the Parts Being Cleaned. Degradation or Corrosion of Parts Due to the New Solvent(s) Shall Not Be Allowed. If Aqueous or Semi-Aqueous Solvents Are Used, All Parts Shall Be Thoroughly Dried Prior to Assembly and Use. Delete the Use of Trichloroethane in Paragraph 4.3(b). Thoroughly Degrease the Threads of Nozzle / Igniter Assembly With a Swab Saturated With Either Isopropyl Alcohol or Aliphatic Naptha (Mineral Spirits) and Allow to Completely Dry.

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**Document Number:** AS3680                      A                      Warhead, Guided Missile, High Explosive, WDU-18/B and Warhead,  
Guided Missile, Dummy, WDU-18(D-1)/B, Lining and Loading Of

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:** Dichloromethane (MIL-D-6998)

**ODS Use:** Clean Threads and Exterior of Warhead With Dichloromethane in Accordance With MIL-D-6998, or Trichloroethane in Accordance With O-T-620, Type I, as Required (See 3.3(b)(11), Revised, on Page 6 of Version SCN2)..

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620                      **Comments:**  
O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Delete 1,1,1-trichloroethane and use dichloromethane. If a replacement for 1,1,1-trichloroethane is required, recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AS3713                      A                      Propellant Grain Assembly, Catalyst Cartridge, Mark 198 MOD 0

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Remove Any Foreign Matter From the Tooling With a Clean White Cloth Dampened With Trichloroethane Conforming To Type I of O-T-620 (See 10.2.4.1(A) On Page 7 and Table 10.I On Page 5). Clean Two Disks, Previously Prepared, With a Clean White Cloth Dampened With Trichloroethane Conforming To Type I of O-T-620 (See 20.2.3.2(c) on Page 10 and Table 20.I on Page 9).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AS3787 Coating, Conformal, Applications Of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Cleaning Compound Shall be in Accordance With MIL-C-81302, Type I (See 3.2.3 on Page 3). Printed Wiring Assemblies Shall be Cleaned in a Vapor Degreaser Using MIL-C-81302, Type I Cleaning Compound (See 3.3.1 on Page 3).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-I-46058 All references to ODSs have been removed from this specification. MIL-I-46058, Revision C, Amendment 7, dated 14 September 1993, has removed all ODS references. Paragraph 4.7.1.1(c) has been Revised to state " the test panel shall be cleaned of all traces of rosin flux and other contaminants by scrubbing in suitable solvents normally used to clean contaminants from printed wiring and terminal- board assemblies." Paragraphs 4.7.1.1(c) (1), 4.7.1.1(c) (2) and 4.7.1.1(c) (3) are deleted in their entirety.

**General Comments:** Delete use of vapor degreasing with MIL-C-81302. Replace with Isopropyl Alcohol, Isopropyl Alcohol/Ethanol, or other suitable PWA cleaner by brushing or in a suitable batch/in-line cleaning system.

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**Document Number:** AS4036 Bonding Large Components to Printed Circuit Boards.

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Spilled and Mislocated Adhesive May be Removed Prior To Curing By the Use of a Lint-Free Industrial Cleaning Tissue or Cotton-Tipped Applicator Saturated With 1,1,1-Trichloroethane Solvent (O-T-620, Type I) (See 3.4.1.1 on Page 5 of Version SCN1)..

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** WS6536 WS6536 has been Cancelled by Revision E, Notice 2, dated 6 November 1995, and is not superseded by another document.

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** AS4460                      A                      Rocket Motor Processing For Rocket Catapults Mark 12 MOD I and Mark 18 MOD 0

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:** AS4460 has been Cancelled by Notice 1, dated 22 May 1995, and is not superseded by another document.

**ODS Use:** Scrub the Inside of the Tubes With Trichloroethane, O-T-620 , or Its Equivalent (See 3.2.1(f) on Page 6).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620                      **Comments:**

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example hydrocarbon solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol and acetone.

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**Document Number:** AS4514                      A                      Warhead, Guided Missile, High Explosive, WDU-22/B, Loading of

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Blow Out Any Dust Inside the Warhead and if Necessary Wash Out With Trichloroethane. Care Should Be Taken To Prevent the Trichloroethane From Contacting the Exterior Paint On the Warhead. Set the Warhead Aside and Allow the Trichloroethane To Evaporate a Minimum of 1 Hour (See 3.3.5.1(b) on Page 10 of Version SCN1).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620                      **Comments:**

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

---

**Document Number:** ASTM-B280

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** NEED COPY OF VERSION PRIOR TO 1993 FOR ODS USEAGE.

**ODS CHEM 1:**

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-B368                      Copper-Accelerated Acetic Acid-Salt (Fog) Testing (Cass Test)

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 8.1 (Preparation of test specimens) - Anodized aluminum parts may be cleaned with inhibited 1,1,1-trichloroethane or other suitable solvent (see 8.1.1); also 8.1.1 Caution - 1,1,1-trichloroethane should be used in a well-ventilated area away from open flames.

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-B741 Porosity In Gold Coatings On Metal Substrates By Paper [need rest of title]

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 9.1 - Clean the test specimens by immersing in reagent grade 1,1,1-trichloroethane or other grease-removing solvents.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D1278 Rubber From Natural Sources, Chemical Analysis

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon tetrachloride is listed as a reagent in 19.1. Paragraph 20.2 - Proceed with the extraction as described in 21.1 and measure the absorbance of CCl<sub>4</sub> solution as described in 21.1, using the solution with no added copper as the reference solution. Paragraph 21.1 eighth sentence - Shake the mixture vigorously for one minute, allow the layers to separate, and draw off the CCl<sub>4</sub> layer through a funnel containing a plug of absorbent cotton, directly into the absorption cell. Leave a small amount of the CCl<sub>4</sub> layer in the separatory funnel so as to avoid introducing water into the cell.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D1542 Varnishes, Rosin In, Qualitative Tests For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 3.2 (Bromine reagent) - Dissolve one part by volume of Bromine in four parts by volume of carbon tetrachloride (CCl<sub>4</sub>).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D1901                      Relative Evaporation Time Of Halogenated Organic Solvents [need rest of title]

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 7.1 - Carbon Tetrachloride, initial bp 77 degrees C, boiling range 1 degree C, purity 99%. Paragraph 8.2 - Run the test in triplicate, with alternate runs of the material under test and the reference standard solvent (xylene, perchloroethylene, or carbon tetrachloride).

**ODS CHEM 1:** Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D2257 Textiles, Extractable Matter In

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 1.1.1: The preferred solvent for use in this method is HH solvent (1,1,2-trichloro-1,2,2 trifluoroethane). Paragraph 6.5 (Halogenated Hydrocarbon solvent) - 1,1,2-trichloro-1,2,2-trifluoroethane, hereinafter called "HH solvent." The use of trichlorotrifluoroethane is referenced throughout the procedure in section 10.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D2276 Standard Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Petroleum Ether

**ODS Use:** Trichlorotrifluoroethane in Accordance With MIL-C-81302 is Used as the Flushing Solvent For All Tests (See 7.5.2 on Page 141).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Recommend that Trichlorotrifluoroethane be deleted from test method and use of other solvent listed in standard (petroleum ether). Evaluate the use of electronic particle counters in place of this test method.

---

**Document Number:** ASTM-D2510 Lubricants, Solid Film, Adhesion Of

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** [need hard copy to verify]

**ODS Use:** Sect. 2 (reference documents) lists MIL-C-81302. Sect. 7.2 - Trichlorotrifluoroethane conforming to MIL-C-81302 may be used as an alternate. As a sidenote, the specification, MIL-T-27602, for Trichloroethane, which is not an ODS, was canceled and superseded by MIL-C-81302, which is a Class 1 ODS.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-81302  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D2625

Standard Test Method For Endurance (Wear) Life and Load-Carrying Capacity of Solid Film Lubricants (Falex Pin and Vee Method).

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

Suggested Revision, dated 12 October 1993, states "No Class I ozone depleting substances conforming to Paragraph 602(a) of the Clean Air Act Amendments of 1990, as identified in Section 326 of PL 102-484, should be used." This Revision is not yet official.

**ODS Use:** Trichloroethylene Conforming to MIL-T-27602 or Trichlorotrifluoroethane Comforming to MIL-C-81302 are Required For the Application of Dry Solid Film Lubricant (See 7.2.2 Page 3). Please Note that MIL-T-27602 has been Cancelled and is Superseded by MIL-C-81302.

**ODS CHEM 1:** CFC-113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** DOD-P-16232

DOD-P-16232, Revision F, Interim Amendment 1, dated 9 September 1992, removes the direct ODS reference in Paragraph 4.8.6.2.2.6. This paragraph has been deleted by Interim Amendment 1. Please note that ODS references are still found in Paragraphs 4.8.4.1(c) and 4.8.5(b).

**General Comments:**

---

**Document Number:** ASTM-D2651 Preparation Of Metal Surfaces For Adhesive Bonding, Guide [need rest of title]

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** virtually any nonflammable sol

**ODS Use:** Paragraph 7.4.7.2 (General precleaning) - Removal of grease, oil, and other organic soils can be accomplished with virtually any solvent, including Trichlorotrifluoroethane and similar nonflammable types.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D297 Rubber Products - Chemical Analysis

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 18.1.7 mineral oil - Mineral oil in the rubber product is the portion of the unsaponifiable acetone extract that is soluble in absolute ethanol at -5 degrees C and that is soluble in carbon tetrachloride and is not attacked by concentrated H<sub>2</sub>SO<sub>4</sub>. Under section 25 (mineral oil) - Carbon tetrachloride is used as a reagent to determine the amount of mineral oil that is extracted from a rubber with acetone.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D308 Standard Test Method for Electrical Conductivity of Liquid Hydrocarbons  
By Precision Meter

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Toluene-Isopropyl Alcohol Mix

**ODS Use:** Precision Grade Trichlorotrifluoroethane (Freon (Trademark) Precision Cleaning Agent or Freon (Trademark) TF by Du Pont are Suitable) or a Toluene-Isopropyl Alcohol Mixture are Listed as Cleaning Solvents (See 7.1, 7.1.1, 7.1.2 and Footnote 6 on Page 358). Precautions For Using Trichlorotrifluoroethane are Listed in Section A1.2 on Page 361.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
Freon TF

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of Trichlorotrifluoroethane from test standard.

---

**Document Number:** ASTM-D3265 Standard Test Method For Carbon Black

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** [need other solvents]

**ODS Use:** Footnote 11 lists 1,1,1-trichloroethane as a satisfactory solvent for this method.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D3443                      Standard test method for chloride in trichlorotrifluoroethane

**Level:** P                      **Class:** Primary                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      Not Available For Review.

**ODS CHEM 1:**                      CFC 113                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D3447 Standard test method for purity in trichlorotrifluoroethane

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Not Available For Review.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D350 Flexible Treated Sleeving Used For Electrical Insulation, [need rest of title]

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** [need 3 alternative solvents]

**ODS Use:** Under section 60 (solvent resistance), 1,1,1-trichloroethane is listed in Paragraph 61.4 as one of the four solvents used to determine solvent resistance.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D3703 Standard Test Method for Peroxide Number in Aviation Turbine Fuels

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Trichlorotrifluoroethane is Listed as a Reagent (See 6.4 on Page 52). Trichlorotrifluoroethane is Used as a Solvent To Mix With the Weighed Sample Prior To Starting the Test For Peroxide Number (See 8.2 on Page 53). The Precision of This Test Method, Reported 10.1.1 and 10.1.2, was Determined By Dissolving the Sample in Carbon Tetrachloride. The Precision Has Not Been Determined When Using Trichlorotrifluoroethane (See 10.1 on Page 53). The Original Test Method Called For the Use of Carbon Tetrachloride and the Precision was Determined With Carbon Tetrachloride as the Sample Solvent. In Recent Times it has Become the Policy of Most Laboratories To Avoid the Use of Carbon Tetrachloride Wherever Possible Because it is a Carcinogen. Trichlorotrifluoroethane Should Now be Used as Per the Procedure in Section 8 of This Test Method (See Note 2 To 10.1 on Page 53).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Alternative Test Method is Under Evaluation by ASTM.

---

**Document Number:** ASTM-D3867 Nitrite-Nitrate In Water, Test Method For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 11.5 - 1,1,2-trichloro-1,2,2 trifluoroethane listed as a reagent. Under Paragraph 14.1.2 - Extract with two 25-ml portions of Trichlorotrifluoroethane (11.5) in a separatory funnel. Paragraph 19.5 - 1,1,2-trichloro, 1,2,2-trifluoroethane listed as a reagent. Under Paragraph 22.1.2 - Extract with two 25-ml portions of Trichlorotrifluoroethane (19.5) in a separatory funnel.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D4126 Standard Specification For Vapor Degreasing and General Solvent Grade  
1,1,1-Trichloroethane

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Is The Reference Specification For 1,1,1 Trichloroethane.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D4306 Aviation Fuel Sample Containers For Tests Affected By Trace [need rest of title]

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Under Reagents: 1,1,2-trichloro 1,2,2-trifluoroethane is listed in Paragraph 5.4 (see also note 8 for Freon TF). Under Paragraph 6.3.3.1 (cleaning before use) - "Fill the container about 1/4 full with Trichlorotrifluoroethane, replace closure and repeat shaking, draining the solvent and air drying the container. A1.3 provides use warning for Freon TF.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D461 Felt, Testing, Method Of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 22 (Matter Extracted by 1,1,1-trichloroethane) describes a method to determine the amount of extractable matter from felt using 1,1,1-trichloroethane.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D4636                      Standard Test Method for Corrosiveness and Oxidation Stability of Hydraulic Oils, Aircraft Turbine Engine Lubricants, and Other Highly Refined Oils

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Trichlorotrifluoroethane and 1,1,1-Trichloroethane are Listed as Degreasing Solvents (See 6.9 on Page 476). Wash Square Metal Specimens in Heated 1,1,1-Trichloroethane, Rinse With Fresh Solvent and Allow To Dry (See 8.2.5.3 on Page 477). Using Forceps, Wash Each Square Individually in Heated 1,1,1-Trichloroethane (See 10.3.5.2 on Page 479). Repeat the Washing, Using Fresh 1,1,1-Trichloroethane and Scrubbing the Squares With the Short-Bristled Brush Until the Solvent Shows No Additional Discoloration, and Allow the Squares To Dry (See 10.3.5.3 on Page 479). Precautionary Statements For the Use of 1,1,1-Trichloroethane are Listed in A1.5 on Page 480. Since Trichlorotrifluoroethane is Listed as a Possible Degreasing Solvent, it is Presumed that Either Trichlorotrifluoroethane or 1,1,1-Trichloroethane may be Used For This Test.

**ODS CHEM 1:** CFC 113                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend investigation of aliphatic naphtha, acetone or non-ODS hydrocarbon degreasing solvents such as P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108 and IPA, etc.

---

**Document Number:** ASTM-D4693                      Low-Temperature Torque Of Grease-Lubricated Wheel Bearings, [need rest of title]

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Under Reagents and Materials: 1,1,1-trichloroethane is listed in Paragraph 6.3. Paragraph 8.2: "Remove excess grease from the bearings. Place the bearings in a beaker and cover with 1,1,1-trichloroethane (note 5)."

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D4898

**Level:** 1      **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paras. 2.2 and 6.4 list CFC-113 (MIL-C-81302) as a reagent. Paragraph 9.7 specifies the use of either hexane or CFC-113 to rinse the residual sample from the graduated cylinder into the filter funnel and to wash down the inside of the filter funnel

**ODS CHEM 1:**

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D543 Plastic To Chemical Reagents, Resistance Of - 27 FEB 87

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 5.3.8 lists carbon tetrachloride as a reagent used to determine chemical resistance.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D629 Textiles, Quantitative Analysis Of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 9.2.3 lists Trichlorotrifluoroethane as a reagent. Paragraph 9.7.1 Solvent extraction - Extract the dried specimen for two hours with Trichlorotrifluoroethane (note 6).

**ODS CHEM 1:** CFC-113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D746                      Plastics and Elastomers, Brittleness Temperature Of, By [need rest of title]

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:**    [need other cooling fluids]

**ODS Use:**                      Note 4 lists Dichlorodifluoromethane (R-12) as one of the cooling fluids.

**ODS CHEM 1:**                      CFC 12                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-D924                      Liquids, Electrical Insulating, Dissipation Factor (Or Power [need rest of title])

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 13.2: Dismantle the cell completely and wash all the component parts thoroughly with a technical grade of a suitable solvent (such as Trichlorotrifluoroethane, petroleum ether, or heptane).

**ODS CHEM 1:** CFC 113                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-E427 Testing For Leaks Using The Halogen Leak Detector (Alkali-IO [need rest of title])

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (R-22)

**ODS Use:** Under Paragraph 9.1.1 (Test Gas Requirements) - To be satisfactory, the test gas should be nontoxic, nonflammable, not detrimental to common materials, inexpensive, and have a response factor of 1. R-12 (dichlorodifluoromethane, CCL<sub>2</sub>F<sub>2</sub>) and R-22 (monochlorodifluoromethane CHCLF<sub>2</sub>) have these characteristics; R-12 is commonly used unless the higher pressure of the more expensive R-22 is needed (130 psig is 70 psig at 70 degrees F).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-ES24                      Emergency Standard Specification for Halon 1301,  
Bromotrifluoromethane (CF3Br)

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The Specification Covers Requirements for Halon 1301 as a Fire Fighting Medium (See 1.1 on page 1).

**ODS CHEM 1:**                      Halon 1301                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Halon 1301

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-F302 Aerospace Fluids In Containers, Field Sampling Of, Practice [need rest of title]

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** MIL-C-81302 listed as a reference document in Paragraph 2.2 and also in note 2 as an acceptable solvent.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-F310 Sampling Cryogenic Aerospace Fluids

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** MIL-C-81307 listed under reference documents in Paragraph 2.1. Paragraph 4.7: Polyethylene wash bottle, 1-L capacity, filled with Trichlorotrifluoroethane per MIL-C-81302, filtered in a manner described in ASTM practice F311.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** ASTM-F483 Total Immersion Corrosion Test For Aircraft Maintenance Chem [need rest of title]

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Paragraph 5.3 - 1,1,1 Trichloroethane. Paragraph 7.1 - Immerse the test specimens in a beaker of 1,1,1-trichloroethane at room temperature and swab the surface of the individual specimens thoroughly using clean forceps to hold the test specimen and the cotton swab.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** BB-A-1034      B      Compressed Air, Breathing

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

BB-A-1034, Revision B, Notice 1, dated 27 December 1995, has removed the ODS reference. In Table II, the phrase "(trichloroethylene and freon TF)" has been deleted.

**ODS Use:** Table II (Page 4) Lists Maximum Volume Limits for Gaseous Hydrocarbons and Halogenated Solvents (Trichloroethylene and Freon TF). Section 4.7.10 (Page 13) Requires the Use of an Infrared Spectrophotometer to Test for these Impurities. The Analyzer is to be Calibrated at Appropriate Intervals by the Use of Calibration Gas Standards.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-STD-1411

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

---

**Document Number:** BB-F-1421      B      Fluorocarbon Refrigerants

**Level:** P      **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**ODS Use:** This Specification Covers The Requirements For Fluorocarbon Refrigerants With Collateral Use As Nonpolar Heat Transfer And Electronics Isolation Media. Fluorocarbon Solvents Are Excluded From This Specification. Specification Also Includes Other Class I ODSs Such as CFC-13, CFC-12, R500, R-502 and R-503.

**ODS CHEM 1:** CFC 11

**ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)

Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend cancellation of BB-F-1421 and superseding with ARI Standard 700-93. ARI 700 still has class I ODSs but also contains NON-ODSs such as HFC-134a.

---

**Document Number:** C-F-206 Felt, Sheet: Cloth, Felt, Wool, Pressed

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Felt Shall Conform to the Physical and Chemical Requirements Which Uses 1,1,1, Trichloroethane as an Applicable Chemical for Determining Soluble Matter Percent. (See Tables I, II, III, IV on Pages 6-19 and Table X on Page 31). 1,1,1 Trichloroethane Shall be Used in Lieu of Chloroform (Page 32).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Recommend alternative solvent such as trichloroethylene be used for determining soluble matter percent.

---

**Document Number:** CCC-C-46            D            Cloth, Cleaning, NonWoven Fabric

**Level:** 1            **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

CCC-C-46, Revision D, Amendment 1, dated 23 June 1995, removes the ODS references. Paragraph 3.7.1 has been revised to read "When tested in accordance with applicable requirements of method 5508 referenced in 4.3, the Class 1 cloth shall not be seriously affected by the following organic solvents: trichloroethylene, turpentine, and Stoddard solvent." Paragraph 3.7.3 has been revised to read "When Class 7 cloth is tested in accordance with 4.3.6, the average percentage of extractable matter, excluding volatiles, shall be no more than 0.20 percent using methyl ethyl ketone (MEK) and 0.20 percent using trichloroethylene."

**ODS Use:**

For the Solvent Resistance Test (Type I Cloth): When Tested in accordance with Applicable Requirements of Method 5508 Referenced in 4.3, the Class I Nonwoven Cloth shall not be Seriously Affected by the Following Organic Solvents: Carbon Tetrachloride, Turpentine and Stoddard Solvent (See 3.7.1 on Page 4). When Class 7 Cloth is Tested in accordance with 4.3.6, the Average Percentage of Extractable Matter, Excluding Volatiles, shall be no More than 0.20 Percent Using Methyl Ethyl Ketone (MEK) and 0.20 Percent Using 1,1,1-Trichloroethane (See 3.7.3 on Page 4).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

Carbon Tetrachloride

**Comments:**

**PRIMARY REFS:**

1,1,1-Trichloroethane (Methyl Chloroform)  
Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

Recommend deletion of carbon tetrachloride for compatability test. Recommend deletion of 1,1,1-Trichloroethane for determination of extractable matter. TCE is a possible alternative extraction solvent if it is determined that 1,1,1-Trichloroethane should be replaced.

---

**Document Number:** DOD-C-85045 C Cables, Fiber Optics, (Metric) General Specification for

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

DOD-C-85045, Revision C, dated 30 July 1986, has been Superseded by MIL-C-85045. MIL-C-85045 does not contain any direct ODS references.

**ODS Use:** For the Fluid Immersion Test:: Each Specimen shall be Exposed to only One Test Fluid: Lubricating Oil C10W), Hydraulic Oil, Salt Solution (5% by Weight), Freon, or Trichloroethane (See 4.7.24.a. On Page 23). **Comments:** This specification is superseded by MIL-C-85045.

**ODS CHEM 1:** Freon

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Freon

1,1,1-Trichloroethane

**1ST LEVEL REFS:**

**General Comments:** This specification has been superseded by MIL-C-85045 which does not reference an ODS.

---

**Document Number:** DOD-G-24508 A Grease, High Performance, Multipurpose (Metric)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

DOD-G-24508, Revision A, Proposed Amendment 4, dated 17 April 1995, removes the ODS reference in Paragraph 4.5.2.2.2. Paragraph 4.5.2.2.2 has been deleted and replaced by the following text "ELECTRON solvent, (NSN 6850-01-375-5553 [6-gallon pail], NSN 6850-01-375-5554 [1-gallon can] or equivalent aliphatic hydrocarbon-terpene mixture."

**ODS Use:** Cleaning compound, solvent, trichlorotrifluoroethane shall be in accordance with MIL-C-81302 (See 4.5.2.2.2, Revised, Amendment 3, on Page 6) .

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend use of alternative solvent Electron listed in proposed amendment.

---

**Document Number:** DOD-L-24574

Lubricating Fluid For Low and High Pressure Oxidizing Gas Mixtures

**Level:** 1      **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Acetone

**Comments:**

DOD-L-24574, proposed Amendment 3, dated 23 March 1995, deletes the ODS reference in Paragraph 40.1 of the Appendix. Paragraph 40.1 has been revised to read:

"Clean all components of the assembly with aqueous detergent and rinse with tap water. Soak the glass parts in a strong oxidizing inorganic acid solution that does not contain chromium. For example, NOCHROMIX in concentrated sulfuric acid is suitable. After the acid soak, rinse glass parts with tap water and then with distilled water. Soak the glass parts in distilled water and then rinse a final time with distilled water. Rinse the cleaned metal parts with trichloroethylene and/or acetone. Polish with steel wool and re-rinse with solvents and dry. All traces of steel wool must be eliminated since it is highly flammable."

This amendment is not yet official.

**ODS Use:** Metal Components Should Be Rinsed in Trichlorotrifluoroethane and or Acetone, Polished With Steel Wool, and Re-rinsed With Solvents (See 40.1, Appendix, on Page 7).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Recommend using proposed Amendment 3 modifications.

---

**Document Number:** DOD-L-81846 A Lubricating Oil, Instrument, Ball Bearing, High Flash Point

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

DOD-L-81846, Revision B, Amendment 1, dated 24 August 1994 has deleted the reference to MIL-C-81302. Paragraph 5.1.1 has been revised to read "the bottles shall be cleaned using a suitable aqueous glass cleaner, rinsed with deionized water and thoroughly dried."

**ODS Use:** Bottles Shall be Rinsed With Filtered Trichlorotrifluoroethane in Accordance With MIL-C-81302 (See 5.1.1 on Page 7)..

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend use of aqueous glass cleaner in accordance with revised specification.

---

**Document Number:** DOD-L-85645 A Lubricant, Dry Thin Film, Molecular Bonded

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. DOD-L-85645, Revision A, Amendment 1, dated 18 January 1994, has removed the ODS references. Paragraph 30.2 on page 10 (Appendix) has been Revised to delete the phrase "vapor degrease parts and sample specimens with trichloroethane" and substitute the phrase "vapor degrease with trichloroethylene conforming to O-T-634, Type II, or solvent wiping with a bleached cotton cheesecloth soaked with aliphatic naphtha conforming to TT-N-95."

**ODS Use:** Vapor degrease parts and sample specimens with trichloroethane (See 30.2 on Page 10).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** DOD-P-16232 F Phosphate Coatings, Heavy, Manganese or Zinc Base (For Ferrous Metals)

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Naphtha, Petroleum Ether

DOD-P-16232, Revision F, Interim Amendment 1, dated 9 September 1992, removes the direct ODS reference in Paragraph 4.8.6.2.2.6. This paragraph has been deleted by Interim Amendment 1. Please note that ODS references are still found in Paragraphs 4.8.4.1(c) and 4.8.5(b).

**ODS Use:** If a Supplementary Treatment is Present, it shall be Removed Prior to Testing by Immersion in a Solvent Such as Petroleum Ether or 1,1,1-Trichloroethane (See 4.8.4.1.C. on Page 14). Completely Remove the Supplementary Treatment by Immersing in Successive Baths of Petroleum Ether or Naptha, or by 1,1,1-Trichloroethane Vapor Degreasing (See 4.8.5.b on Page 15). Samples shall be Subjected to Vapor-Phase Degreasing with 1,1,1-Trichloroethane to Free Them of Oil or Grease, Rinsed with Alcohol (See 4.8.6.2.2.b).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** Recommend deleting 1,1,1-Trichloroethane from specification.

---

**Document Number:** DOD-STD-1376 A Piezoelectric Ceramic For Sonar Transducers (Hydrophones And Projectors)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. DOD-STD-1376, Revision A, Notice 2, dated 6 September 1994 (submittal date to NAVSEA Specifications Control Board), removes the direct ODS reference. References to Trichloroethane have been replaced by references to isopropyl alcohol. Paragraph 5.1.4.1.7 has been Revised to read "One electroded surface of all test specimens shall be cleaned with a solvent such as isopropyl alcohol. [...]" Paragraph 5.2.4.1.8 has been Revised to read "One electroded surface of all test specimens shall be cleaned with a solvent such as isopropyl alcohol. [...]"

**ODS Use:** One Electroded Surface Of All Test Specimens Shall Be Cleaned With A Solvent Such As Trichloroethane (See 5.1.4.1.7 on Page 10 and 5.2.4.1.8 on Page 13/14).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend use of Isopropyl Alcohol in accordance with proposed revision of specification.

---

**Document Number:** DOD-STD-2138      Metal Sprayed Coating Systems For Corrosion Protection Aboard Naval Ships (Metric)

**Level:** 1      **Class:** ALTAVAIL      **Comments:**

**Alternatives Listed In Spec:** Toluene      DOD-STD-2138 has been Cancelled and Superseded by MIL-STD-2138. MIL-STD-2138, Revision A, dated 13 May 1992, has been Revised to use n-butanol and high flash naptha in place of 1,1,1-Trichloroethane.

**ODS Use:** 1,1,1-Trichloroethane listed as applicabale cleaning agent (See 4.3.1 on Page 10)

**ODS CHEM 1:** Methyl Chloroform      **ODS CHEM 2:**

**PRIMARY REFS:** O-T-620      **Comments:**

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-P-23377      All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

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**Document Number:** FED-STD-141 C Paint, Varnish, Laquer and Related Materials: Methods of Inspection, Sampling and Testing

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

FED-STD-141, Revision C, Notice 2, dated 10 December 1993, removes the direct ODS references. For Test Method 7371, Carbon Tetrachloride has been replaced by Hexanes. For Test Method 7356, the 1 ml of carbon tetrachloride and 1 drop of 1 percent bromine in carbon tetrachloride has been replaced by acetone and a 1 percent potassium permanganate solution, respectively.

**ODS Use:**

Test Method 7371 Requires the Use of Carbon Tetrachloride. Carbon Tetrachloride is Listed as a Reagent in Section 3.2 (See Page 1). With Rapid Stirring, Add 3 ml of Carbon Tetrachloride Dropwise from a Buret. Can Not Substitute for Carbon Tetrachloride in this Method, Action is Based on Non-Solvent Action of the Cabon Tetrachloride for the Resins. All Other Solvents Would Be Unsuitable (See Note 1 on Page 1). Test Method 7356 requires the use of carbon tetrachloride. Carbon tetrachloride is used to test for cyclo-olefinic compounds (See 4.4 on Page 2).

**ODS CHEM 1:**

Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** FED-STD-151 B Metals, Test Methods

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

FED-STD-151 has been Cancelled by Revision B, Notice, dated 15 March 1993, and has been Superseded by ASTM A309, ASTM A630, ASTM B117, ASTM E1282, ASTM E172, ASTM E376, ASTM E427, ASTM E498, ASTM E515, ASTM G47 and ASTM G69.

**ODS Use:** Freon is Listed as One of the Applicable Pressurized Gases For Use in the Leak Detection Test (Method 442.1; Table I, Page 1).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend HCFC-22 for use with existing electronic leak detectors or use of HFC-134a with new fluorine compound leak detectors for internal leak detection. Other inert gases such as helium may also be used with appropriate detectors.

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**Document Number:** FED-STD-191 A Federal Standard for Textile Test Methods

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test Methods, 1200, 1240, 1400, 1410, 1500, 1510, 1520, 1530, 1540, and 1550 reference 1,1,1 Trichloroethane for preparation of sample for Herzberg's Stain Test. The specimen shall be Washed in or extracted with 1,1,1- Trichloroethane, Ether or Alcohol to Remove Oils, Waxes, Dirt, or Any Other Material that may obscure the Fiber Characteristics. Test Method 1600, The preparation of Density Liquids Requires 1,1,1 Trichloroethane Mixed with Benzene (Density =1.2) and Bromoform Mixed with 1,1,1 Trichloroethane (Density 1.4 and 1.7) Test Method 5120, Carbon Tetrachloride is Listed as One of the Suitable Solvents for Use in Cleaning the Ball.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Carbon Tetrachloride

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)  
Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** For test methods 1200, 1240, 1400, 1410, 1500, 1510, 1520, 1530, 1540, and 1550 recommend deleting 1,1,1-trichloroethane. Use ether or alcohol for sample preparation for Herzberg's Stain Test. For test method 1600 recommend preparing density liquids with other non-ODS liquids (such as PFCs) having densities of 1.2, 1.4, and 1.7. For test method 5120 recommend deleting reference to carbon tetrachloride.

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**Document Number:** FED-STD-228 Cable and Wire, Insulated; Methods of Testing

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. FED-STD-228, Notice 4, dated 30 June 1994, has revised Test Method 7001 to remove the ODS reference (carbon tetrachloride) from Paragraph 3.1.2.4. FED-STD-228, Notice 3, dated 23 July 1993, has revised Test Method 7021 to remove the ODS references (CFC 113, Methyl Chloroform and Carbon Tetrachloride).

**ODS Use:** Test Method 7001 Lists Carbon Tetrachloride as a Reagent that Shall Be Available (See 3.1.2.4 on Page 1 of Test Method 7001). Method 7021 Lists 1,1,1-Trichloroethane, an Azeotrope of Trichlorotrifluoroethane (Freon 113 or equal) and Methylene Chloride (Specification TT-1-735), Carbon Tetrachloride and MIL-T-81533 as Applicable Test Fluids for the Fluid immersion Tests.

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)  
MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** FED-STD-601 Rubber;Sampling and Testing

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Method 16001 (3.1.6.9): Carbon Tetrachloride used as reagent in test.  
Method 16371 (4.4 and 4.5): Carbon Tetrachloride used as solvent for the mineral oil extraction test.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---



**Document Number:** FED-STD-791 C Lubricants, Liquid Fuels, and Related Products; Methods of Testing

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Following Test Methods Reference An ODS (ODS References Listed in Following Sentences): Test Methods 350, 1110, 3011, 3012, 3214, 3404, 3457, 3816, 4001, 5305, 5307, 5308, 5311 and 10000. SPECIFIC REFERENCES: Test Methods 350, 1110, 3404, 4001 and 5308 reference O-T-620. Test Methods 3011, 3012, and 3214 Reference MIL-C-81302. Test Methods 3457, 3816 and 5311 Reference MIL-T-81533. Test Method 5305 references 1,1,1-Trichloroethane. Test Method 5307 References Trichlorotrifluoroethane. Test Method 10000 References Trichlorotrifluoroethane and 1,1,1 Trichloroethane. Full Description Available for each test method.

**ODS CHEM 1:** CFC-113 **ODS CHEM 2:** Methyl Chloroform  
**Comments:**

**PRIMARY REFS:** MIL-C-81302  
O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** NAVAIR has proposed the following modifications for use of this specification in contracts:

The following methods reference the use of ODS's. Replace with solvents shown below and add the note: 1,1,1-trichloroethane (O-T-620 or MIL-T-81533) and trichlorotrifluoroethane (MIL-C-81302) are prohibited and shall not be used.

Method 350 uses 1,1,1-trichloroethane for Precision cleaning, replace with Petroleum ether (ACS grade);

Method 1110 uses 1,1,1-trichloroethane for Non-precision cleaning, replace with Stoddard solvent (P-D-680); Method 3011 uses Trichlorotrifluoroethane for Precision cleaning, replace with Alternate available;

Method 3012 uses Trichlorotrifluoroethane for Bottle cleaning. For new and reused bottles, rinse thoroughly with sample, then fill with sample;

Method 3214 uses Trichlorotrifluoroethane for Non-precision cleaning replace with Stoddard solvent (P-D-680);

Method 3403 uses 1,1,1-trichloroethane for Non-precision cleaning replace with Stoddard solvent (P-D-680);

Method 3457 uses 1,1,1-trichloroethane for Specimen cleaning replace with Acetone (ACS grade);

Method 3816 uses 1,1,1-trichloroethane for Specimen degreasing replace with Petroleum ether (ACS grade);

Method 4001 uses 1,1,1-trichloroethane for Pre-paint cleaning replace with Acetone (ACS grade);

Method 5305 uses 1,1,1-trichloroethane for Specimen cleaning replace with Boiling acetone (ACS grade);

Method 5306 uses 1,1,1-trichloroethane for Specimen cleaning replace with Acetone (ACS grade);

Method 5307 uses Trichlorotrifluoroethane for Apparatus degreasing replace with Petroleum ether (ACS grade)

Method 5308 uses 1,1,1-trichloroethane for Specimen preparation examination replace with Acetone (ACS grade);

Method 5331 uses 1,1,1-trichloroethane for Specimen degreasing replace with Petroleum ether (ACS grade);

Method 10000 Note: This method provides material handling safety precautions for each of the chemicals referenced and does not direct their use. Retain ODS references for informational purposes.

---

**Document Number:** GG-P-455 B Plates and Foils, Photographic (Photosensitive, Anodized Aluminum)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

GG-P-455, Revision B, Amendment 3, dated 18 May 1995, removes the ODS reference. Paragraph 3.7.1.10 has been revised by deleting Carbon Tetrachloride from the list of solvents.

**ODS Use:** The Photosensitive Aluminum Plates and Foils shall meet the specified test in each of the following solvents -- Carbon Tetrachloride is one of the solvents listed (See 3.7.1.10 on Page 4).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting carbon tetrachloride for solvent resistance test.

---

**Document Number:** GG-S-1344      A      Sterilizer, Ethylene Oxide Gas, for Heat- and Moisture-Labile Surgical Instruments and Supplies (Nonportable)

**Level:** 1      **Class:** ODS      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Sterilizer Shall Be Designed to Use a Gaseous Sterilant Consisting of Approximately 12 % Ethylene Oxide and 88% Halogenated Hydrocarbons by weight (See 3.3 on Page 4). Hydrocarbon Assumed to Be Dichlorodifluoromethane (R-12) Since 12%/88% Mixture is For R12/Ethylene Oxide Mixture.

**ODS CHEM 1:** CFC 12      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Many existing 12/88 ethylene oxide sterilizers can be converted to EO/HCFC-124 operation (8.6/91.4). Generally only minor adjustments to sterilizer controls and possibly to equipment may be necessary. Other gases under research for use in existing ethylene oxide sterilizers include HFC-125 and HFC-227ea. Specification should be cancelled and replaced with new technology non-ODS sterilizers.

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**Document Number:** JAN-C-99 Cement, Pettman

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Shellac: Heat The Crucible And Contents In An Oven At 100 Degree Centigrade For 1/2 Hour, Remove Crucible From Oven And To The Hot Crucible Add 15ml Of Boiling Carbon Tetrachloride (F4C Page 3).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/extraction solvent by the specification preparing activity.

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**Document Number:** L-H-490                      B                      Holder, Card-Label (Plastic)

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The Glass Shall Then Be Dried With A Clean lintless Cloth And Cleaned With Carbon Tetrachloride Applied On A Lintless Cloth (4.5.1 Page 8).

**ODS CHEM 1:**                      Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**                      Recommend deleting carbon tetrachloride and replacing with a suitable solvent such as isopropyl alcohol or ethyl alcohol.

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**Document Number:** MIL-A-11210 G Air Conditioners: Base Mounted, Self-Contained, Multipackage-Type, Air Cooled, Electric Motor Driven 18,000 BTU/Hour

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** System Shall Be of Vapor Cycle Type Conforming to BB-F-1421 Type 12 and Will be Furnished With a Full Charge in the System (See 3.11 on Page 6). After An Additional Period of 1 Hour, Withdraw a Sample of Refrigerant Vapor From the Low-Pressure Side and Determine the Moisture Content by One of the Methods Specified in BB-F-1421 (See 4.6.3.4 on Page 15).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-A-21071 B Anti-Fogging Compound, Transparent Aircraft Enclosures

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-A-21071 has been Cancelled by Revision B, Notice 1, dated 9 November 1993, and is not superseded by another document.

**ODS Use:** The Melted Polyoxyethylene (4) Sorbitan Monostearate Shall Be Added Slowly to the Trichlorotrifluoroethane and Dissolved (See 3.1.1 on Page 2) Trichlorotrifluoroethane (type 113, BB-F-1421) is listed on Table 1 (page 3).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-A-22262 B Abrasive Blasting Media Ship Hull Blast Cleaning

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-A-22262, Revision B, Amendment 1, dated 30 September 1994, has removed the reference to "Freon" from paragraph 4.5.11.2 on page 14 and replaced it with the use of "A nonozone depleting solvent." This specification no longer requires the use of an ODS.

**ODS Use:** Oil Extraction: b) Add To Sample 1 And Sample 2 125ml Of Freon, and (e) Add 250ml Of Freon To A Third Beaker Labeled Sample 3. (See 4.5.11.2 on Page 14).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-A-2334 J Apron, Toxicology Agents Protective, M-2

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Dampen a Clean Swab With 75/25 Freon/Toluene Blend. Using Circular Motion, Lightly Rub Excess Adhesive In Vicinity Of Back Shoulder Seam Strapping For 30 Seconds (See 4.5.1.1 on Page 28).

**ODS CHEM 1:** CFC-113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of Freon/Toluene blend with a non-ODS replacement solvent mixed with Toluene or with a non-ODS replacement solvent alone. Possible replacements include hydrocarbon wipe solvents or non-ODS chlorinated solvents.

---

**Document Number:** MIL-A-26107 D Air Conditioner, Trailer Mounted, Freon Cycle, 11-1/2 Ton Refrigerating Capacity, Type MA-3

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Air Conditioner shall Be Designed for the Use of Dichlorodifluoromethane (Freon 12 or Equal), 3.6.4. page 8.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-A-26846 B Air Conditioner, A/M32C-4, Trailer Mounted Vapor Cycle, Electric Motor Driven

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Refrigerant Shall Be Dichlorodifluoromethane (R-12) (See 3.7.1 on Page 9).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-C-5015

All references to ODSs have been removed from this specification. MIL-C-5015, Revision G, Amendment 5, dated 15 March 1994, removes the direct ODS reference by deleting fluid sample numbers 11 and 12 from table XVIII. This specification no longer requires the use of an ODS.

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-A-356 A Asphaltum (Gilsonite)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-A-356, Revision A, has been Cancelled by Notice 1, dated 15 October 1996, and is not superseded by another document.

**ODS Use:** Solubility: Transfer Weighed 5g Portions Of The Sample To 250ml Beakers. Add 100ml Of Carbon Tetrachloride To One, 100ml Of Petroleum Ether To Another, And 100ml Of Carbon Disulfide To the Third (4.4.7 Page 3)

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible replacement for carbon tetrachloride is trichloroethylene.

---

**Document Number:** MIL-A-47062                      Amino Propyl Alkyl Amine

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Iodine Value (WIJS Method): Add 25ml Of Filtered Carbon Tetrachloride To Dissolve The Sample (4.8.1.4b Page 7).

**ODS CHEM 1:** Carbon Tetrachloride                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible replacement for carbon tetrachloride is chloroform.

---

**Document Number:** MIL-A-4914 D Air Conditioner, Trailer Mounted, Freon Cycle Gasoline Engine Driven,  
132,000 BTU/Hr, Type MA-1A

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-A-4914 has been cancelled by Revision D, Amendment 1, Notice 1, dated 7 May 1985, and is not superseded by another document.

**ODS Use:** The refrigerant shall be dichlorodifluoromethane (Freon 12 or equivalent) (3.8.2 page 9).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-A-52424 B Air Conditioners: Wall or Base-Mounted, Self-Contained, Multipackage, Standard Weight, Air Cooled, 6000 BTU/Hr

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-A-52424 has been Cancelled by Revision B, Notice 1, dated 25 November 1994, and is not superseded by another document.

**ODS Use:** The Refrigeration System Shall Be of the Vapor Cycle Type Employing Refrigerant Conforming To BB-F-1421, Type 12 (See 3.6 on Page 6) The Methods BB-F-1421 are Listed as Applicable Methods for the Refrigerant Moisture Content Test (See 4.6.3.3 on Page 17)

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

R-12

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-A-53100 Arctic Fuel System Supply Point (AFSSP)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Tab e I (on Page 6) Lists 12 Fire Extinguishers as Required For Use, Each One Containing Halon 1211.

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-46168 All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

A-A-1108

**General Comments:** Recommend replacement with a suitable dry chemical extinguisher having an equivalent UL rating.

---

**Document Number:** MIL-A-60091 B Adhesive For Bonding Demolition Charges To Structural Surfaces

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-A-60091, Revision B, dated 12 March 1993, does not remove any of the ODS references.

**ODS Use:** Degrease The Oily Test Pieces In 1,1,1 Trichloroethane And Dry On A Paper Towel (4.4.3.2 Page 7)

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon degreasing solvent.  
Example degreasing solvents include: Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, Acetone, etc.

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**Document Number:** MIL-A-7647 C Air Conditioner, Trailer Mounted, Freon Cycle, Gasoline Engine Driven, 4 Ton Refrigerating Capacity, Type A-3.

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Air Conditioner Shall Be Designed for the Use of Dichlorodifluoromethane Refrigerant (Freon 12 or Equal)

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-A-81801 Anodic Coatings for Zinc and Zinc Alloys

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P All references to ODSs have been removed from this specification. MIL-A-81801, Revision A, dated 12 January 1994, has deleted the ODS references in paragraph 3.4.2.

**ODS Use:** Suitable Solvents Such as Trichloroethylene (O-T-634) , Perchloroethylene (O-T-236) or 1,1,1 Trichloroethane (MIL-T-81533) May Be Used (see 3.4.2)

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

**General Comments:**

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**Document Number:** MIL-A-82836 Adhesive, Epoxy Resin, Structural Bonding, Non-Asbestos

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-A-82836 has been Cancelled by Notice 1, dated 25 February 1993, and is not superseded by another document.

**ODS Use:** Place Steel Adhesion Discs (Figure 1) in Vapor Degreaser, and Spray with Methyl Chloroform Conforming to MIL-T-81533 (See 4.5.5.1 (a) on Page 9)

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-A-82842 Adhesive, Conductive, Low Resistivity

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-A-82842 has been Cancelled by Notice 1, dated 15 October 1996, and is not superseded by another document.

**ODS Use:** Wipe Test Panels with a Suitable Solvent Such As O-T-620, Methyl Chloroform or Equivalent. (See 4.6.5 on Page 7).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol and aliphatic naptha (TT-N-95).

---

**Document Number:** MIL-A-82845 Adhesive, Paste, One-Part, Non-Asbestos

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Perchloroethylene (O-T-236) MIL-A-82845 has been Cancelled by Notice 1, dated 25 February 1993, and is not superseded by another document.

**ODS Use:** Note: As an Alternative Procedure, Panels May Be Wiped with MIL-T-81533, Methyl Chloroform For 2 Minutes Using Clean Cheesecloth (See 4.5.4.2 (f) on Page 11).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-A-85495                      Antioxidant, T-Butylphenol Type, 2,2' Methylenebis (4-Methyl-6-t-Butylphenol)

**Level:** 1                      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-A-85495, Amendment 1, dated 30 June 1995, removes the ODS references. Amendment 1 deletes Carbon Tetrachloride from the list of reagents (Paragraph 4.4.1.2(c)). Amendment 1 also deletes Carbon Tetrachloride from Paragraph 4.4.1.3, sentences 3 and 12, and substitutes "any non-reactive solvent which will dissolve both the isocyanate and the polybutadine polymer and which exhibits no significant infrared absorbance in the 2270 CM-1 region" (sentence 3) and "the same non-reactive solvent" (sentence 12).

**ODS Use:** Carbon Tetrachloride, Spectrophotometry Grade In Accordance With MIL-STD-1218, Is Listed As A Required Reagent (See 4.4.1.2(c) on Page 4). Dissolve In A Few ml Of Carbon Tetrachloride, Transfer Quantitatively To A 25-ml Volumetric Flask, Dilute To Volume With Carbon Tetrachloride, And Mix Thoroughly (See 4.4.1.3, sentence 3, on Page 4). Again Determine The Infrared Absorbance Of 0.35 gm Of Sample And Blank In A 25-ml Volumetric Flask With Carbon Tetrachloride As Above (See 4.4.1.3, sentence 12, on Page 4).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-B-197 F Bearings, Antifriction; Associated Parts and Subassemblies; Preparation For Delivery Of

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-B-197 is no longer available in DODISS and is superseded by MIL-P-197. MIL-P-197, Revision G, Amendment 1, dated 19 November 1993, removes the ODS references (requirement to use Freon TF in package cleaning). The fifth and sixth sentences of Paragraph 6.3.1 (on Page 23) are Revised to read "A recommended method is to have the package blasted with absolutely clean dry air or remove static electricity charge with an appropriate solvent. Once entering the process area and placed in a laminar flow hood, the package should be washed again with the appropriate solvent for approximately 5 to 10 seconds to remove exterior contaminants. The package should then be placed in a clean container ready to be cut open." MIL-P-197, Revision G, Amendment 1, dated 19 November 1993, also Revised the second and third sentences of Paragraph 3.3.1.3.2 (on Page 9) to read "The cleaning process shall include sprays, ultrasonics and vapor rinsing in accordance with applicable laws and regulations. Class I Ozone Depleting Compounds (ODC's) [sic] shall not be used as solvents."

**ODS Use:** A Recommended Method Is To Have The Package Blasted With Absolutely Clean Dry Air Or Remove Static Electricity Charge With a Solvent Such As Freon TF. Once Entering The Processing Area and Placed In a Laminar Flow Hood, The Package Should Be Washed Again With Freon TF Solvent For Approximately 5 to 10 Seconds (See 6.2 Page 14).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

TT-E-485

TT-E-485, Revision F, Notice 1, dated 25 February 1991, has made TT-E-485 inactive for new design. Any future acquisitions should refer to MIL-E-52891.

**General Comments:**

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**Document Number:** MIL-B-38741 Bromochlorodifluoromethane, Technical

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specimen Covers The Requirements For Bromochlorodifluoromethane For Use As A Fire Extinguishing Agent.

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Bromochlorodifluoromethane (Halon-1211)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-B-43711 Barrier Material, Waterproof, Flexible, Lumber Protective

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634)

**ODS Use:** Reinforcement: Immerse One End In A Suitable Solvent, Such As Trichloroethylene Or Carbon Tetrachloride, Until The Piles Can Be Separated And The Reinforcing Strands Are Visible (4.3.2 Page 9).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting carbon tetrachloride and using only trichloroethylene as immersion solvent.

---

**Document Number:** MIL-B-44037 A Blender, Powdered Mix, Mechanically Refrigerated

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Compressor Shall Be Designed to Meet the Requirements of 3.5 Using Refrigerant Conforming to Type 12 of BB-F-1421. The Completely Assembled Refrigeration System Shall Be Evacuated, Dehydrated, and Charged with Refrigerant Conforming to Type 12 of BB-F-1421. (See 3.6.3.2 on Page 8)

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, HFC-134a, R-402, R-404 and R-507.

---

**Document Number:** MIL-B-50012                      Bag, Delousing

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      A 20 milliliter ampoule of methyl bromide conforming to O-M-261 shall be used as the fumigant (3.5 page 8).

**ODS CHEM 1:**                      Methyl Bromide                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                      O-M-261

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-B-9972 A Brazing, Nickel Alloy, General Specification for

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-B-9972, Revision B, dated 4 February 1994, has removed the ODS reference from paragraph 3.6.1. The last two sentences of paragraph 3.6.1 have been revised to read "Parts shall be cleaned in accordance with manufacturer's instructions. If necessary, wipe surfaces clean with O-A-51 Acetone or TT-I-735 Isopropyl Alcohol."

**ODS Use:** When Vapor Degreasing, Use trichloroethane - 1,1,1 Type Solvents Conforming To MIL-T-81533. Wipe Surfaces Clean with trichloroethane - 1,1,1, O-T-620 (See 3.6.1 on Page 4)).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-B-9978      A      Biological Agent, Simulant, Bacillus Globigii: Dispenser, AN-MI

**Level:** 1      **Class:** ODS      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Nozzle Discharge Pattern: Install Nozzle Assembly In A Can Charged With 300g Of A Mixture Consisting Of 50 Percent Freon 12 And 50 Percent Ethyl Alcohol By Volume (4.6.6 Page 13).

**ODS CHEM 1:** CFC 12      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon 12

**1ST LEVEL REFS:**

**General Comments:** 40 CFR Part 82 subpart C makes it illegal for manufacturers to produce aerosol propellants that contain class I or class II ODSs, except for certain medical devices, mold release agents, document preservation sprays and other specialty uses. Recommend deleting requirement to use CFC propellants from this specification. Replace with suitable hydrocarbon, DME, HFC or CO2 propellant.

---

**Document Number:** MIL-C-10933 E Chilled Water Units, Bakery

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-10933 has been cancelled by Notice 1, dated 31 August 1993, and is not superseded by another document.

**ODS Use:** Chilled Water Units Shall Employ Dichlorodifluoromethane Refrigerant Specified in Section 3.4.3 (See 3.3). Refrigerant Shall Be Dichlorodifluoromethane Conforming to Type 12 of BB-F-1421 (See 3.4.3).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-C-11796 C Corrosion Preventive Compound, Petrolatum BOT Application

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** For the Abrasives Test, Dissolve 5 Grams of the Compound in a Small Portion of Methyl Chloroform, and Pour the Dissolved Sample into a Cone-Shaped Centrifuge Tube. Add Methyl Chloroform to Make a Total Volume of 100 Milliliters (See 4.6.6 on Page 8).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. Methylene chloride is a possible substitute.

---

**Document Number:** MIL-C-12104 B Cylinder, Compressed Gas, Bromotrifluoromethane (Halon 1301)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-12104 has been Cancelled by Amendment 1, dated 24 January 1962, and is not superseded by another document.

**ODS Use:** The cylinder shall conform to all applicable ICC regulations for the transportation of liquified bromotrifluoromethane (3.1 page 3). Cylinders are to be used for shipment and storage of bromotrifluoromethane (Halon 1301) (6.1 page 8).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1301

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-14370 D Compressors, Reciprocating, Power Driven, Open Type for Use with Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Compressors Shall Be Reciprocating, Open Type Designed for Operation with Refrigerant Conforming to Type 12 of BB-F-1421 (See 3.4 on Page 4).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-STD-279

**General Comments:** Specification is for equipment parts that use an ODS. However, the specification does not require the use of an ODS. No SAO approval is required. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment. Recommend changing specification to HFC-134a compressors.

---

**Document Number:** MIL-C-17605 C Charcoal, Activated, Unimpregnated

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Adsorption Of Carbon Tetrachloride Activity Is described On Page 5 - 8 (4.6.1)

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Currently reviewing applicability of proposed ASTM Method. The ASTM Method is scheduled for balloting in May 1995. The new ASTM method uses n-butane instead of the ODS.

---

**Document Number:** MIL-C-18164 A Composition D-2

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Benzene

**ODS Use:** Assay: Place Thimble In A Soxhlet Extraction Apparatus And Using Benzene Or Carbon Tetrachloride As The Solvent, Extract The Wax And Lecithin From The Sample (4.4.2.1 Page 5).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting carbon tetrachloride and using only benzene as the extraction solvent.

---

**Document Number:** MIL-C-19328 E Converter, Liquid Oxygen, 5 Liter, MBA-5A

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Degreasing, Prior to Assembly, Internal Surfaces Shall be Degreased by Flushing with Cleaning Compound MIL-C-81302 or Use Vapor Degreaser in Accordance with MIL-T-81533 (See 3.11.1). Components Shall Be Cleaned by Immersion in MIL-C-81302 or Ultrasonics with MIL-C-81302.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend replacing MIL-C-81302 with Navy Oxygen Cleaner (NOC) cleaning process.

---

**Document Number:** MIL-C-19803 F Converter, Liquid Oxygen, 10 Liter, GCU-24A/A

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-19803, Revision F, Amendment 5, dated 29 September 1995, removes the direct ODS references. Paragraph 3.11.1 has been revised to read "Prior to assembling, all internal surfaces of the converter shall be degreased and cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:** Prior to Assembling the Converter, All Internal Surfaces of the Converter Shall Be Degreased by Flushing with a Cleaning Compound, MIL-C-81302 or Using A Vapor Phase Degreaser in Accordance with MIL-T-81533. Components Shall Be Cleaned by Immersing, Scrubbing or Pressure Spray with MIL-C-81302 Cleaning Compound or Ultrasonics May Be Used in Conjunction with Vapor Degreasing or MIL-C-81302 Cleaning Compound ( See 3.11.1 on Page 9)

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend replacing MIL-C-81302 with Navy Oxygen Cleaner (NOC) cleaning process.

---

**Document Number:** MIL-C-19853 C Carbon Removing Compound (For Use in Agitated Tank)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-19853, Revision D, dated 24 March 1994, removes the ODS reference. The requirement to use 1,1,1-Trichloroethane (Paragraph 4.5.10) is deleted and replaced with a requirement to use methyl ethyl ketone (see page 11).

**ODS Use:** A Used Vapor Degreased (1,1,1-Trichloroethane) Carbon Covered Aluminum Alloy Aircraft Piston Shall Be Cut into Eight Sections (See 4.5.10 on Page 2 of Amendment 1).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-C-21049 F Coupling Assemblies, Quick Disconnect, Aircraft Liquid Oxygen Systems

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-21049, Revision F, Amendment 1, dated 27 December 1995, has removed the ODS reference. O-T-620 has been removed from the list of Federal Specifications. Paragraph 4.7.8.1 has been revised to read "After starting the flow of liquid oxygen, submerge the cold assembly in a bath of fluorocarbon type solvent (Fluorinert 3M Co.) or similar non-reactive solvent and flow for two minutes."

**ODS Use:** For Operational Testing of Type I Coupling Assemblies: After Starting a Flow of Liquid Oxygen, Submerge the Cold Coupling Assembly in a Bath of O-T-620 (Trichloroethane) and Flow For Two Minutes (See 4.7.8.1 on Page 11).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:** Recommend investigation of water, HFC, HCFC or PFC for replacement of 1,1,1-Trichloroethane in external leak detection. Note: Any leak detection material must be compatible with oxygen (e.g., not flammable).

---

**Document Number:** MIL-C-21852 F Cloth, Taffeta, Nylon

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (See 4.5.4 on Page 13). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-C-22230 B Cleaning Compound, Fuel Tank and Bilge

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-22230, Revision B, Amendment 2, dated 24 March 1995, removes the ODS reference. Paragraph 4.5.1.4 has been revised to read "The residual oil shall be extracted from the pint jar surface and the test strips using 25 ml of trisolvent. Trisolvent is a mixture of equal amounts of spectro or HPLC grade acetone, methanol and toluene. The extract shall be filtered through a dry solvent compatible, filter paper and the amount of oil present shall be determined by measuring the oil content photometrically at 700 nm with a spectrophotometer, Bausch and Lomb Spectronic 20."

**ODS Use:** The residual oil shall be extracted from the pint jar surfaces and the test strip using 25ml of carbon tetrachloride (4.5.1.4 page 9).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. Recommend replacement of carbon tetrachloride with alternative extraction solvent such as TCE, PCE, Methylene Chloride or HCFC-141b.

---

**Document Number:** MIL-C-22284 A Container, Aircraft Fire Extinguishing System, Bromotrifluoromethane, CF3Br

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-C-22284, Revision A, Amendment 1, dated 6 November 1995, removes the ODS references. In paragraphs 1.1 and 3.4.4, the phrase "(see 6.1.1)" is added at the end of the paragraph. A new paragraph 6.1.1 is added as follows: "Paragraphs 1.1 and 3.4.4 require the use of bromotrifluoromethane, CF3Br, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

**ODS Use:** The Container shall be Charged with Bromotrifluoromethane, CF3Br, Conforming to MIL-B-12218 (Typo: Should Read MIL-M-12218). The Quantity of CF3Br shall be as Indicated in Table I for the Specified Type. See Section 3.4.4 on Page 5. Table I (Page 1) Lists CF3Br Charges (in Lbs.) For Each Type of Container.

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-M-12218

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-C-22750 E Coating, Epoxy, VOC-Compliant

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-22750, Amendment F, dated 31 May 1994, has deleted the reference to 1,1,1-Trichloroethane.

**ODS Use:**

The Type II Coating shall Contain an Inhibited Grade of 1,1,1-Trichloroethane such as Dow Chemical's CHLOROTHENE SM or Equivalent (See 3.4.2 on Page 6). The Admixed Type II Coating shall be Compatible with 1,1,1-Trichloroethane (See 3.4.3 on Page 6). When Components A and B are Mixed and Reduced For Spraying with Thinner Conforming to MIL-T-81722, Type II (For Type I Coating) or 1,1,1-Trichloroethane (For Type II Coating), the Material shall be Homogenous and, When Sprayed, shall Yield a Smooth, Uniform Film (See 3.9.2 on Page 8). The Type II Topcoat may be Reduced with 1,1,1-Trichloroethane (See 4.5.2 on Page 11). Type II Coatings shall be Furnished in the Following Type as Specified -- Exempt-Solvent (1,1,1-Trichloroethane) (See 1.2 on Page 1).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-22751 D Coating System, Epoxy-Polyamide, Chemical and Solvent Resistant,  
Process for Application of

**Level:** 1 **Class:** ODS **Comments:**  
MIL-C-22751 has been Cancelled by Revision D, Amendment 1, Notice 1, dated 11 April 1990, and is not  
superseded by another document.

**Alternatives Listed In Spec:**

**ODS Use:** Any residue left by masking shall be removed with safety solvent conforming to O-T-620 (5.2.1 page 7).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded  
by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-C-22750 All references to ODSs have been removed from this specification. MIL-C-22750, Amendment F, dated 31  
May 1994, has deleted the reference to 1,1,1-Trichloroethane.

MIL-P-23377 All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30  
September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation  
"Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

---

**Document Number:** MIL-C-23122 B Condensers, Air Cooled, Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Covers Air Cooled Condensers For Use With Refrigerant-12 (See 1.1 on Page 1). Each Condenser Coil shall be Subjected to a gage Pressure of 235 Pounds Per Square Inch (0.07 kg.M2) Using Dry Nitrogen Gas, Dry Air, or Refrigerant-12 (See 4.5.1 on Page 8).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment parts that use an ODS. However, with the exception of the condenser coil pressure test, the specification does not require the use of an ODS. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment using a refrigerant such as HFC-134a. R-12 shall not be used for condenser coil pressurization. Use only nitrogen or air for pressure test.

---

**Document Number:** MIL-C-23136 B Condensers, Refrigerating, Water-Cooled, Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Covers Water-Cooled R-12 Refrigerating Systems.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment parts that use an ODS. However, the specification does not require the use of an ODS. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment using an alternative refrigerant such as HFC-134a.

---

**Document Number:** MIL-C-23365 C Compressors, Hermetic, For Use With Refrigerant 12

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-23365 has been Cancelled by Revision C, Notice 2, dated 5 December 1994, and is not superseded by another document.

**ODS Use:** Compressors shall be Designed For Use with Refrigerant Conforming to Type 12 of BB-F-1421 (See 3.5.3. on Page 4).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-2397 A Chamber, Fumigation, Methyl Bromide Nonportable

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-2397 has been Cancelled by Revision A, Amendment 1, dated 2 August 1950, and is not superseded by another document.

**ODS Use:** This specification covers the requirements for the manufacture and delivery of a non-portable fumigation chamber utilizing methyl bromide as a fumigant (D-1 page 4).

**ODS CHEM 1:** Methyl Bromide

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Methyl Bromide

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-2398 Chamber, Fumigation, Methyl Bromide, Portable

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-2398 has been cancelled, dated 10 August 1950, and is not superseded by any other specification.

**ODS Use:** This specification covers two types of chamber, fumigation, methyl bromide portable as follows: Type I (gasoline operated), Type II ( electric operated).

**ODS CHEM 1:** Methyl Bromide

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Methyl Bromide

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-24166 A Cooler, Drinking Water, Mechanically Refrigerated, Self-Contained, Naval Shipboard.

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-C-24166, Revision B, Amendment 1, dated 8 July 1997, removes all ODS references. In the second sentence of paragraph 3.5.4, delete "dichlorofluoroethane (R-12)" and substitute "1,1,1,2 tetrafluoroethane (R-134a)." In the first sentence of paragraph 4.3.3, delete "R-12" and substitute "R-134a."

MIL-C-24166, Revision B, dated 18 July 1991, does not remove the ODS reference(s). A new section 4.3.3 (Page 20) has added the following ODS reference:

"The system shall be pressurized to 50 lb/sq in gauge with 10 percent of R-12 refrigerant as a tracer gas and shall be tested for leaks with a halide leak detector with a leak index sensitivity of not more than 1/2 ounce per year."

**ODS Use:** The Condensing Unit Shall Be Dispensed for Operation with Dichlorodifluoromethane (R12) Refrigerant (See 3.5 on Page 5). Requires Pressure and Leakage Testing with Air and Refrigerant (See 4.5.1 on Page 13).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. A possible alternative to investigate is HFC-134a.

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**Document Number:** MIL-C-24524 Cable Assemblies, Magnetic Minesweeping, Type CL2B

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Ethylene Dichloride

**Comments:**

MIL-C-24524, Amendment 1, dated 10 April 1995, removes the ODS reference. In Paragraph 30.4, Line 3, delete "... one part inhibited methyl chloroform in accordance with O-T-620, or."

**ODS Use:** Removal Of Sealant: Immerse The Conductor To Be Cleaned In A Solution Of One Part Inhibited Methyl Chloroform In Accordance To O-T-620 Or Ethylene Dichloride, And Three Parts Kerosene Or Diesel Fuel Agitated With Compressed Air (See 30.4 on Page 7 of Appendix)

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting 1,1,1-Trichloroethane and using only ethylene dichloride.

---

**Document Number:** MIL-C-24671 A Cloth, Lint-Free, Flushing And Cleaning

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-24671, Revision B, dated 31 July 1995, removes the ODS reference. The reference to Trichloroethane (methyl chloroform) in the list of test solvents for the solvent compatibility test (Paragraph 3.2.7 in Revision A; Paragraph 3.1.7 in Revision B) has been deleted.

**ODS Use:** The Fabric And Cloths Shall Not Discolor Or Show Visible Degradation When Immersed In Each Of The Following Solvents For A Period Of 60 Minutes At Ambient Temperature: (f) Trichloroethane (3.2.7 Page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Recommend deletion of 1,1,1-Trichloroethane from test requirement.

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**Document Number:** MIL-C-24746 Coolers, Unit Forced Air For Ship's Refrigerated Stores

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**Comments:**

MIL-C-24746, Amendment 1, dated 9 November 1996, removes most, but not all, the ODS references in this document.

Paragraph 2.1 (Page 2): Delete MIL-C-81302.

Table I (Page 6): Under "Materials" column for "Refrigerant" delete "Type R-12 or R-22" and replace with "R-12 or R-22 for existing systems and R-134a for new or converted systems."

Table I (Page 6): Under "Specification" column for "Refrigerant" after BB-F-1421 add ", ARI 700."

Paragraph 5.2(a)(1) (Page 22): Delete the entire Section 5 and substitute:

"For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity with the Military Department or Defense Agency, or within the Military Department's System Command. Packaging date retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity."

Add as new paragraph:

"6.8 Preservation. Preservation should be level A, C, or commercial and cleaned as follows or by an equivalent commercial process as approved by NAVSEA.

(a) Cleaning.

(1) The refrigerant system circuit shall be cleaned internally in accordance with the manufacturer's standard practice.

(2) After the refrigerant system circuit has been cleaned, evacuate and then pressurize with a holding charge of nitrogen to 2 lb/square inch. Seal for shipping."

**ODS Use:** Refrigerant Type R-12 Or R-22 in Accordance With BB-F-1421 Shall Be Used (See Table I on Page 6). Clean Refrigerant Circuit Internally After Leak Testing. Fill With Trichlorotrifluoroethane Solvent Conforming To MIL-C-81302, Type II (5.2(a)(1) on Page 22). After Cleaning Units, The Expansion Valve Shall be Returned To Normal and the Unit Evacuated and Then Pressurized With the Holding Charge of R-12 To 2 lb/square inch and Sealed For Shipping (See 5.2(a)(6)).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:** CFC 113

**PRIMARY REFS:** BB-F-1421

**Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

MIL-C-81302

**1ST LEVEL REFS:** DOD-G-24508 DOD-G-24508, Revision A, Proposed Amendment 4, dated 17 April 1995, removes the ODS reference in Paragraph 4.5.2.2.2. Paragraph 4.5.2.2.2 has been deleted and replaced by the following text "ELECTRON solvent, (NSN 6850-01-375-5553 [6-gallon pail], NSN 6850-01-375-5554 [1-gallon can] or equivalent aliphatic hydrocarbon-terpene mixture."

MIL-R-16743 MIL-R-16743, Revision F, dated 1 March 1991, does not remove the ODS references.

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a. Recommend deleting requirement to use trichlorotrifluoroethane (MIL-C-81302) for cleaning and replace with "suitable solvent."

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**Document Number:** MIL-C-25666 E Converters, Liquid Oxygen, Capacitance Type Gaging, General Specification For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Prior to the Assembly of the Converter, the Internal and External Surfaces of the Components shall be Degreased by Ultrasonics, by Immersing and Scrubbing, by Pressure Spraying with a Cleaning Compound that Conforms to MIL-C-81302, or by Vapor Degreasing with a Solvent that Conforms to MIL-T-27602, Type I or II of MIL-C-81302, or MIL-T-81533 (See 3.4.5.1 on Page 4). Please Note that MIL-T-27602 has been Cancelled and is Superseded by MIL-C-81302.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:** MIL-O-27210

MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend replacing MIL-C-81302 and MIL-T-81533 with Navy Oxygen Cleaner (NOC) cleaning process.

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**Document Number:** MIL-C-28754/100

Connectors, Electrical, Modular, Type IV, Connector, 200 Contact, Center

**Level:** 1      **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Mineral Spirits

MIL-C-28754/100, Amendment 1, dated 23 March 1994, removes the ODS reference. Step 7 (Page 10) has been revised to read:

"7) Step 11 - Rinse in mineral spirits, TT-T-291, followed by an isopropyl alcohol, TT-I-735, rinse and allow to air dry."

**ODS Use:** Rinse in Freon TF or Mineral Spirits (See Requirement 7 on Page 10).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**

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**Document Number:** MIL-C-28754/101 Connectors, Electrical, Modular, Type IV Conector, 0.6 Pitch, 250 Contact, Center

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Mineral Spirits

**Comments:**

All references to ODSs have been removed from this specification. MIL-C-28754/101, Amendment 1, dated 23 March 1994, deletes the requirement to use Freon TF for cleaning prior to insertion force testing.

**ODS Use:** Rinse In Freon TF or Mineral Sprirts (See Requirement 7 on Page 9).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**

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**Document Number:** MIL-C-28754/83 Connectors, Electrical, Modular, Type IV, Connector, 0.6 Pitch, 250 Contact, Center

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-C-28754/83, Amendment 1, dated 23 March 1994, deletes the requirement to use Freon TMS for cleaning prior to insertion force testing.

**ODS Use:** Mechanical Requirements: Insertion Force: Force required to fully mate this connector with a corresponding backplane manufactured in accordance with MIL-C-28754/79, /80 or /81 shall be less than 45 pounds. Both backplane and connector shall be cleaned in freon TMS and allowed to air dry in a lab environment for a minimum of 30 minutes and a maximum of 4 hours prior to testing (page 13).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TMS

**1ST LEVEL REFS:** MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

MIL-I-43553 All references to ODSs have been removed from this specification. MIL-I-43553, Revision B, Amendment 1, dated 23 June 1994, has deleted all ODS references. The second sentence of paragraph 4.6.3.2 has been Revised to read, "These specimens shall be immersed in water, denatured alcohol, methyl alcohol, and a cleaning solvent selected in 4.6.1, for a period of 30 minutes...." Also 1,1,1- Trichloroethane has been deleted from the keyword list (Section 6.8).

**General Comments:**

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**Document Number:** MIL-C-28754/84 Connectors, Electrical, Modular, Type IV, Connector, 0.3 Pitch, 100 Contact, Offset

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-C-28754/84, Amendment 1, dated 23 March 1994, deletes the requirement to use Freon TMS for cleaning prior to insertion force testing.

**ODS Use:** Mechanical Requirements: Insertion Force: Force required to fully mate this connector with a corresponding backplane manufactured in accordance with MIL-C-28754/79, /80 or /81 shall be less than 45 pounds. Both backplane and connector shall be cleaned in freon TMS and allowed to air dry in a lab environment for a minimum of 30 minutes and a maximum of 4 hours prior to testing (page 16).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TMS

**1ST LEVEL REFS:** MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

MIL-I-43553 All references to ODSs have been removed from this specification. MIL-I-43553, Revision B, Amendment 1, dated 23 June 1994, has deleted all ODS references. The second sentence of paragraph 4.6.3.2 has been Revised to read, "These specimens shall be immersed in water, denatured alcohol, methyl alcohol, and a cleaning solvent selected in 4.6.1, for a period of 30 minutes...." Also 1,1,1- Trichloroethane has been deleted from the keyword list (Section 6.8).

**General Comments:**

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**Document Number:** MIL-C-28754/85 Connectors, Electrical, Modular, Type IV Connector, 0.3 Pitch, 100 Contact, Dual Inline Package (DIP)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-C-28754/85, Amendment 1, dated 23 March 1994, deletes the requirement to use Freon TMS for cleaning prior to insertion force testing.

**ODS Use:** Mechanical Requirements: Insertion Force: Force required to fully mate this connector with a corresponding backplane manufactured in accordance with MIL-C-28754/79, /80 or /81 shall be less than 45 pounds. Both backplane and connector shall be cleaned in freon TMS and allowed to air dry in a lab environment for a minimum of 30 minutes and a maximum of 4 hours prior to testing (page 14).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TMS

**1ST LEVEL REFS:** MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

MIL-I-43553 All references to ODSs have been removed from this specification. MIL-I-43553, Revision B, Amendment 1, dated 23 June 1994, has deleted all ODS references. The second sentence of paragraph 4.6.3.2 has been Revised to read, "These specimens shall be immersed in water, denatured alcohol, methyl alcohol, and a cleaning solvent selected in 4.6.1, for a period of 30 minutes...." Also 1,1,1- Trichloroethane has been deleted from the keyword list (Section 6.8).

**General Comments:**

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**Document Number:** MIL-C-28754/98 Connectors, Electrical, Modular, Type IV, Connector, 150 Contact, Center, Contact Tails on 0.100 Centers

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Mineral Spirits All references to ODSs have been removed from this specification. MIL-C-28754/98, Amendment 1, dated 23 March 1994, deletes the requirement to use Freon TF for cleaning prior to insertion force testing.

**ODS Use:** Rinse in Freon TF or Mineral Spirits, TT-T-291 (See Requirement 7 on Page 9).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**PRIMARY REFS:** Freon TF **Comments:**

**1ST LEVEL REFS:** MIL-F-14256 MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**

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**Document Number:** MIL-C-28754/99 Connectors, Electrical, Modular, Type IV, Connector, 150 Contact Offset

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Mineral Spirits All references to ODSs have been removed from this specification. MIL-C-28754/99, Amendment 1, dated 23 March 1994, deletes the requirement to use Freon TF for cleaning prior to insertion force testing.

**ODS Use:** Rinse in Freon TF or Mineral Spirits, TT-T-291 (See Requirement 7 on Page 10).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**PRIMARY REFS:** Freon TF **Comments:**

**1ST LEVEL REFS:** MIL-F-14256 MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**

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**Document Number:** MIL-C-28840 A Connectors, Electrical, Circular Threaded, High Shock, High Density, Shipboard, Class D, General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-28840, Revision A, Amendment 4, dated 1 April 1993, deletes the ODS reference. The requirement to use 1,1,1-Trichloroethane and Trichlorotrifluoroethane for the fluid immersion test (See Table X on page 35) has been deleted and Superseded by a new table that references method 1016 of MIL-STD-1344 for fluids for the fluid immersion test.

**ODS Use:** 1,1,1-Trichloroethane and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride are Listed as Applicable Fluids For the Fluid Immersion Test (See 4.6.12, Table X, on Page 35).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-29202 B Coach Recruiter, Forward Control, 4 By 2

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Extinguishers Shall Be Halon 1211 Marine Type In Accordance With ANSI UI 1093 (3.10 Page 22).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a suitable dry chemical extinguisher having an equivalent UL rating.

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**Document Number:** MIL-C-2939 E Cooling Coils, Air, Duct Type and Gravity Type; Cooler Units, Air, Naval Shipboard Environmental Control Systems

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

All references to ODSs have been removed from this specification. MIL-C-2939, Revision F, dated 31 December 1990, removes the direct ODS reference. Type I (Cooling Coil, Air), Style A, Class 2 (Refrigerant (DF)) and Type II (Unit Coolers), Class 2 (Refrigerant (UF)) have been discontinued.

**ODS Use:** R-12 Coils shall be Filled with R-12 Gas Prior to Sealing (See 5.1.1 (c) on Page 20).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-C-29576 A Cylinders, Steel, Compressed Gas, Non-Shatterable, Welded

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-29576, Revision A, Amendment 1, dated 6 November 1995, removes the ODS references. In Paragraph 2.1.1, MIL-C-81302 has been deleted from the Military Specifications list. In Paragraph 4.7.2.1, the requirement to use Cleaning Compound Solvent Conforming to MIL-C-81302, Type I, has been deleted and replaced with a requirement to use an oxygen-safe cleaning compound.

**ODS Use:**

To Perform the Non-Volatile Residue Test, Place a Clean Plug in the Outlet of the Cylinder and Clean the Surface Around the Plug and the Cylinder Outlet with Cleaning Compound Solvent Conforming to MIL-C-81302, Type I. Wipe Dry with a Clean, Lint Free Cloth. Calculate the Internal Surface Area of the Cylinder. Using the Internal Surface Area of the Cylinder and a Ratio of 200 ml Per Square Foot (2.15 l/m<sup>2</sup>), Calculate the Required Amount of Solvent (MIL-C-81302, Type I) to be Used. In No Case shall less than 150 ml of Solvent be Used (See 4.7.2.1 on Page 10).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-O-27210

MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible.

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**Document Number:** MIL-C-342 J Cloth, Wind Resistant, Poplin, Cotton

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (See 4.5.2 on Page 12). Magnesium Reagent and Halon are Available From the Eastman Kodak Company (See 6.10 on Page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-36337 B Cooler, X-Ray Film Processing Unit

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-36337 has been Cancelled by Revision B, Notice 2, dated 22 August 1994, and is not superseded by another document.

**ODS Use:** Refrigerant shall be Dichlorodifluoromethane Conforming to Type 12 of BB-F-1421 (See 3.3.1 on Page 3).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-3702 B Cable, Power, Electrical: Ignition, High Tension

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** MIL-T-81533, 1,1,1-Trichloroethane (Methyl Chloroform) Inhibited, Vapor Degreasing and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Dupont Freon TMC, or equivalent are Listed as Applicable Test Fluids For the Liquid Immersion Test For Air Force Aircraft (See 4.7.3.5.4 on Page 18) in Table VIII (See Page 20, Test Fluids For Cable Specimens 18 and 19).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting 1,1,1-Trichloroethane, Trichlorotrifluoroethane and Freon TMC for immersion tests.

---

**Document Number:** MIL-C-3924 J Cloth, Oxford, Cotton Warp and Nylon Filling, Quarpel Treated

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (See 4.5.3 on Page 16). Magnesium Reagent (Ribbon) and Halon are Available From the Eastman Kodak Company (See 6.9 on Page 20). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-427 A Composition C-3

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-C-427 has been made Inactive for new design by Notice 1, dated 20 December 1995.

**ODS Use:** Moisture: Add 200ml Of Carbon Tetrachloride, Dried Over Anhydrous Calcium Chloride (4.3.3. Page 5). Grit: Add 100ml Of Carbon Tetrachloride And Heat On A Steam Bath Until All Lumps Are Broken Down And All Soluble Material Is Dissolved (4.3.6 Page 6). Acidity: Add 100ml Carbon Tetrachloride And Stir To Insure Homogeneous Solution (4.3.9 Page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend making this specification inactive for new design since there is no longer a demand for composition C-3.

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**Document Number:** MIL-C-43128 C Cloth, Plain Weave, Nylon: Water Repellent, OG-106

**Level:** 1 **Class:** NON-ODS

**Comments:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**Alternatives Listed In Spec:**

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (See 4.5.3 on Page 10). Magnesium Reagent (Ribbon) and Halon are Available From the Eastman Kodak Company (See 6.8 on Page 11). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-43153 Cloth, Cartridge, Polyester, Viscose Rayon (For Cartridge Bags)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Perchloroethylene (O-T-236)

**ODS Use:** A Liquid Of Specific Gravity 1.36 And A Liquid Of Specific Gravity 1.40 Shall Be Prepared By Mixing The Proper Proportions Of Either Xylene Or Benzene With Either Carbon Tetrachloride Or Perchloroethylene And Checking The Specific Gravity With A Hydrometer (4.3.1.3 Page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting carbon tetrachloride and using only perchloroethylene to prepare a liquid of specific gravity 1.36 and a liquid of specific gravity 1.40.

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**Document Number:** MIL-C-43191 H Cloth, Wind Resistant Sateen, Cloth and Nylon

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (See 4.5.2 on Page 16). Magnesium Reagent (Ribbon) and Halon are Available From the Eastman Kodak Company (See 6.7 on Page 20). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-43300 G Cold Food Counters, Mechanically Refrigerated

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** Refrigerant Used in Refrigerating System of Each Size shall Conform to Type 12, 22 or 502 of BB-F-1421 (See 3.3.2 on Page 5).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of references to R-12 and R-502 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, HFC-134a and R-401A (R-12 alternatives) and R-402A, R-402B, R-404A and R-507 (R-502 alternatives).

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**Document Number:** MIL-C-43358 B Cloth, Knitted, Nylon/Acetate, Tricot, Camouflage Green 483

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The solvent used in the Chloroform extraction (Non-Fibrous Material Test; See Table IV on Page 8) shall be Carbon Tetrachloride (See Note 3 To Table IV on Page 9).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible replacement for carbon tetrachloride is trichloroethylene.

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**Document Number:** MIL-C-43375 E Cloth, Duck, Nylon, 12.5 Ounce

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (See 4.5.1 on Page 9). Magnesium Reagent (Ribbon) and Halon are Available From the Eastman Kodak Company (See 6.6 on Page 10). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-43427 C Cabinets, Food Service, Refrigerator-Warmer, Roll-Thru, Roll-In

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) MIL-C-43427, Revision C, Notice 2, dated 22 June 1994, has been cancelled and any future acquisitions should refer to A-A-52137. A-A-52137 does not allow the use of any Ozone Depleting Chemicals in either the operation or the manufacture of the Refrigerator-Warmer.

**ODS Use:** The refrigerant shall be type 12, 22, or 502 conforming to BB-F-1421 (3.3.5 page 6).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421

**Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-43468 H Cloth, Camouflage Pattern, Wind Resistant Poplin, Cotton

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 11). Magnesium Reagent (Ribbon) and Halon are available from Eastman Kodak Company (see 6.6 page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-43627 D Cloth, Duch, Cotton, Plied Yarns, Fire, Water, Weather, and Mildew Resistant Treated, Lightdry Finish

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 11). Magnesium Reagent (Ribbon) and Halon are available from Eastman Kodak Company (see 6.6 page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-43637 D Cloth, Plain Weave, Ripstop, Nylon

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 11). Magnesium Reagent (Ribbon) and Halon are available from Eastman Kodak Company (see 6.6 page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-43734 Cloth, Duch, Textured Nylon

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 11). Magnesium Reagent (Ribbon) and Halon are available from Eastman Kodak Company (see 6.6 page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-43842 C Cloth, Oxford, Aramid

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 15). Magnesium Reagent (Ribbon) and Halon are available from the Eastman Kodak Company (see 6.10 page 19). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-43858 B Cloth, Laminated, Nylon Tricot Knit, Polyurethane Foam Laminate,  
Chemical Protective and Flame Resistant

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Vapor Generator for the Carbon Tetrachloride Absorption Test shall be an Apparatus that Generates a Carbon Tetrachloride/Nitrogen Gas Mixture which contains a Concentration of 5 +/- 0.5mg or Carbon Tetrachloride for Liter (see 4.5.2.1.1 page 14). Prepurified Nitrogen shall be used as the Diluent to pass the Carbon Tetrachloride Vapors through the Test Cups containing the Test Specimens (see 4.5.2.1.2 page 14). To determine the Carbon Tetrachloride Concentration Sample, the Carbon Tetrachloride Vapor from the Generator Manifold at a Rate of 1 Liter/min. through the Tared Schwartz-Type Drying tubes (with Stop-Cocks) for a 15-min. Period (see 4.5.2.2.2 page 15). Carbon Tetrachloride Concentration (mg/Liter) is Determined by Dividing the Weight Pick-up (in mg) by the Sampling Time (min.) and Flow Rate (Liters/min.). Determine the Carbon Tetrachloride Concentration during each Test Run (see 4.5.2.2.3 page 15). Start the Flow of Carbon Tetrachloride through the Test Sample and Record the Time for the First Tinge of Blue to Appear in the Indicator Bubbler (see 4.5.2.4 page 16). The Sample Cup shall be Purged with Air after Running each Sample to Assure Removal of any Residual Carbon Tetrachloride (see 4.5.2.4 page 16). The Formula for Determining Carbon Tetrachloride Absorption is given on (Section 4.5.2.5 page 16). Due to the Toxicity of Carbon Tetrachloride, the effluent must be Vented into a Hood (see 6.7 page 20). The Requirement to Perform the Carbon Tetrachloride Absorption Test is listed in Section 3.4 page 5, Table III page 6, and Table VII page 12.

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-C-44034 D Cloth, Twill, Camouflage Pattern, Cotton and Nylon for Desert Uniform

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 14). Magnesium Reagent (Ribbon) and Halon are available from the Eastman Kodak Company (see 6.7 page 22 and 23). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44043 B Cloth, Ballistic, Nylon, Lightweight, Water-Repellent Treated

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.4 page 16). Magnesium Reagent (Ribbon) and Halon are available from the Eastman Kodak Company (see 6.12 page 19). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44044 Cabinet, Storage, Milk Shake, Mechanically Refrigerated

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-C-44044, Draft Amendment 1, dated 6 March 1995, removes the direct ODS reference. Paragraph 3.3.7 has been revised to read "The refrigerant shall be nonflammable, conform to ARI 700, and be an Environmental Protection Agency (EPA) Significant New Alternate Program (SNAP) approved refrigerant with ozone depletion potential (ODP) of 0.05 or less."

**ODS Use:** The Refrigerant shall Conform to Type 12 of BB-F-1421 (See 3.3.7 on Page 4). The Completely Assembled Refrigeration System shall be Evacuated, Dehydrated, and Charged with the Refrigerant Specified in 3.3.7 and Quantity of Oil Recommended by the Manufacturer (See 3.4.6.2 on Page 7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44103 C Cloth, Duck, Polyester, Fire, Water and Weather Resistant

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 11). Magnesium Reagent (Ribbon) and Halon are available from the Eastman Kodak Company (see 6.7 page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44161 A Cloth, Knitted, Terry, Synthetic Fibers

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.3.1 page 9). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-44187 B Cloth, Laminated, Waterproof and Moisture Vapor Permeable

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 11). Magnesium Reagent (Ribbon) and Halon are available from the Eastman Kodak Company (see 6.7 page 15). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44273 Cloth, Laminated, Waterproof, Moisture Vapor Permeable, and Flame Resistant (4.6 oz)

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 10). Magnesium Reagent (Ribbon) and Halon are available from the Eastman Kodak Company. Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** MIL-C-83429

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**General Comments:**

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**Document Number:** MIL-C-44303 Cloth, Porous, Laminated Fabric System

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Vapor Generator for the Carbon Tetrachloride Absorption Test shall be any Apparatus that Generates a Carbon Tetrachloride/Nitrogen Gas Mixture which contains a Concentration of 5 +/- 0.5 mg of Carbon Tetrachloride per Liter (see 4.3.1.1.1 page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-C-44313                      Cover, Chemical Protective, Patient Wrap

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The Carbon Tetrachloride Absorption of the Cover shall be No Less than 1.8 mg/cmz when Tested as Specified in 4.4.7.1 (see 3.5 page 4 and 4.4.7.1 page 13).

**ODS CHEM 1:**                      Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**                      MIL-C-44303

**General Comments:**                      Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-C-44317 A Cloth, Laminated, Nylon, Water Repellant Treated : for Individual, Multipurpose Shelter (IMPS)

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 12). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44413

Cover, Nuclear, Biological, And Chemical Protective (NBC-CP)

**Level:** 1      **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (4.5.2 Page 13).

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-44423 Cloth, Coated, Flame Resistant, Light Weight, Reversible

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (4.5.4 Page 12). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-C-44424 Cloth, Chemical Protective

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride Adsorption: Vapor Generator: Any Apparatus Can Be Used That Generates A Carbon Tetrachloride/Nitrogen Gas Mixture Which Contains 4 To 6mg Of Carbon Tetrachloride Per Minute (4.5.1.1.1 page 7). Carbon Tetrachloride Is Used In The Adsorption Test Which Is Described On Pages 7-9

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-C-44436 Cloth, Camouflage Pattern, Wind Resistant Poplin, Nylon/Cotton Blend

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (4.5.4 Page 16). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** FED-STD-191

**General Comments:**

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**Document Number:** MIL-C-450 C Coating Compound, Bituminous Solvent Type, Black (For Ammunition)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

MIL-C-450, Revision C, has been made Inactive For New Design by Notice 1, dated 9 May 1996.

**ODS Use:** Tests for olefinic and cyclo-olefinic compounds: Dissolve the first sample in 1ml of carbon tetrachloride and add 1 drop of 1 percent bromine in carbon tetrachloride (4.5.18.3 page 14).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

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**Document Number:** MIL-C-46113 B Cutting-Fluid Concentrates, Transparent

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 1,1,1-Trichloroethane (Methyl Chloroform) Conforming to O-T-620 is Listed as an Applicable Solvent in Section 4.6.7.2.2 (Page 8). Duplicate Metal-Strip Specimens are Placed in A Tightly Stoppered Bottle Filled with 1,1,1-Trichloroethane Prior to Examination (See 4.6.7.3.1 on Page 8). All Metal-Strip Specimens are Washed with 1,1,1-Trichloroethane and Allowed to Dry before Examination (See 4.6.7.3.1 on Page 8).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS solvent such as petroleum ether (reagent grade) or Trichloroethylene.

---

**Document Number:** MIL-C-46168 D Coating, Aliphatic Polyurethane, Chemical Agent Resistant

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**ODS Use:** Type III Coatings are Lead and Chromate (Hexavalent) Free Formulations using 1,1,1 Trichloroethane (Chlorothene) to Meet a Volatile Organic Compound Content of 420 Gm/Liter (3.5 16/Gallon) Maximum as Packaged (See 1.2.2 on Page 2). For the Volatile Organic Compound Determination (See 4.3.7.1 on Page 22), Identification of the Chlorinated Compounds is Made From the Approximate Retention Time of 9.5 Minutes for 1,1,1 Trichloroethane (See Page 23).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:**

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**Document Number:** MIL-C-48497 A Coating, Single or Multilayer Interference: Durability Requirements For

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634) MIL-C-48497, Revision A, Amendment 2, Dated 30 September 1993, Deletes the reference to O-T-620 from the applicable documents section (added by amendment 1) but does not remove the use requirement which was also added by amendment 1. (See paragraph 4.5.4.2, Page 12) The only change made to the offending paragraph (4.5.4.2) by amendment 2 is the correcting of a spelling mistake.

**ODS Use:** Both Trichloroethylene Conforming to O-T-634 and 1,1,1-Trichloroethane Conforming to O-T-620 are listed as Applicable Solutions For the First Solution in the Solubility and Cleanability Test (See 4.5.4.2 on Page 12 and 4.5.4.2, Revised, on Page 2 of Amendment 1).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**PRIMARY REFS:** O-T-620 **Comments:** O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of 1,1,1-Trichloroethane (O-T-620) from test methods.

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**Document Number:** MIL-C-49467                      Capacitors, Fixed, Ceramic, Multilayer, High Voltage (General Purpose)  
Established Reliability, General Specification For

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**                      MIL-C-49467, Amendment 2, dated 22 June 1993, deletes the required use of 1,1,1-Trichloroethane as a vapor degreasing solvent (Paragraph 4.7.7(c) entirely deleted). Note that this specification still references "freon" (used to prevent arcing or high leakage currents).

**ODS Use:**                      It Is Recommended That The Capacitors Be Immersed In An Inert Medium, Such As Freon, To Prevent Arcing Or High Leakage Currents (4.7.5.1.b on Page 20). Posting Test Conditioning: The Capacitors Shall Be Inserted In A Vapor Degreasing Apparatus Containing Boiling 1-1-1 Trichloroethane For 1 1/2 To 2 Minutes (4.7.7(C) on Page 21).

**ODS CHEM 1:**                      Methyl Chloroform                      **ODS CHEM 2:**                      Freon

**Comments:**

**PRIMARY REFS:**                      1,1,1-Trichloroethane (Methyl Chloroform)  
Freon

**1ST LEVEL REFS:**                      MIL-STD-202                      All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

MIL-F-14256                      MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**                      Recommend deleting "freon" and change to read "... Immersed in an inert, high-dielectric medium."

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**Document Number:** MIL-C-4952 E Cartridges, Desiccant, Dehydrator

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** After the cartridge shell side seam and one end have been assembled and sealed, cleaning shall be accomplished by one of the following methods: Method A: A vapor degreasing method with stabilized trichloroethane conforming to MIL-T-81533 shall be used. The cartridge shall be blown clean and dry with a stream of clean, dry, oil-free air until all traces of the trichloroethane fluid have been removed. As an alternate after degreasing, the cartridge shall be dipped in a hot water (180 degrees) bath and then wiped with a soft cloth until all traces of the trichloroethane are removed (See 3.12.1.1 on Page 8).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting Cleaning and Degreasing Method A.

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**Document Number:** MIL-C-5015 G Connectors, Electrical, Circular Threaded General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-5015, Revision G, Amendment 5, dated 15 March 1994, removes the direct ODS reference by deleting fluid sample numbers 11 and 12 from table XVIII. This specification no longer requires the use of an ODS.

**ODS Use:** 1,1,1 Trichloroethane and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride are Applicable As Fluids for Fluid Immersion Test (See Table XVIII on Page 46).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-508 J Cloth, Oxford, Nylon, 3 Ounce

**Level:** 1 **Class:** NON-ODS

**Comments:**

**Alternatives Listed In Spec:**

The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (4.3.3 Page 12). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:** MIL-STD-191

**General Comments:**

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**Document Number:** MIL-C-51047 B Compound, Antiseepage, For Cooling System, Internal Combustion Engine (Metric)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Wash Approximately 250 Grams Of The Well Mixed Compound With 100ml Of Carbon Tetrachloride (4.6.6 Page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend testing a replacement such as petroleum ether, trichloroethylene, or other solvent to replace carbon tetrachloride.

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**Document Number:** MIL-C-52211 A Components and Assemblies For Industrial Gas Production, Storage and Transport Equipment, Packaging of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Cleaning [by Vapor Degreasing] shall be Effected by Subjecting the Component or Assembly to the Vapor from Stabilized Trichloroethylene Conforming to O-T-634 or 1,1,1-Trichloroethane Conforming to MIL-T-81533 Until no Further Solvent Condensation Occurs (See 3.3.2.1.1 on Page 5). Cleaning [by Solvent Degreasing] shall be Effected by Washing All Surfaces of the Component or Assembly Using Trichloroethylene Conforming to MIL-T-27602, 1,1,1-Trichloroethane Conforming to MIL-T-81533 or a Commercial Oxygen Safe Cleaning Solvent at Ambient Temperatures (See 3.3.2.1.2 on Page 5). For Ultrasonic Cleaning, Trichloroethylene Conforming to MIL-T-27602 or Trichloroethane Conforming to MIL-T-81533 shall be Used as the Organic Solvent (See 3.3.2.1.6 on Page 5). Please Note that MIL-T-27602 has been Cancelled and is Superseded by MIL-C-81302.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting 1,1,1-trichloroethane and MIL-C-81302 from specification. Replace with trichloroethylene, HCFC-225, HCFC-141b, or other oxygen-safe solvent/cleaning process such as the Navy Oxygen Cleaner (NOC) cleaning process.

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**Document Number:** MIL-C-52241 Cylinder, Compressed Gas, Dichlorotetrafluoroethane

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-52241 has been Cancelled by Notice 1, dated 29 October 1971, and is Superseded by RR-C-910.

**ODS Use:** Cylinders are to be used for shipment and storage of liquefied dichlorotetrafluoroethane (refrigerant 114) (6.1page 4)

**ODS CHEM 1:** CFC 114

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorotetrafluoroethane (CFC-114)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-52717 D Compressors, Hermetic, For Air Conditioner Application

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Style I Compressors Use CFC-12 as the Refrigerant (See 1.2 on Page 1). The Compressors Shall be of a Hermetically Sealed Type as Defined by ARI Standard 515, Designed For Air Conditioning Systems Which Employ Refrigerant 22 (Monochlorodifluoromethane) or Refrigerant 12 (Dichlorodifluoromethane) (See 3.1 on Page 5). The Refrigerant For the Performance Test Shall be in Accordance With BB-F-1421 (See 4.5.2.5.1.2 on Page 16). After Not Less than 1 Hour of Continuous Operation, Withdraw a Sample of Refrigerant from the System and Determine the Moisture Content by One of the Following: (a) Methods Specified in BB-F-1421 or (b) Electrical Method Employing Hygroscopic Film (See 4.5.2.5.1.2 on Page 16).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 12

**PRIMARY REFS:** BB-F-1421

**Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-A-52424

MIL-A-52424 has been Cancelled by Revision B, Notice 1, dated 25 November 1994, and is not superseded by another document.

**General Comments:** Recommend deleting Style I (R-12) compressors or replacing with HFC-134a compressors.

---

**Document Number:** MIL-C-53039 A Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-53039, Revision A, Amendment 2, dated 19 May 1993, deletes the required use of 1,1,1-Trichloroethane to reduce the volume of the coating (See Paragraphs 3.8 and 4.3.14).

**ODS Use:**

If it is Necessary to Reduce for Spraying and the 3.5 lb/gallon VOC Requirement is in Effect, Reduce 4 Parts by Volume of the Coating with One Part by Volume of 1,1,1 Trichloroethane (Dow Chemical SM or Equivalent) or Follow Manufacturer's Instructions (See 4.3.14 on Page 19). Note: If 1,1,1 Trichloroethane is Used in Reduction, Do Not Use Spray Equipment Containing Any Aluminum Components (See Note to 3.8 on Page 13).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:**

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**Document Number:** MIL-C-53072 B Chemical Agent Resistant Coating (CARC) System Application  
Procedures and Quality Control Inspection

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The admixed primer shall be reduced to a spraying viscosity of 16 to 18 seconds through a number 2 Zahn cup by adding MIL-T-81772 type I or II for class 1 and 2 and an inhibited grade of 1,1,1 Trichloroethane for class 3 (3.4.1.4 page 8). If necessary for spray application, MIL-C-46168, type II and type III may be reduced up to one part by volume of the applicable solvent with four parts by volume of the mixing coating. The applicable solvent for type III is 1,1,1 Trichloroethane. (Only type III requires the use of an ODS) (3.5.1.4 page 15). If necessary for spray application, MIL-C-53039 may be reduced up to one part by volume of the applicable solvent with four parts by volume of the coating. The applicable solvent for areas requiring VOC compliance is 1,1,1 Trichloroethane, and for all other areas the solvent is MIL-T-81722, type 1 (3.5.2.4 page 16).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-C-53039

All references to ODSs have been removed from this specification. MIL-C-53039, Revision A, Amendment 2, dated 19 May 1993, deletes the required use of 1,1,1-Trichloroethane to reduce the volume of the coating (See Paragraphs 3.8 and 4.3.14).

MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** Recommend deleting references to Class 3 primer and Type III coatings and reduction using 1,1,1-trichloroethane.

---

**Document Number:** MIL-C-5886 E Cylinder, Oxygen, Low Pressure, Nonshatterable

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Solvent Used in the Cleanliness Test shall be Trichlorotrifluoroethane Conforming to MIL-C-81302 (See 4.3.2 on Page 6). Place a Clean Plug in the Outlet of the Cylinder and Clean the Surface Around the Plug and the Cylinder Outlet with Cleaning Compound MIL-C-81302. Using the Internal Surface Area of the Cylinder and a Ratio of 200 ml. Per sq. ft. (0.093 m<sup>2</sup>), Calculate the Required Amount of Cleaning Compound, MIL-C-81302, Type I, to be Used in the Cylinder (See 4.6.2 on Page 11).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-O-27210

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible.

---

**Document Number:** MIL-C-70724 Cartridge, 5.56 mm, Blank, M 200 A1 Performance Specification For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The cartridge shall be safe to store and fire when subjected to the lubricants and solvents listed below: Trichloroethane solvent O-T-620 (3.4.4 page 5).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting 1,1,1-Trichloroethane from the test method.

---

**Document Number:** MIL-C-70725

Cartridge, 5.56mm, M862 Short Range Training Ammunition General  
Specification For

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-70725, Revision A, dated 8 December 1993, deletes the requirement to use O-T-620 in the chemical compatibility test.

**ODS Use:** The Reliability Of The Cartridge Shall Not Degrade By More Than 0.10 After Exposure To The Following Substances: O-T-620, Trichloroethane Solvent (3.4.6.5 Page 7).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-7905 G Cylinders, Steel, Compressed Gas, Non-Shatterable, Seamless, 1800 PSI and 2100 PSI

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-7905, Revision G, Amendment 1, dated 6 November 1995, removes the ODS references. In Paragraph 2.1.1, MIL-C-81302 has been deleted from the Military Specifications list. In Paragraph 4.7.2.1, the requirement to use Cleaning Compound Solvent Conforming to MIL-C-81302, Type I, has been deleted and replaced with a requirement to use an oxygen-safe cleaning compound.

**ODS Use:** To Perform the Non-Volatile Residue Test, Place a Clean Plug in the Outlet of the Cylinder and Clean the Surface Around the Plug and the Cylinder Outlet with Cleaning Compound Solvent Conforming to MIL-C-81302, Type I. Using the Internal Surface Area of the Cylinder and a Ratio of 200 ml Per sq. ft. (2.15 l/m<sup>2</sup>), Calculate the Required Amount of Solvent (MIL-C-81302, Type I) to be Used (See 4.7.2.1 on Page 10).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** BB-A-1034

BB-A-1034, Revision B, Notice 1, dated 27 December 1995, has removed the ODS reference. In Table II, the phrase "(trichloroethylene and freon TF)" has been deleted.

TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible.

---

**Document Number:** MIL-C-81302 D Cleaning Compound, Solvent, Trichlorotrifluoroethane

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Establishes The Requirements For A 1,1,2-Trichloro-1,1,2-Trifluoroethane Solvent (See 3.1 On Page 3).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-81309 D Corrosive Preventive Compounds, Water Displacing, Ultra-Thin Film

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**ODS Use:** The Propellant Shall Consist Of Either Carbon Dioxide Dissolved In Type II Material Of MIL-C-81302 Or A Mixture Of Trichlorotrifluoroethane And Chlorodifluoromethane (See 3.5.4, Revised, On Page 1 Of Amendment 3). The Table Of Equivalentents In Section 6.6 (Page 18) Lists MIL-C-85054 As The Applicable Specification For Type I Class 1 and Type I Class 2 Compounds.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-81302

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-81751 B Coating, Metallic-Ceramic

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P All references to ODSs have been removed from this specification. MIL-C-81751, Revision B, Amendment 1, dated 12 January 1994, removes the ODS reference. MIL-T-81533 has been deleted from the applicable documents section. Also the phrase "with a suitable solvent such as trichloroethylene, O-T-634; perchloroethylene, O-T-236; or 1,1,1-Trichloroethane, MIL-T-81533" (See 3.4.3 on page 8, Line 10, after "TT-C-490") has been deleted.

**ODS Use:** Prior to Coating, Cleaned Steel Parts shall be Degreased in Accordance with Method II of TT-C-490 with a Suitable Solvent such as Trichloroethylene (O-T-634), Perchloroethylene (O-T-236), or 1,1,1-Trichloroethane (MIL-T-81533) (See 3.4.3 on Page 8).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-S-5002 All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."

TT-C-490 TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:**

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**Document Number:** MIL-C-81777 B Cooler, Liquid, Electronic Equipment HD-908 (/ AWM-23(V)

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-C-81777, Revision B, Amendment 1, dated 15 December 1995, does not remove the ODS reference. At the end of Paragraph 3.2.2.5 (Page 5), add "(see 6.1.1)."

Add a new Paragraph 6.1.1 as follows:

"6.1.1 ODS assessment. Paragraph 3.2.2.5 requires the use of freon 12, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of freon 12 is permitted pending approval from the Senior Acquisition Official for each acquisition."

**ODS Use:** Freon, Type 12, Will Be Provided By The Facility (See 3.2.2.5 on Page 5).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon 12

**1ST LEVEL REFS:** MIL-R-16743

MIL-R-16743, Revision F, dated 1 March 1991, does not remove the ODS references.

**General Comments:**

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**Document Number:** MIL-C-81797 Coating, Inorganically Bonded Aluminum (Electrophoretically Deposited)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P All references to ODSs have been removed from this specification. MIL-C-81797, Revision A, dated 12 January 1994, has removed the ODS reference in Paragraph 3.4.3.

**ODS Use:** Prior to Coating, Cleaned Steel Parts shall be Treated in Accordance with Method II of TT-C-490 with a suitable Solvent such as Trichloroethylene, O-T-634; Perchloroethylene, O-T-236; or 1,1,1-Trichloroethane, MIL-T-81533 (See 3.4.3 on Page 5).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:** MIL-S-5002 All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."

TT-C-490 TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc.

---

**Document Number:** MIL-C-81907 Coating System, Polyurethane, Aliphatic, Weather Resistant: Process For Application of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Any Residue Left by Masking shall be Removed with Safety Solvent Conforming to O-T-620 (See 5.3.(g) on Page 11).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-F-18264

All references to ODSs have been removed from this specification. MIL-F-18264, Revision D, Amendment 2, dated 31 May 1994, has removed the ODS reference. The term "O-T-620" has been deleted and replaced by the phrase "P-D-680, O-A-51, or TT-N-95."

MIL-F-7179

All references to ODSs have been removed from this specification. Please Note: MIL-C-85054, Revision B, dated 5 November 1994, as referenced in MIL-F-7179, no longer requires ODSs in the formulation of the corrosion preventive compound. **WARNING: NEW FORMULATION FOR MIL-C-85054 IS FLAMMABLE; USE WITH CAUTION.**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, acetone (O-A-51), or aliphatic naptha (TT-N-95).

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**Document Number:** MIL-C-81964 A Cleaning Compound, Avionic Components

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-81964, Revision A, has been Cancelled by Notice 1, dated 19 September 1996, and is superseded by MIL-PRF-29608(AS). MIL-PRF-29608(AS), dated 19 September 1996, does not contain any ODS references (NON-ODS).

**ODS Use:**

This Specification Covers A Cleaning Compound Designed For Use On Avionic Components. The Cleaning Compound Shall Be A Mixture Of Trichlorotrifluoroethane And Dimethyl Polysiloxane. The Cleaning Compound Covered By This Specification Is Intended For Cleaning Electrical And Electronic Components, And Is Particularly Effective In Cleaning Electrical Contacts. Table I (Page 9) Lists The Composition Of The Type I And II Cleaning Compounds (MIL-C-81302 Is The Cleaning Solvent And CFC-12 Is The Propellent).

**ODS CHEM 1:**

CFC 12

**ODS CHEM 2:**

CFC 113

**Comments:**

**PRIMARY REFS:**

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-82604 Compound, Asphaltic, High Melting Hot-Melt (Cavity Lining).  
**Level:** 1 **Class:** ODS **Comments:**  
**Alternatives Listed In Spec:** MIL-C-82604 has been made Inactive For New Design by Notice 1, dated 9 May 1996.

**ODS Use:** Insoluble Matter In Carbon Tetrachloride: Method: (...) Add Approximately 60 ml Of Carbon Tetrachloride To The Samples In The Cups. (4.6.1.4.2 Page 9).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** MIL-C-450 MIL-C-450, Revision C, has been made Inactive For New Design by Notice 1, dated 9 May 1996.

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible alternative for carbon tetrachloride is trichloroethylene.

---

**Document Number:** MIL-C-83286 B Coating Urethane, Aliphatic Isocyanate, for Aerospace Applications

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

**ODS Use:** The Distillate is Diluted with Carbon Tetrachloride and its Spectrum Obtained in the Wavelength Region 2480-2000 CM-1 (see Section 20 and 30.9 of Appendix I page 23). Free Diisocyanate Test Requirement is listed in Section 3.6.6 (on Page 7).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-83360 C Cleaning And Lubricating Compound, Electrical Contact

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-83360 has been Cancelled by Revision C, Notice 4, dated 19 September 1996, and is superseded by MIL-PRF-29608(AS). MIL-PRF-29608(AS), dated 19 September 1996, does not contain any ODS references (NON-ODS).

**ODS Use:** Types I, III and IV Cleaner-Lubricants Or Cleaner Materials Are Composed Of CFC-113. Type II Cleaner-Lubricant Is Composed Of 1,1,1-Trichloroethane (See 3.2/3.3.2 On Page 3 And 3.2/3.3.2, Revised, On Page 1 Of Amendment 1). Propellant Shall Conform To Type 12, Table 1 Of BB-F-1421 (See 3.3.3 On Page 3).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-83429 B Cloth, Plain and Basket Weave, Aramid

**Level:** 1 **Class:** NON-ODS **Comments:**

**Alternatives Listed In Spec:** The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

**ODS Use:** Other Standard White Reference Materials May Be Used, Provided That They Are Calibrated to Absolute White, e.g. Halon, Magnesium Oxide, or Vitrolite Tiles (see 4.5.1 page 13). Magnesium Reagent (Ribbon) and Halon are Available from the Eastman Kodak Company (see 6.9 page 16). Please Note: Halon is an old tradename for PTFE; Teflon is the current DuPont tradename.

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-83513 C Connectors, Electrical, Rectangular, Microminiature, Polarized Shell,  
General Specificaiton For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-C-83513, Revision C, Amendment 1, dated 23 September 1994, does not remove the ODS reference.

**ODS Use:** Freon is listed as an applicable test fluid for the fluid immersion test (See 4.7.17 on Page 21).

**ODS CHEM 1:** Freon **ODS CHEM 2:**

**PRIMARY REFS:** Freon **Comments:**

**1ST LEVEL REFS:** MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

MIL-W-22759/33 All references to ODSs have been removed from this specification. MIL-W-22759/33, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**General Comments:** Recommend deleting freon from fluid immersion test.

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**Document Number:** MIL-C-83690

Cylinders, Sampling

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-83690 has been Cancelled by Notice 1, dated 20 April 1993, and is not superseded by another document.

**ODS Use:** The Assembled and Tested Cylinder Shall Be Cleaned By Thoroughly Flushing With Trichloroethylene Conforming To MIL-T-27602 or Equivalent (See 3.4.4 on Page 5). Note That MIL-T-27602 Has Been Cancelled and is Superseded By MIL-C-81302.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

MIL-C-53039

All references to ODSs have been removed from this specification. MIL-C-53039, Revision A, Amendment 2, dated 19 May 1993, deletes the required use of 1,1,1-Trichloroethane to reduce the volume of the coating (See Paragraphs 3.8 and 4.3.14).

**General Comments:**

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**Document Number:** MIL-C-83821 Crane, Wheel Mounted, Crash, Rough Terrain, Hydraulic Full Revolving,  
4x4, DED, Fightr Type Aircraft

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** A Halon 1211 Fire Extinguisher (Five Pounds) Amerex Part Number 355T, or Equal Shall Be Securely In stalled In A Location Readily Accessible To the Operator (3.8.10 Page 17).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

**General Comments:** Recommend replacement with a suitable dry chemical extinguisher having an equivalent UL rating.

---

**Document Number:** MIL-C-83960 A Cylinder, Dehydrator

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Cleaning Methods B or C

**ODS Use:** Cleaning and Degreasing Shall Be Accomplished by One of the Following: Method A, Vapor Degreasing with Trichloroethane Conforming to O-T-620 (See 3.5.1.1).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend using cleaning methods B or C. Do not use cleaning method A. Recommend deleting cleaning method A. If a vapor degreasing method is still desired, substitute trichloroethylene.

---

**Document Number:** MIL-C-85054 A Corrosion Preventive Compound, Water Displacing, Clean (Amlguard)

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound.  
WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**ODS Use:** CFC-113 Is Listed As A Component Of The Corrosion Preventive Compound (See Tables I And III On Pages 4 and 28). Fluorocarbon Propellant No. 12 Conforming To BB-F-1421 Is Used In Type I Containers Of The Corrosion Preventive Compound (See 3.2.1 On Page 4).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-C-85447 A Cleaning Compounds, Electrical And Electronic Components

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

Please Note: MIL-C-85447 has been superseded by MIL-PRF-29608(AS), dated 19 September 1996, for Type I and Type II, Compositions A and B. MIL-PRF-29608(AS), dated 19 September 1996, does not contain any ODS references (NON-ODS).

MIL-C-85447 has not been revised to reflect this change.

**ODS Use:** The Cleaning Compounds Covered By This Specification Shall Be Of The Following Types And Compositions, As Specified (See 6.2.1): Type I - Aerosol, Type II - General Use; Composition A - Trichlorotrifluoroethane Blend, Composition B - 1,1,1-Trichloroethane (See 1.2 On Page 1). See Also Table I On Page 4.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-C-85485 A Cable, Electric, Filter Line, Radio Frequency Absorptive

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-85485, Revision A, Amendment 1, dated 15 March 1994, removes the references to MIL-T-81533 (Methyl Chloroform). Note that this specification still references Trichlorotrifluoroethane.

**ODS Use:** Azetrope of Trichlorotrifluoroethane and Methylene Chloride, and Methyl Chloroform (MIL-T-81533) are listed as Immersion Fluids (See 4.7.15 and Table VIII).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting Trichlorotrifluoroethane and Methyl Chloroform from immersion test.

---

**Document Number:** MIL-C-85521 Concentrator, Oxygen, CGU-7A

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-85521, Amendment 1, dated 29 September 1995, has removed the ODS references. Paragraph 3.6.14.1 has been revised to read Prior to assembling the concentrator and its assemblies, all internal surfaces shall be degreased and all components shall be cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:** Prior to Assembling the Concentrator and its Subassemblies, All Internal Surfaces Shall Be Degreased by Flushing with a Cleaning Compound, MIL-C-81302 or Using a Vapor Phase Degreaser in Accordance with MIL-T-81533. Components Shall be Cleaned by Immersing, Scrubbing or Pressure Spray with MIL-C-81302 Cleaning Compound or Ultrasonics may be used in Conjunction with Vapor Degreasing or MIL-C-81302 Cleaning Compound. (See 3.6.14.1 on Page 9)

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

---

**Document Number:** MIL-C-85570 B Cleaning Compound, Aircraft Exterior

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, as referenced in MIL-C-85570, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**ODS Use:**

Type V Cleaning Compound Shall Remove Corrosion Preventative Compound (MIL-C-81309) and Wire Rope Lubricant (Sprayon # 201 or Equivalent) as well as or Better Than Corresponding Control Formula, When Tested as Specified in 4.6.13.4. (See 3.12.3 on Page 6) Spray One of the Test Soils (MIL-C-81309 soil from Spray Can or Sprayon 201) onto an Aluminum Test Panel Which is at Least 12 by 40 cm (5 By 16 Inches in Size and Prepared as in Table VI (Panel Designation B) When Using Corrosion Preventative Compound (81309) Apply Uniform Film Thickness but do Not Wipe. Bake for 1 Hour.

**ODS CHEM 1:**

CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

MIL-C-81309

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**1ST LEVEL REFS:**

MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

MIL-C-81309 has been reformulated to remove ODSs.

---

**Document Number:** MIL-C-85614 A Coating, Fastener (Titanium and Cres Alloys), Aluminum Pigmented,  
Organically Bonded (For All Threaded and Unthreaded Fasteners)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-85614, Revision A, Amendment 1, dated 12 January 1994, has removed the ODS references. MIL-T-81533 has been deleted from the Applicable Documents section. The phrase ", or trichloroethane (MIL-T-81533)" (Paragraph 4.5.6.2, Line 10) has been deleted. And the phrase "trichloroethane 1,1,1 per MIL-T-81533" (Paragraph 4.5.8(c), Line 1) is deleted and replaced by the phrase "methyl ethyl ketone (ASTM D740)."

**ODS Use:** 4.5.8(c) Clean Holes With Trichloroethane, 1,1,1 per MIL-T-81533 or Equivalent Solvent to Remove Cutting Fluid. After Installation, Grease and Fingerprints Shall Be Removed By Solvent Cleaning With Methyl Ethyl Ketone or Trichloroethane (MIL-T-81533), see 4.5.6.2 on Page 8.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-8638                      Cleaning Compound, Oxygen Systems

**Level:** 1                      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-8638 has been cancelled by Amendment 6, Notice 1, dated 19 February 1971, and is Superseded by MIL-C-81302 (NOTE: MIL-C-81302 is the Primary specification for Trichlorotrifluoroethane cleaning solvent).

**ODS Use:** Trichlorotrifluoroethane and Tetrachlorodifluoroethane are Components of the cleaning compound (Table I page 2).

**ODS CHEM 1:** CFC 112

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** Tetrachlorodifluoroethane (CFC-112)

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-C-87179 Coating, Protective, Solvent Removable For Microcircuits

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-C-87179 has been Cancelled by Notice 2, dated 14 February 1994, and has been Superseded by AMS 2535A.

**ODS Use:** Ionic Content Determination, 50 mL or High Purity Trichlorotrifluoroethane (MIL-C-81302) in pipetted into container (See 4.4.5). Solvent Removability, Panels Shall Be Placed in Soxhlet Extractor Containing Trichlorotrifluoroethane (See 4.4.11). Thermal Shock Resistance If Coating Forms Between Adjacent Wires, Coating Shall Be Removed with Trichlorotrifluoroethane in a Vapor Degreaser or Soxhelt Extractor (See 4.4.13).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-81302

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-D-0040605 D Display Cases, Mechanically Refrigerated, Self-Service  
**Level:** 1 **Class:** ODS **Comments:**  
**Alternatives Listed In Spec:** MIL-D-0040605 has been Cancelled by Revision D, Notice 1, dated 29 July 1994, and is not superseded by another document.

**ODS Use:** Refrigerants of the Display Cases Shall Conform to BB-F-1421 (See 3.3.2).

**ODS CHEM 1:** CFC 11 **ODS CHEM 2:** CFC 12  
**Comments:**

**PRIMARY REFS:** BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-D-0050029 D Dye, Vat Yellow 4

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride Is Used To Calibrate An Infrared Spectrophotometer (4.2.4.4 a and b Page 6).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-D-0050074 E Dye, Benzanthrone

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride Is An Applicable Solvent For the Anti-Dusting Agent (Marcol 52) (See 4.2.4.4(a) and (b) on Page 6).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-D-22825 C Dehydrators, Desiccant, Refrigerant 12.

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Specification For Dehydrators Suitable For Use With R-12. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment parts that use an ODS. However, the specification does not require the use of an ODS. No SAO approval is required. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment.

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**Document Number:** MIL-D-23523 D Dehydrator, Low Pressure Air, For Special Applications

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Type II Dehydrator

**Comments:**

MIL-D-23523, Revision D, Amendment 2, dated 23 February 1996, deletes the ODS references. The phrase "dichlorodifluoromethane (R-12)" has been deleted from the first sentence and replaced by the phrase "Environmental Protection Agency (EPA) Significant New Alternatives Program (SNAP) approved, with an Ozone Depletion Potential (ODP) of 0.05 or less." The phrase "for R-12" has been deleted from the fourth sentence of Paragraph 3.6.15.3.

Please note that the word "Freon" has been replaced by "refrigerant" in the following paragraphs: 3.6.1, 3.6.1.1, and 4.7.1.

MIL-D-23523, Revision D, Amendment 1, dated 5 April 1993, does not remove the ODS reference in this specification.

**ODS Use:** The Refrigerant For The Condensing Unit Shall Be Dichlorodifluoromethane (R-12) (3.6.15 Page 16).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend use of Type II, heater self-reactivating dessicant dehydrator which does not use a refrigeration unit. Recommend cancelling Type I desicators which use a refrigeration unit or replacement of Dichlorodifluoromethane (R-12) with HFC-134a.

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**Document Number:** MIL-D-23615 B Design And Evaluation Of Cartridge Actuated Devices

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-D-23615, Revision C, Amendment 1, dated 17 May 1995, deletes the ODS references. Revision C, Amendment 1 deletes MIL-T-81533, MIL-C-81302, and related information from Table III (Pages 28-29 in Revision C; Pages 11-12 in Revision B, Amendment 2). Revision C, Amendment 1 also adds the following at the end of Paragraph 3.4 (on Page 5 of Revision C):

"When required, vapor degreasing shall be performed using perchloroethylene conforming to O-T-236 or other suitable solvent. Immersion cleaning is acceptable. Recommended cleaning solvents include alcohol, ethers, esters, ketones, hydrocarbons, aqueous or semi-aqueous solvents. The solvent shall be compatible with the metal surface."

MIL-D-23615, Revision C, dated 30 November 1993, does not delete the ODS requirements.

**ODS Use:** Table III of Amendment 2 lists MIL-T-81533 and MIL-C-81302 as second tier required documents as referenced by the first tier document MIL-S-5002 (See Table III on Pages 11 and 12 of Amendment 2). The requirements and quality assurance provisions of MIL-T-81533 and MIL-C-81302 are considered applicable to MIL-D-23615. Note 2 to Table III (See Page 12) indicates that the applicable portions of O-T-236, O-T-634, or MIL-T-81533 may be used for vapor degreasing. Note 3 to Table III (See Page 12) indicates that the applicable portions of O-A-51, TT-N-95, MIL-C-81302, MIL-T-81533 or ASTM D740 may be used for hand cleaning.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-S-5002

All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."

**General Comments:** Vapor Degreasing: The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc. Wipe Solvent: Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** MIL-D-2802                      Dichlorodifluoromethane (F-12)

**Level:** P                      **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

This specification is no longer available on the DODISS and is Superseded by BB-F-671. BB-F-671 has been cancelled and is Superseded by BB-F-1421.

**ODS Use:**                      This specification describes the characteristics of dichlorodifluoromethane.

**ODS CHEM 1:**                      CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                      Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-D-37651                      Dichlorotetrafluoroethane, NF

**Level:** P                      **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

MIL-D-37651 has been Cancelled by Notice 2, dated 1 March 1994, and is not superseded by another document.

**ODS Use:**                      This Specification Covers Dichlorotetrafluoroethane, NF.

**ODS CHEM 1:**                      CFC 114

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                      Dichlorotetrafluoroethane (CFC-114)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-D-40605 C Display Cases, Mechanically Refrigerated, Self-Service

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-D-40605 has been Cancelled by Revision C, Notice 3, dated 29 July 1994, and is not superseded by another document.

**ODS Use:** Refrigerants of the Display cases Shall Conform to BB-F-1421 (See 3.3.2).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:** CFC 11

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-D-43699 C Drums, Fabric-Reinforced, Collapsible: (Drinking Water; 55-, 250-, and 500-Gallon Capacities)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Leakage: If any evidence of fizzing or bubbling is observed, a Freon test shall be made on the drum (See 4.5.2.11, page 15).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:** MIL-S-7916

All references to ODSs have been removed from this specification. MIL-S-7916, Revision D, dated 28 June 1994, has deleted the ODS requirement from paragraph 4.4.4. Paragraph 4.4.4 has been revised to read "All metal panels shall be cleaned by wiping with bleach cheesecloth dampened with methyl ethyl ketone."

**General Comments:** Recommend HCFC-22 for use with existing electronic leak detectors or use of HFC-134a with new fluorine compound leak detectors for internal leak detection.

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**Document Number:** MIL-D-45413 B Dynamite, Military, ML

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Freon 113/Chloroform Mixture Is Used For Determination Of Composition And TNT Determination (4.5.1 And 4.5.1.1 Page 11).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon 113

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-D-50074 D Dye, Ben Zanthrone

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride Is Used To Calibrate The Infrared Spectrophotometer And Used To Prepare The Specimen (4.2.4.2 Page 5 And 6)

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-D-51106 A N,N'-Dicyclohexylcarbodiimide, Technical

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Solids: Wash The Residue With 100ml Of Carbon Tetrachloride At 25 Degree Centigrade (4.2.4.4 Page 5).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-D-51146 Decontaminating Agent, Biological Ethylene Oxide-Propellant Mixture

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-D-51146 has been Cancelled by Notice 1, dated 6 April 1993, and is not superseded by another document.

**ODS Use:** The Propellant Making Up the Remainder of the Mixture Shall Consist of Equal Parts By Weight of Trichloromonofluoromethane (Type 11) and Dichlorodifluoromethane (Type 12) Conforming To BB-C-310 (See 3.1.2 on Page 3). Note that BB-C-310 has been Cancelled and is Superseded by BB-F-1421.

**ODS CHEM 1:** CFC 11

**ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)  
Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-D-51161 A N,N'-Diisopropylcarbodiimide

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Infrared Absorption Characteristics: Prepare A 1-Percent By Volume Solution Of The Specimen In Carbon Tetrachloride. (...) Place A Matched Cell Containing Carbon Tetrachloride In The Referenced Beam (4.2.4.3 Page 6).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-D-53092                      Drum, Fabric, Collapsible, Liquid Fuel, Cylindrical, 500-Gallon Capacity,  
Low Temperature

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Leakage Test: If any evidence of fizzing or bubbling is observed, a Freon test shall be made on the drum. Evidence of leakage determined by the Freon test shall constitute failure of this test (See 4.5.2.2.10, page 12).

**ODS CHEM 1:** Freon                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend HCFC-22 for use with existing electronic leak detectors or use of HFC-134a with new fluorine compound leak detectors for internal leak detection.

---

**Document Number:** MIL-D-8683 C Design and Installation of Gaseous Oxygen Systems in Aircraft, General Specification For

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-D-8683, Revision C, Amendment 1, dated 29 September 1995, has removed the ODS references. Paragraph 3.9.3 has been revised to read "The oxygen distribution system or parts of the oxygen system not covered by cleaning procedures shall be degreased or cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:** The Oxygen Distribution System or Parts of the Oxygen System Not Covered by Cleaning Procedures Shall Be Degreased Using a Cleaning Compound, MIL-C-81302, or Using Vapor Phase Degreaser in Accordance with MIL-T-81533 as Specified in MIL-STD-1359 (See 3.9.3).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-STD-1359

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

---

**Document Number:** MIL-E-22285

Extinguishing System, Fire, Aircraft, High-Rate Discharge Type,  
Installation and Test Of

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-E-22285, Amendment 2, dated 6 November 1995, removes the ODS reference. In paragraph 3.7, the phrase "(see 6.1.1)" is added at the end of the paragraph.

A new paragraph 6.1.1 is added as follows:

"6.1.1 ODS assessment. Paragraph 3.7 requires the use of bromotrifluoromethane, CF3Br, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

**ODS Use:** The Extinguishing Agent Shall Be Bromotrifluoromethane in Accordance with Specification MIL-M-12218 (See 3.7 on Page 3).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-M-12218

**1ST LEVEL REFS:** MIL-C-22284

MIL-C-22284, Revision A, Amendment 1, dated 6 November 1995, removes the ODS references. In paragraphs 1.1 and 3.4.4, the phrase "(see 6.1.1)" is added at the end of the paragraph. A new paragraph 6.1.1 is added as follows: "Paragraphs 1.1 and 3.4.4 require the use of bromotrifluoromethane, CF3Br, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

**General Comments:** A suitable alternative for Halon 1301 has not been identified to date. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative under joint DoD Halon 1301 replacement program.

---

**Document Number:** MIL-E-24572 A Extinguisher, Fire, Bromotrifluoromethane (Halon 1301) Systems (Fixed Pipe, Pneumatically Actuated, Naval Shipboard Use

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-E-24572, Revision B, Proposed Amendment 1, dated 8 December 1995, would remove the required ODS use for new procurements of shipboard fire extinguishers. However, this proposed amendment would not remove the required ODS use for existing contracts on shipboard fire extinguishers.

**ODS Use:**

Halon 1301 Capacity is Listed for Various Sizes of Cylinders (Class I and II) on Tables I and II (See Page 6). The 360-Degree Pattern Nozzles Shall Produce a Uniform Halon Air Mixture at All Points Within a 15-Foot Radius, 8 Feet Below the Nozzle (See 3.2.11 on Page 11) Unless Otherwise Specified Herein, All Halon Cylinder Assemblies Shall Be Charged with the Required Weight Plus or Minus of 1 Pound of Halon 1301 In Accordance with MIL-M-12218 (See 3.2.14 on Page 13)..

**ODS CHEM 1:**

Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

MIL-M-12218

**1ST LEVEL REFS:**

MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

A suitable alternative for Halon 1301 has not been identified to date. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative under The U.S. Navy's Halon 1301 replacement program.

---

**Document Number:** MIL-E-24715 Extinguishers, Fire, Vaporizing Liquid (Bromochlorodifluoromethane, Halon 1211)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-E-24715 has been Cancelled by Notice 1, dated 7 June 1997, and is not superceded by another document.

**ODS Use:** The Extinguishing Agent Shall Be Bromochlorodifluoromethane (Halon 1211) as Specified in MIL-B-38741 (See 3.3.1 on Page 4).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:** Halon 1211

**Comments:**

**PRIMARY REFS:** Bromochlorodifluoromethane (Halon-1211)  
MIL-B-38741

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend cancellation of specification and/or Replacement with a Halon 1211 alternative identified by the U.S. Air Force test program.

---

**Document Number:** MIL-E-24762 Enclosures For Electronic Equipment Survivable Naval Shipboard Use

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Enclosure Shall Perform As Specified In 3.2.1 When Exposed To Compartment Fire Conditions Consisting Of Flames And Heat Up To 1000 Degrees F For Up To 15 Minutes And Firefighting Conditions Of High Pressure Sprays Of Various Fire Extinguishers (Such As Halon, Water Carbon Dioxide And AFFF) (See 3.2.5.9 on Page 8).

**ODS CHEM 1:** Halon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon

**1ST LEVEL REFS:**

**General Comments:** The Preparing Activity States, "A review of the document indicates that the requirement in MIL-E-24762 DOES NOT require the use of an ODS. Rather, it identifies Halon as a potentially hazardous substance and requires that electronic enclosures not be adversely affected by exposure to Halon. The fact that the enclosures are survivable in a Halon environment does not require or condone the use of Halon fire extinguishing agents. Retention of the current wording will not cause any use of ODCs and does not conflict with the Navy's efforts to phase out the use of ODSs."

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**Document Number:** MIL-E-45782 B Electrical Wiring, Procedure For

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), A MIL-E-45782, Revision C, dated 27 August 1993, does not delete the ODS references.

**ODS Use:** Solvents Used For Cleaning Or Removal Of Grease And Oil Shall Consist Of A Suitable Noncorrosive Material, Such As Trichloroethane, Trichloroethylene, Alcohol, Or Solvent In Accordance With P-D-680 (3.2.8 Page 7).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-S-45743

MIL-S-45743 has been Cancelled by Revision E, Interim Amendment 4, Notice 2, dated 27 February 1995, and is superseded by MIL-STD-2000A. MIL-S-45743, Revision E, Interim Amendment 4, Notice 1, dated 15 October 1976, makes MIL-S-45743 inactive for new design. For new design use MIL-STD-2000.

MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:** Recommend deletion of references to Trichloroethane.

---

**Document Number:** MIL-E-5007 D Engine, Aircraft, Turbojet and Turbofan, General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-E-5007, Revision D, Amendment 3, dated 27 December 1995, has removed the ODS reference. In Paragraph 3.1.2.11.3, delete "Methyl bromide" and substitute "Halogenated hydrocarbon."

**ODS Use:** Methyl Bromide is Listed as a Bleed Air Contaminant (See 3.1.2.11.3 on Pages 10-11).The Engine Manufacturer must Demonstrate that Specified Threshold Limits ( For Each Substance) are not Exceeded.

**ODS CHEM 1:** Methyl Bromide

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Methyl Bromide

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-52031 D Extinguisher, Fire, Vaporizing-Liquid: CF3BR; 2 3/4 Pound with Bracket

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Spec is for One-Time Usage, Non-Refillable Hand-Held Fire Extinguisher and Replacement Cylinders Containing 2 3/4 lbs of Halon 1301 (See 1.1). Extinguisher Shall Be Charged With 2 lbs. 14 Oz of Halon 1301 (See 3.1).

**ODS CHEM 1:** Halon 1301 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-M-12218

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a CO2 extinguisher having an equivalent UL rating. U.S. Army and U.S. Navy (NAVAIR) are currently working on a Commercial Item Description for a replacement CO2 extinguisher. Army activities using this specification should contact Dr. Dan Verdonik, ASA(RDA) at (703) 274-5998.

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**Document Number:** MIL-E-82668 Explosives, Cyclotol - 25/75 And 29/71, RDX/TNT

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-E-82668 has been made Inactive for new design by Notice 1, dated 20 December 1995.

**ODS Use:** Moisture Content Shall Be Determined By A Karl Fischer Method In Accordance With ASTM D 1744-64 Except That A Solvent Consisting Of 1:1 Anhydrous Methanol: Carbon Tetrachloride Shall Be Used (4.7.3 Page 6).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Naval Air Systems Command has recommended using chloroform in place of carbon tetrachloride for determination of the moisture content.

---

**Document Number:** MIL-E-82896 Explosive, Plastic-Bonded, Cast, PBXN-107

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride, Reagent Grade, is listed as a Required Supply Item For the Method C -- Chemical Composition Test (See 4.6.1.4.1(f) on Page 12). Add 15-20 ml of Carbon Tetrachloride To the Crucible (See 4.6.1.4.2(c) on Page 12)

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-82898 Explosive, Plastic-Bonded, Cast, PBX(AF)-108

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-E-82898 has been made Inactive for new design by Notice 1, dated 20 December 1995.

**ODS Use:** Extract the Residue With 150 ml of Boiling Carbon Tetrachloride and Filter Through a Previously Weighed Medium Porosity Porcelain Filter Crucible (See 4.5.5(c) on Page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-82901 Explosive, Plastic-Bonded, Cast PBXN-110

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Weighed Samples of Cured Material Shall be Extracted With Carbon Tetrachloride (CCl<sub>4</sub>) and the Residue Dried and Weighed (Loss in Weight = CCl<sub>4</sub> Extractables) (See 4.6.5.1 on Page 8). Add 40 ml of CCl<sub>4</sub> and Continuously Stir the Solution For 15 Minutes (See 4.6.5.1(b) on Page 8). % CCl<sub>4</sub> Extractables = A-B/A x 100 (See 4.6.5.1(l) on Page 9). B = Weight of Residue After CCl<sub>4</sub> Extraction (See 4.6.5.1(l) on Page 9).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-82908 Explosive Material, Coated, CXM-8

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Reagent: Carbon Tetrachloride (Standard - Other Similar Materials May be Used) (See 4.6.1.1(a) on Page 6). Warning - Carbon Tetrachloride is Toxic, and Precautions Must be Taken in Handling So That All Applicable Safety Requirements are Met (See 4.6.1.1(a) on Page 6). Extract Each Sample With 20-ml Portions of Carbon Tetrachloride (Using Fisher Vacuum Filtrator) (See 4.6.1.2(b) on Page 6).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-82915 Explosive Material, Coated; CXM-6

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Reagent: Carbon Tetrachloride (Standard - Other Similar Materials May be Used) (See 4.5.1.1(a) on Page 6). Warning - Carbon Tetrachloride is Toxic, and Precautions Must be Taken in Handling So That All Applicable Safety Requirements are Met (See 4.5.1.1(a) on Page 6). Extract Each Sample With Five 10-ml Portions of Carbon Tetrachloride (Using Fisher Vacuum Filtrator) (See 4.5.1.2(b) on Page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-82917 Explosive, Plastic-Bonded, Cast, PBXN-105

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Twenty ml of Carbon Tetrachloride (CCl<sub>4</sub>) Shall be Added and the Mixture Heated To Boiling (See 4.8.6.2 on Page 12). In Addition To the CCl<sub>4</sub> Already Present from the Beaker, Usually Three 3-ml Portions of CCl<sub>4</sub> Suffice To Wash the Beaker For This Transfer (See 4.8.6.2 on Pages 12-13).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-82918 Explosive, Plastic-Bonded, Cast, PBXN-106

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The RDX Content of Cured PBXN-106 Shall Be Found By Extracting With Acetone, Evaporating the Solution, and Extracting the Residue With Carbon Tetrachloride (See 4.5.6.1 on Page 10). Extract the Residue With 20 ml of Boiling Carbon Tetrachloride and Filter Through a Previously Weighed, Medium Porosity, Sintered-Glass Crucible (See 4.5.6.1.1(e) on Page 11).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-E-83304 B Entinguisher Unit, Fire, Bromochlorodifluoromethane, FEU-4/S32P; 500  
Pound Capacity, Truck Mounting

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-E-83304 has been Cancelled by Revision B, Notice 1, dated 22 August 1988, and is not superseded by another document.

**ODS Use:** This specification covers a 500-pound capacity bromochlorodifluoromethane (Halon 1211) fire extinguisher unit suited for mounting in the body of a pickup truck (1.1 page 1).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-B-38741

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-F-0011137 E Filter, Gas 150 CFM, M10

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Gas Filter shall not Leak when a Concentration of 1000 ppm of Dichlorodifluoromethane (R12) Conforming to Type 12 of BB-F-1421 is Introduced at the Influent Side of the Filter (See 3.3.2). Test for R12 : Introduce R12 Into Intake of Dome Blower (See 4.4.4.3).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-0014512 J Filter, Gas 12 CFM, M12A1

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Leakage Challenge Concentration Shall be 1000 ppm of Dichlorodifluoromethane (R12) Conforming to Type 12 of BB-F-1421 (See 3.5). LeakageTest: Introduce R-12 into Intake of the Blower (See 4.4.6.3).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-14256 E Flux, Soldering, Liquid, (Rosin Base)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**ODS Use:** Remove all Flux Residue With a Suitable Solvent, i.e. Methyl Chloroform (1,1,1 Trichloroethane) (See 4.7.5 on Page 13).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-F-14788 Fabricated Parts, Silicone Rubber, (For Use in Ammunition)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-F-14788 has been Cancelled by Notice 1, dated 3 July 1994, and is not superseded by any other specification.

**ODS Use:** Trichlorotrifluoroethane in Accordance With MIL-T-14757 (MU) Shall Be Used as the Test Fluid For the Swelling in Trichlorotrifluoroethane Test (See 4.3.8 on Page 7 and 3.1.8 on Page 3). Trichlorotrifluoroethane Shall be Used as the Test Fluid For the Material Extracted by Trichlorotrifluoroethane Test Using Method 16311 of FED-STD-601 (See 4.3.10 on Page 7 and 3.1.10 on Page 3).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
MIL-T-14757

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-F-18264 D Finishes: Organic, Weapons System, Application And Control Of

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-F-18264, Revision D, Amendment 2, dated 31 May 1994, has removed the ODS reference. The term "O-T-620" has been deleted and replaced by the phrase "P-D-680, O-A-51, or TT-N-95."

**ODS Use:** Any Residue Left By Masking Shall Be Removed With Safety Solvent Conforming To O-T-620 (See 5.1.2 On Page 13).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-C-22750

All references to ODSs have been removed from this specification. MIL-C-22750, Amendment F, dated 31 May 1994, has deleted the reference to 1,1,1-Trichloroethane.

MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

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**Document Number:** MIL-F-22606 C Flask, Compressed Gas and End Plugs For Air, Oxygen and Nitrogen

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Trisodium Phosphate (O-S-642) All references to ODSs have been removed from this specification. MIL-F-22606, Revision C, Amendment 1, dated 17 September 1993, removes the ODS reference (O-T-620). Paragraph 3.4.4 on Page 9 is Revised to read "Plugs shall be free of oil, grit, products of machining, and other debris. They shall be rinsed with detergent trisodium phosphate (O-S-642), or commercially acceptable cleaners until ultraviolet light examination shows no oil contamination."

**ODS Use:** Plugs Shall be Wire Brushed and Rinsed With Detergent Trisodium Phosphate (O-S-642) or Trichloroethane (O-T-620) (See 3.4.4 on Page 9).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-STD-271

All references to ODSs have been removed from this specification. MIL-STD-271, Revision F, Notice 1, dated 21 June 1993, removes the ODS references. ODS references (1,1,1-Trichloroethane, Trichlorotrifluoroethane and Freon TF) have been removed from Paragraph 5.6.1 and replaced with acetone, denatured ethanol (ethyl alcohol), isopropanol (isopropyl alcohol) or cleaner/removers supplied by penetrant manufacturers which meet the requirements of MIL-I-25135.

MIL-L-24131

MIL-L-24131, Revision C, dated 2 November 1995, removes the ODS references. Paragraph 4.4.3 has been deleted and a new procedure for determining graphite content has been added. This new procedure does not require the use of an ODS.

**General Comments:**

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**Document Number:** MIL-F-24951 Fuel Oil Reclaimed

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-F-24951, Revision A, dated 17 November 1993, removes the reference to Trichloroethane.

**ODS Use:** Table I - Chemical and Physical Requirements: Chlorinated Material Determination: Note 1/ For practice, a blend of 1% of Trichloroethane in DFM or other distillate fuel may be used as an example of an oil which fails this test (page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-F-51193 C Filter Gas 10CFM, M18

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-F-51193, Revision C, Amendment 3, dated 13 December 1989, deletes Paragraphs 3.6, 4.4.4.3(g) and 4.4.4.4 (which require the use of CFC-12 as a test gas for the airflow resistance and R-12 tests after rough handling). Note that ODS references are still found in Paragraphs 3.5, 4.4.4.3(c) and 6.5.

**ODS Use:** The Filter Leakage Shall Not Exceed 1 ppm Within 2 Minutes When Subjected To a Challenge Concentration. The Challenge Concentration Shall Be 1000 ppm of Dichlorodifluoromethane (R-12) Conforming to Type 12 of BB-F-1421 (See 3.5 on Page 3). For the Airflow Resistance and R-12 Value After Rough Handling Test, the Filter Shall Not Permit Penetration of 50 ppm or More of R-12 For a Minimum of 15 Minutes, at Rated Airflow (See 3.6 on Page 3). For the Leak Test, Introduce R-12 Into the Intake of the Blower; Monitor and Maintain a Concentration of 1000 ppm By Volume of R-12 in Air at 1/5 Rated Airflow on the Influent Side of the Filter at the Proper Temperature and Relative Humidity For the Period of Time Specified in Paragraph 3.5 (See 4.4.4.3(c) on Page 7). Leakage Shall be in Accordance With 3.5 and Shall be Determined Using a Suitable Leak Detector For Sampling and Detecting R-12 at the Effluent Side of the Filter (See 4.4.4.3(d) on Page 8). Filters To Be Used in Subsequent R-12 Testing Shall be Purged of R-12 By Passing Air at 150 To 250 Degrees F. in the Reverse Direction of that Indicated in 4.4.4.3(c) Above Through the Filter at its Rated Airflow or Higher Until Less Than One Part Per Million is Indicated by the Leakage Detector (See 4.4.4.3(g) on Page 8). After the Sample Filters Have Been Roughly Handled, They Shall be Tested For Airflow Resistance in Accordance With 4.4.4.2 and R-12 Value in an Apparatus Which Meets the Requirements of the Test as Follows (See 4.4.4.4 on Page 8). R-12 Shall be Introduced in the Influent Side of the Filter such that a Homogeneous Concentration is Reached and Held Constant as Indicated by a Suitable Influent R-12 Concentration Detector (See 4.4.4.4(b) on Page 8). A Timer is Started at the Same Time R-12 Flow is Begun (See 4.4.4.4(b) on Page 8). R-12 is Allowed To Flow Into the System Until 50 ppm of R-12 is Read on the Effluent R-12 Concentration Detector; the Timer is Stopped When 50 ppm R-12 is Reached; and the Time Recorded as the R-12 Value (See 4.4.4.4(c) on Page 8). Purge Tested Filters of R-12 by Passing Air at Rated Flow or Higher, at 150 To 250 Degrees F., in the Reverse Direction of Test Airflow For 30 Minutes (See 4.4.4.4(d) on Page 8). The Beckman 4B Infrared Analyzer, Model 15a, has been Found To Be a Suitable Detector For Both Influent and Effluent R-12 Concentrations (See 6.5 on Page 9).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-51213 D Filters, Gas, (60, 120 and 250 CFM Modules) C10, C31, and C21

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Leakage, Each Cell of Filter Shall Not Leak When Dichlorodifluoromethane R12 Conforming to type 12 of BB-F-1421 is Introduced in the Influent Side (See 3.5). Each Cell of Production Lot shall be Tested for R12 Leakage (See 4.3.2.2). Sections 4.3.3.2, 4.4.2.2, 4.4.3.2, 4.4.4.2 all Reference Leakage and R12.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-51214 D Filter, Gas, 600, 1200, 2500 and 5000 CFM

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The filter shall not leak when a concentration of 1000 parts per million of dichlorodifluoromethane refrigerant (See 3.4 on Page 4). Leak detection test: (3) Introduce R 12 into intake of blower monitor; and maintain a concentration of 1000ppm by volume of R12 in air at 1/5 rated airflow ... (4) determine leakage using suitable leak detector (see 6.4 ) for sampling and detecting R 12 (See 4.4.4.1 on Page 9).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-51222 C Filter, Gas, 150 CFM, M23

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.4 page 3 Filter shall not permit penetration of 1 part per million or more of R 12. 4.3.2.2b page 5 Each packaged filter in the preproduction lot shall be tested for R12 leakage. 4.3.3.2b R 12 leakage shall be preformed in accordance with 4.4.4.3. 4.4.2.2b and 4.4.3.2b R 12 leakage. Each filter shall be tested for R12 leakage. 4.4.4.3 The filter shall meet the R 12 leakage requirement when tested as follows : a-e.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-51367 B Filter and Utilities Unit, Chemical-Biological Shelter System

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant Type 12 in Accordance with BB-F-1421 Shall Be Used (See 3.3.5.1). Leakage maximum Allowable of Type 12 Shall Be 0.5 oz (See 3.3.5.2). System will be Charged to 25 PSIG minimum with R12 (See 4.4.5.1).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-S-45743

MIL-S-45743 has been Cancelled by Revision E, Interim Amendment 4, Notice 2, dated 27 February 1995, and is superseded by MIL-STD-2000A. MIL-S-45743, Revision E, Interim Amendment 4, Notice 1, dated 15 October 1976, makes MIL-S-45743 Inactive for new design. For new design use MIL-STD-2000.

**General Comments:** Recommend HCFC-22 for use with existing electronic leak detectors or use of HFC-134a with new fluorine compound leak detectors.

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**Document Number:** MIL-F-51369 B Filters, Gas, Recirculation (550 CFM and 1200 CFM)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.3.2.1 page 4, Type I filter, Type I filter shall not leak when a concentration of 100 parts per million of dichlorofuoromethane, refrigerant (R12) conforming to type 12 of BB-F-1421. 3.3.2.2 Type II filter shall bot leak when a concenctration of 100ppm of R-12 at 75F to 95F ... 3.3.3 R-12 value. 3.3.3.1, When a concentration of 100ppm of R12 ... the R12 value of the filter shall be 8.5 minutes ... 3.3.3.2 when a concentration of 100ppm of R12 in the air at 75F to 95F ... R12 value shall be 8.5 minutes minimum. 3.3.5 Airflow, resistance, leakage and R12 value after rough handling. 4.3.3.2 c. Each sample filter from the preproduction shall meet the R12 value requirement. e) Airflow, resistance, leakage and R12 value after rough handling. 4.4.4.3b R12 value and c) Airflow resistance, leakage, and R12 value after rough handling. 4.4.4.3 Leakage. Procedure. 4.4.4.4. R 12 value. Other references 4.4.4.4 and 4.4.4.5

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-51525 A Filter, Gas, 200 CFM

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Gas Filter shall not Leak when Dichlorodifluoromethane Refrigerant (or R-12) Conforming to Type 12 of BB-F-1421 is Introduced at the Influent Side of the Filter (see 3.3.2 page 3). Each Filter shall be Tested for Air Flow Resistance and R-12 Leakage (see 4.3.3.2 (a) page 6), (4.4.2.2 (a) page 7), (4.4.3.2 (a) page 8), (4.4.4.1 page 9).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)  
BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-51541 Filter, Gas, FFU-17/E, 600 CFM

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.4 page 3, The gas filter shall not leak when dichlorodifluoromethane (R-12) conforming to type 12 of BB-F-1424 is introduced. 4.3.2.2.b page 5, Each filter in preproduction lot shall be tested for R12 leakage. Other references for leak testing, 4.3.3.2a page 6, 4.4.2.2b page 7, 4.4.3.2b page 8, 4.4.4.2 page 10 a-e.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)  
BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Qualification of an alternative leak test gas is underway. Upon final qualification, a non-ODS leak test gas will be substituted in this specification. Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** MIL-F-53026 Fan, Circulating

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** All grease shall be removed from the parts to be tested by immersion in 1,1,1 Trichloroethane for 10 minutes (4.6.3.17.3, page 22).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc.

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**Document Number:** MIL-F-62265 A Filter Element and Relief Valve, Fluid Pressure, Hydraulic (M-60 Tank Series)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Petroleum Ether

**ODS Use:** The flask shall be washed with 1000 ml of prefiltered Petroleum Ether or prefiltered Freon (4.7.2.2a, page 13). A filter shall be washed with 200 ml of prefiltered Petroleum Ether or prefiltered Freon (4.7.2.6h, page 14). The rim of the membrane filter shall be gently washed with prefiltered Petroleum Ether or prefiltered Freon to remove traces of hydraulic fluid (4.7.2.6k, page 15).

**ODS CHEM 1:** Freon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of freon from the specification.

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**Document Number:** MIL-F-63232 A Fuze, Pied, M740, Fuze Module For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Fuze Module Assembly Shall Be Immersed In Freon To Cover The Top Of The Module By 1 To 5 Inches (4.5.2.1.4 Page 30).

**ODS CHEM 1:** Freon **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend investigation of Isopropyl Alcohol for replacement of freon in external leak detection.

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**Document Number:** MIL-F-7179 F Finishes, Coating, And Sealants For The Protection of Aerospace Weapons Systems

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** MIL-S-81733, MIL-S-8802, M **Comments:** All references to ODSs have been removed from this specification. Please Note: MIL-C-85054, Revision B, dated 5 November 1994, as referenced in MIL-F-7179, no longer requires ODSs in the formulation of the corrosion preventive compound. **WARNING: NEW FORMULATION FOR MIL-C-85054 IS FLAMMABLE; USE WITH CAUTION.**

**ODS Use:** Tube Assemblies In Categories II And III Shall Be Painted With Primer Followed By Coating Of Joints With MIL-S-81733, MIL-S-8802, MIL-S-83430 Or MIL-C-85054 Coating After All Required Bending And Permanent Joining Has Been Completed And Prior To Final Fabrication Of The Assembly (See 3.6.13.1(b) On Page 9). Assemblies Shall Have Additional Primer Applied As Required, And When Feasible, Followed By Coating Of All Nonseparable Joints With MIL-S-81733, MIL-S-8802, MIL-S-83430 Or MIL-C-85054 And Application Of The Complete Exterior Paint System (See 3.6.13.1(C) On Page 10). After Installation Of The Tube Assemblies, All Remaining Nonsealed Joints, Which Will Not Be Disconnected During Normal Servicing, Will Be Coated With MIL-S-81733, MIL-S-8802, MIL-C-83430, Or MIL-C-85054 Followed By The Appropriate Paint System (See 3.6.13.1(D) On Page 10). All Remaining Nonsealed Joints, Which Must Be Disconnected During Normal Servicing, Will Be Coated With MIL-C-16173, Grade 4, Or MIL-C-85054 Which Shall Seal All Exposed Spaces Between The Parts (See 3.6.13.1(D) On Page 10).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. **WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.**

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. **WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.**

**1ST LEVEL REFS:** MIL-S-83430 MIL-S-83430 has been Cancelled by Revision A, Amendment 3, Notice 2, dated 5 October 1994, and is not superseded by another document.

MIL-C-46168 All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MIL-F-83296 Fittings, Tetrafluoroethylene Hose, High Temperature, High Pressure (3000 PSI), Hydraulic And Pneumatic

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** After the Final 2-Hour Pressurization Period, the Assembly Shall be Drained and Flushed With Trichloroethylene Conforming To MIL-T-27602 (See 4.5.7.6 on Page 15). Note That MIL-C-27602 Has Been Cancelled and is Superseded By MIL-C-81302.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-F-8815 MIL-F-8815, Revision D, Amendment 1, dated 23 June 1995, deletes the ODS references. Amendment 1 substitutes Trichloroethylene for 1,1,1-Trichloroethane in Paragraphs 4.7.2.6.2.1.1, 4.7.2.6.2.3.1(b), 4.7.2.6.2.3.1(d), and 4.7.2.6.2.3.1(e).

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible.

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**Document Number:** MIL-F-83870 A Filter Element, Fluid Pressure, Transmission, Aircraft Disposable, 20 Micron Absolute

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Petroleum Ether

**ODS Use:** Using a suitable wash bottle of filtered solvent (Freon TF or Petroleum Ether) shall then be washed through the contaminant mixing chamber and test filter assembly (4.6.4i, page 10). The filter funnel shall also be washed down with 200 ml of filtered Petroleum Ether or Freon TF (4.6.4L, page 11).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend deletion of freon from the specification.

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**Document Number:** MIL-F-85399 Fuze, Guided Missile, FMU-138/B

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Isopropyl Alcohol (TT-I-735, G

MIL-F-85399, Amendment 1, dated 9 June 1995, removes the ODS reference. Amendment 1 deletes the second sentence of Paragraph 4.4.3 (which lists Trichlorotrifluoroethane and Isopropyl Alcohol as acceptable immersion fluids) and adds the following new second sentence: "Isopropyl alcohol (TT-I-735, grade optional) may be used as the immersion fluid for gross leak testing."

**ODS Use:** To Determine Comformance To 3.2.1.3, Test The Fuze In Accordance With MIL-STD-202 Method 112, Test Condition C, Procedure IV. Trichlorotrifluoroethane (MIL-T-14757) or Isopropyl Alcohol (TT-I-735, Grade Optional) May Be Used as Alternative Immersion Fluids for Gross Leak Testing. (See 4.4.3. page 17.)

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-14757

**1ST LEVEL REFS:**

**General Comments:** Recommend investigation of Isopropyl Alcohol for replacement of freon in external leak detection.

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**Document Number:** MIL-F-85400 Fuze Guided Missile, Dummy FMU-138 (D-1)/B

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Isopropyl Alcohol (TT-I-735, G

MIL-F-85400, Amendment 1, dated 9 June 1995, removes the ODS reference. Amendment 1 deletes the second sentence of Paragraph 4.4.3 (which lists Trichlorotrifluoroethane and Isopropyl Alcohol as acceptable immersion fluids) and adds the following new second sentence: "Isopropyl alcohol (TT-I-735, grade optional) may be used as the immersion fluid for gross leak testing."

**ODS Use:** To Determine Comformance To 3.2.1.3, Test The Fuze In Accordance With MIL-STD-202 Method 112, Test Condition C, Procedure IV. Trichlorotrifluoroethane (MIL-T-14757) or Isopropyl Alcohol (TT-I-735, Grade Optional) May Be Used as Alternative Immersion Fluids for Gross Leak Testing. (See 4.4.3. page 14.)

**ODS CHEM 1:** CFC-113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-14757

**1ST LEVEL REFS:**

**General Comments:** Recommend investigation of Isopropyl Alcohol for replacement of freon in external leak detection.

---

**Document Number:** MIL-F-85475 Fuze, Guided Missile, FMU-141/B

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Isopropyl Alcohol (TT-I-735, G

MIL-F-85475, Amendment 3, dated 23 June 1995, removes the ODS reference. Amendment 3 deletes the second sentence of Paragraph 4.7.3 (which lists Trichlorotrifluoroethane and Isopropyl Alcohol as acceptable immersion fluids) and adds the following new second sentence: "Isopropyl alcohol (TT-I-735, grade optional) may be used as the immersion fluid for gross leak testing."

**ODS Use:** Trichlorotrifluoroethane (MIL-T-14757) or Isopropyl Alcohol (TT-I-735, Grade Optional) May Be Used as Alternative Immersion Fluids for Gross Leak Testing (See 4.7.3. on Page 19).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-14757

**1ST LEVEL REFS:**

**General Comments:** Recommend investigation of Isopropyl Alcohol for replacement of freon in external leak detection.

---

**Document Number:** MIL-F-8815 D Filter and Filter Elements, Fluid Pressure, Hydraulic Line, 15 Micron Absolute and 5 Micron Absolute, Type II Systems

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-F-8815, Revision D, Amendment 1, dated 23 June 1995, deletes the ODS references. Amendment 1 substitutes Trichloroethylene for 1,1,1-Trichloroethane in Paragraphs 4.7.2.6.2.1.1, 4.7.2.6.2.3.1(b), 4.7.2.6.2.3.1(d), and 4.7.2.6.2.3.1(e).

**ODS Use:**

For the Filter Element Pressure Drop Test (Cleanable Elements Only), A Flow Test shall be Performed using 1,1,1 Trichloroethane as a Test Fluid, the Value obtained being used to establish the New Filter Element Pressure Drop for Quality Conformance Testing (4.7.2.6.2.1.1 page 29). To Insure Cleanability and Material Compatability with the Cleaning Solvents, Two Elements shall be subject to both Degreasing in 1,1,1 Trichloroethane and Cleaning in accordance with AFTM T.O. 9H3-1-1 (4.7.2.6.2.3.1 (b) page 30). Cleaning Procedure I (Degreasing in 1,1,1 Trichloroethane) Requires the Filter to be Tested to be Ultrasonically Cleaned in a Solution of Turco Sugex (or Equivalent), Rinsed in 1,1,1 Trichloroethane and Ultrasonically Cleaned in Filtered 1,1,1 Trichloroethane (4.7.2.6.2.3.1 (d) and 4.7.2.6.2.3.1 (e) page 31).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

Recommend replacement of 1,1,1 Trichloroethane with an alternative such as trichloroethylene.

---

**Document Number:** MIL-F-8901 E Filter-Separators, Liquid Fuel: And Filter-Coalescer Elements, Fluid Pressure: Inspection Requirements and Test Procedures For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride is an applicable reagent for the Quantitative Infrared Analysis for the determination of HITEC E-515 Rust Inhibitor in JP-5 (30.1.1, page 39, Appendix C). Prepare the blends of HITEC E-515 in Carbon Tetrachloride (40.1.1, page 40, Appendix C).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** ASTM-D2276

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-G-24139 A Grease, Multipurpose, Water Resistant

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-G-24139, Revision A, Proposed Amendment 4, dated 17 April 1995, removes the direct ODS reference from Paragraph 4.5.3.2. Paragraph 4.5.3.2 has been deleted and replaced by the following text "ELECTRON solvent, (NSN 6850-01-375-5553 [6-gallon pail], NSN 6850-01-375-5554 [1-gallon can] or equivalent aliphatic hydrocarbon-terpene mixture."

**ODS Use:** Cleaning Compound, Solvent, Trichlorotrifluoroethane in Accordance with MIL-C-81302, Type II Shall be Used (See 4.5.4.2, page 6). The Test Bearing Shall be Hand Washed by Slowly Spinning it while Partially Submerged in Solvent Conforming to MIL-C-81302 (See 4.5.4.3 on page 6).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend using solvent listed in proposed Amendment 4.

---

**Document Number:** MIL-G-24696 A Gasket, Sheet, Non-Asbestos

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Other Suitable Solvent

**Comments:**

MIL-G-24696, Revision B, dated 25 May 1995, removes the direct ODS reference from Paragraph 40.2 of Appendix A. The fourth sentence of Paragraph 40.2 of Appendix A has been revised to read "They shall be washed clean with a non-ozone depleting solvent to remove any traces of oil, grease, or other foreign substance." Note: Only the advance copy is available ... advance copy of specification is being sent for printing.

**ODS Use:** Platens shall be washed clean with reagent grade 1,1,1 Trichloroethane or other solvent to remove any traces of oil, grease, or other foreign substance (40.2, Appendix A, page 20).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-G-24717 Gasket, Sheet, Refrigeration, Non-Asbestos

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-G-24717 has been made Inactive for new design by Notice 1, dated 16 April 1996.

**ODS Use:** The platens shall be washed clean with reagent grade 1,1,1 trichloroethane or other suitable solvent to remove any traces of oil, grease, or other foreign substance (40.2, page 16). Refrigerant Exposure and Leakage Test: Charge the assemblies with refrigerant gas, N2, and RCO-2 oil as follows: 1-inch assembly Freon R-12; 3-inch assembly Freon R-11 (30.1f, Appendix B, page 20).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 11

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Trichlorofluoromethane (CFC-11)

**1ST LEVEL REFS:**

**General Comments:** Solvent wash: The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc. Leak Testing: Recommend HCFC-22 for use with existing electronic leak detectors or use of HFC-134a with new fluorine compound leak detectors for internal leak detection.

---

**Document Number:** MIL-G-27253 C Generating and Charging Plant, Oxygen-Nitrogen, Skid-Mounted, A/E26A-8 and A/E26A-20

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-G-27253 has been Cancelled by Revision C, Notice 1, dated 4 March 1991, and is not superseded by another specification.

**ODS Use:** All Surfaces Containing Oxygen Shall Be Cleaned With a Nonflammable Solvent Such as Trichlorotrifluoroethane (See 3.11.1 on Page 25). Vapor Degrease/Solvent Degrease With Trichlorotrifluoroethane, MIL-C-81302 (See 5.1.1.1 on Page 4).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**PRIMARY REFS:** MIL-C-81302 **Comments:**

**1ST LEVEL REFS:** TT-C-490 TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-S-5002 All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."

**General Comments:**

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**Document Number:** MIL-G-82798 Grease, Calcium

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Methyl Ethyl Ketone (ASTM D MIL-G-82798 has been Cancelled by Notice 1, dated 11 February 1993, and is not superseded by another document.

**ODS Use:** 3.11 on Page 4, The Grease Shall Be Completely Removable from Steel Surfaces by a Solvent Wipe Using Common Solvents Such as Methyl Chloroform Conforming to O-T-620 or Methyl Ethyl Ketone Conforming to ASTM D 740. 4.5.2.2 on page 7, The Clean QLS Test Coupons For Five of the Test Specimens Shall Be Prepared Using the QLS Test Coupons which were Grease Coated and then Cleaned and Five Test Specimens shall Be Prepared form the Other QLS Test Coupons.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-G-8968                      Generating Plant, Oxygen-Nitrogen, Trailer Mounted A/M 26U-1

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** For Degreasing Method F, Flush or Rinse Parts and Components with Oxygen Systems Cleaning Compound Conforming To MIL-C-8638 (See 3.17.4.1(f) on Page 28).  
NOTE: MIL-C-8638 has been Canceled and is Superseded by MIL-C-81302.

**ODS CHEM 1:** CFC 113                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-C-5015                      All references to ODSs have been removed from this specification. MIL-C-5015, Revision G, Amendment 5, dated 15 March 1994, removes the direct ODS reference by deleting fluid sample numbers 11 and 12 from table XVIII. This specification no longer requires the use of an ODS.

MIL-O-27210

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

---

**Document Number:** MIL-H-17672 D Hydraulic Fluid, Petroleum, Inhibited

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-H-17672, Revision D, Amendment 3, dated 31 May 1995, removes the ODS references. Paragraph 30.2(b) of Appendix B has been revised to read "(b) Cleaning solvents: P-D-680, Type III, isopropyl alcohol and hexane(s) or heptane or non-aromatic naphtha." Paragraph 40.1.1 of Appendix B has been revised to read:

"The pipe loop shall be dismantled at all take-down joints and allow the fluid to drain. The test valves shall be disassembled and the spool, packings, o-rings, and sleeve assemblies examined. After removal of the o-rings, and packings, the valve bodies, spools, sleeve assemblies and other dismantled parts shall be cleaned under a laboratory fume hood by rinsing first with hexane(s), heptane, or naphtha and then with isopropyl alcohol. Discard any o-rings or packings which appear damaged. Place o-rings or packings back on parts after they have dried."

Paragraph 40.1.2. of Appendix B has been revised to read "The sump is drained of oil and rinsed four times with the replacement solvent P-D-680, Type III, and air dried."

**ODS Use:** Solvent in Accordance with MIL-C-81302 is Listed as an Applicable Material in Appendix B (See 30.2(b) on Page 16). The Test Valves are Disassembled, the Spool and Sleeve Assemblies Examined, Cleaned by Washing With Precipitation Naptha as Specified in MIL-C-81302, Wiping With a Chloroform Saturated Lint Free Tissue To Remove Any Naptha Insolubles and Rinsing Again with Naptha (See 40.1.1 of Appendix B on Page 17). The Sump is Drained of Oil and Rinsed Four Times with solvent in Accordance with MIL-C-81302 and Air Dried (See 40.1.2 of Appendix B on Page 17).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend use of a petroleum or terpene hydrocarbon to clean test valves. Example cleaners include: Naptha, P-D-680 type III, Electron, PF-145HP, EPA 2000, Re-entry KNI-2000, etc.

---

**Document Number:** MIL-H-22832 B Heat Interchangers, Refrigerant 12

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-H-22832 has been made inactive for new design by Revision B, Notice 2, dated 21 November 1994.

**ODS Use:** This Specification Covers Commercial, Liquid To Suction Gas Heat Interchangers For Use With Refrigerant 12 (Dichlorodifluoromethane) (See 1.1 on Page 1). Paragraph 4.4.1 (Pages 6-7) Require Connection of the Heat Interchanger To an Operating System in Order To Run Capacity Test.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-H-25579 E Hose Assembly, Tetrafluoroethylene, High Temperature, Medium Pressure

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** After the Final 2-Hour Pressurization Period, the Assembly Shall be Drained and Flushed With Trichloroethylene Conforming To MIL-T-27602 (See 4.6.11.7 on Page 22). Note That MIL-C-27602 Has Been Cancelled and is Superseded By MIL-C-81302.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-STD-1844

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

---

**Document Number:** MIL-H-27267 B Hose, Tetrafluoroethylene, High Temperature, Medium Pressure

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** After the Final 2-Hour Pressurization Period, the Assembly Shall be Drained and Flushed With Trichloroethylene Conforming To MIL-T-27602 (See 4.6.9.7 on Page 15). Note That MIL-C-27602 Has Been Cancelled and is Superseded By MIL-C-81302.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** FED-STD-791  
ASTM D 3703

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

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**Document Number:** MIL-H-47305 Hose Assembly

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-H-47305 has been Cancelled by Notice 1, dated 31 December 1991, and is not superseded by another document.

**ODS Use:** The solvent rinse shall be performed with filtered trichlorotrifluoroethane conforming to MIL-C-81302 (4.6.6 page 10).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-H-83298 A Hose, Tetrafluoroethylene, High Temperature, High Pressure (3000 PSI), Hydraulic And Pneumatic

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** After the Final 2-Hour Pressurization Period, the Assembly Shall be Drained and Flushed With Trichloroethylene Conforming To MIL-T-27602 (See 4.5.8.6 on Page 14). Note That MIL-C-27602 Has Been Cancelled and is Superseded By MIL-C-81302.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-F-8815 MIL-F-8815, Revision D, Amendment 1, dated 23 June 1995, deletes the ODS references. Amendment 1 substitutes Trichloroethylene for 1,1,1-Trichloroethane in Paragraphs 4.7.2.6.2.1.1, 4.7.2.6.2.3.1(b), 4.7.2.6.2.3.1(d), and 4.7.2.6.2.3.1(e).

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

---

**Document Number:** MIL-H-83772 A Hose Assembly, Metal, Cryogenic Liquid, Aircraft Servicing

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.4.1 Clean All Parts of the Hose Assembly that might come in Contact with Liquid Oxygen, with Cleaning Solvents, Trichlorotrifluoroethane (MIL-C-81302) or trichloroethane. 4.6.3.1 Trichlorotrifluoroethane or Equivalent Shall be Poured through the Hose such that Interior Walls are Rinsed and Flushed. 4.6.3.2 NVR Test, Rinse Flask with Type I Trichlorotrifluoroethane or Equivalent.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

---

**Document Number:** MIL-H-85800                      Hose Assemblies, Polytetrafluoroethylene, Aramid Fiber Reinforced, 5000 and 8000 PSI, General Specification for

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**                      MIL-H-85800, Amendment 1, dated 6 November 1995, removes the ODS reference. Paragraph 4.6.3.10(e) has been revised to read "After the final two-hour pressurization period, the hose assemblies shall be drained and flushed with solvent conforming to type 1A of P-D-680."

**ODS Use:**                      After the Final Two-hour Pressurization Period, the Hose Assemblies Shall Be Drained and Flushed with Trichlorotrifluoroethane Conforming to MIL-C-81302 (See 4.6.3.10(e) on Page 19).

**ODS CHEM 1:**                      CFC 113                      **ODS CHEM 2:**

**PRIMARY REFS:**                      MIL-C-81302                      **Comments:**

**1ST LEVEL REFS:**

**General Comments:**                      Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

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**Document Number:** MIL-H-87990 Aluminum Honeycomb Sandwich Assemblies, Manufacture of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** All aluminum honeycomb core details shall be vaor degreased with 1,1,1 trichloroethane after all machining and cutting operations are complete (3.4.5.2.2 page 40). 1,1,1 trichloroethane is an applicable solvent (3.3.5.1.1 page 23).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**PRIMARY REFS:** O-T-620 **Comments:** O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc.

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**Document Number:** MIL-HDBK-1003/7                      Steam Power Plants - Fossil Fueled

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Halon 1301 Shall Be Used For Fire Suppression Systems (Table 28 Page 173).

**ODS CHEM 1:** Halon 1301                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1301

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a halon alternative identified in NFPA standard 2001 (for example FM200, FE13, INERGEN, etc.).

---

**Document Number:** MIL-HDBK-1005/13 Hazardous Waste Storage Facilities

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Carbon Dioxide

**ODS Use:** Since Reactive Wastes May React Violently With Water, The Storage Area For These Wastes Shall Be Protected By A Gaseous Type System (i.e. CO2 Or Halon 1301) (2.2.2.4 Page 4).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1301

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a halon alternative identified in NFPA standard 2001 (for example FM200, FE13, INERGEN, etc.).

---

**Document Number:** MIL-HDBK-1008 A Fire Protection for Facilities Engineering, Design and Construction

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-HDBK-1008, Revision B, dated 15 January 1994, deletes the requirement to use Halon 1301.

**ODS Use:**

Where it Can Be Established that Fire Temperatures will be Below the Decomposition Temperature of Halon 1301 (Under 900F(482C), Halon 1301 Shall be Acceptable as an Extinguishing System with Provisions that the Halon Discharge is Sufficient to Maintain a Minimum Design Concentration of 5 Percent Throughout the Deceleration Period of the Turbine (See 3.2.2.2(b)(3) on Page 23). Systems shall Transmit Signal to Fire Department or Central Alarm Location and Shall Activate Under Floor Halon 1301 or Carbon Dioxide Systems (See 4.3.5.2 on Page 31).

**ODS CHEM 1:**

Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-HDBK-1013/4                      Instruction For Design, Fabrication, And Construction/Installation of  
Secure Enclosures

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Tools And Materials Required To Complete Maintenance Are Listed As Follows: Solvent, Cleaning Trichloroethane (6.2.2 Page 45). If There Is Excessive Foreign Matter In The Keyway, Flush With Trichloroethane Cleaning Solvent (8.3.2.2 Page 50).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend investigation of low vapor pressure hydrocarbons (petroleum, terpene, alcohol, mixtures) such as P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc.

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**Document Number:** MIL-HDBK-1013/7 Security Hardware Installation, Operation, And Maintenance

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** An Occasional Cleaning With Trichloroethane Cleaning Solvent And Lubrication With Molybdenum Disulfide Powder Will Keep These Locks Operating indefinitely (5.2.1 Page 51). Trichloroethane, MIL-T-81533, Is A Recommended Lock Solvent (Table 8 Page 52).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-L-23398 All references to ODSs have been removed from this specification. MIL-L-23398, Revision D, Amendment 2, dated 18 January 1994, removes all ODS references. MIL-T-81533 - Trichloroethane, 1,1,1 (Methyl Chloroform) Inhibited, Vapor Degreasing is deleted from the Applicable Documents section. In Table III, Trichloroethylene conforming to O-T-634 is substituted for 1,1,1 Trichloroethane conforming to MIL-T-81533.

**General Comments:** Recommend investigation of low vapor pressure hydrocarbons (petroleum, terpene, alcohol, mixtures) such as P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc.

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**Document Number:** MIL-HDBK-1015/1 Electroplating Facilities

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Table 7 Shows Typical Products And Processes Used In Degreasing Work Prior to The Electroplating Or Anodizing (3.3.1) Trichlorotrifluoroethane And Trichloroethane Are Used In A Variety Of Cleaning Methods (Table 7 pages 20-23). when Fluorinated Hydrocarbons Are Specified For The Solvent They Are To Conform To MIL-C-81302 (3.3.3.2 Page 30).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-C-81797 All references to ODSs have been removed from this specification. MIL-C-81797, Revision A, dated 12 January 1994, has removed the ODS reference in Paragraph 3.4.3.

MIL-STD-808

**General Comments:** The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc.

---

**Document Number:** MIL-HDBK-1032/2 Covered Storage

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Provided Automatic Fire Suppression Systems In Accordance With The Following: Halon 1301 Fire Extinguishing Systems, NFPA 12A (3.7.5 Page 46) And (4.1.1.2 Page 73). Storage Areas For Water Reactive Materials Shall Be Protected By A Bromotrifluoromethane (Halon 1301) Or Carbon Dioxide Fire Extinguishing System (4.6.1 Page 83).

**ODS CHEM 1:** Halon 1301 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Halon 1301

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a halon alternative identified in NFPA standard 2001 (for example FM200, FE13, INERGEN, etc.).

---

**Document Number:** MIL-HDBK-1038/3                      Yard Craft

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** For Enclosed Machinery Spaces, Halon-type Agents Shall Be Provided (4.12.1 Page 4). A Fixed, Halon-type System Shall Be Provided For Each Enclosed Machinery Space (4.12.2 Page 42). Refrigeration Machinery: Refrigerant R-12 Shall Be Used (4.19.2 Page 45).

**ODS CHEM 1:** Halon                      **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Halon  
Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. A possible substitute to investigate is HFC-134a.  
Recommend replacing Halon 1301 with HFC-227ea.

---

**Document Number:** MIL-HDBK-1040 Basic Guidelines For Chemical Warfare Hardening Of New Military Facilities

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Iodine Number Test

**ODS Use:** The Adsorbent Used In The Adsorber Cell Shall Meet The Following Specifications: Carbon Tetrachloride Adsorption (ASTM D3467). The Carbon Tetrachloride Adsorption Test Is Preferred (Over The Iodine Number Test) But the Iodine Number Test May Be Run As An Alternative (5.3.4.7 Page 77).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** MIL-C-22750 All references to ODSs have been removed from this specification. MIL-C-22750, Amendment F, dated 31 May 1994, has deleted the reference to 1,1,1-Trichloroethane.

MIL-C-46168 All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** Recommend investigation of the iodine test to identify if it is a functional alternative.  
Delete the carbon tetrachloride adsorption test.

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**Document Number:** MIL-HDBK-132 A Protective Finishes For Metal And Wood Surfaces

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P

**ODS Use:** Trichloroethylene, 1,1,1 Trichloroethane And Perchloroethylene Are Representative Of Chlorinated Hydrocarbone Solvents (See 2.6.1 page 14) Nonflammable Hydrocarbons, Such As Trichloroethylene, Perchloroethylene, Methylene Chloride And 1,1,1 Trichloroethane Are Common Solvents For Vapor Degreasing. (See 2.6.2 Page 16). MIL-C-81302 And MIL-T-81533 Are Listed As Types Of Solvent Cleaning Compounds (See Page 160).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:** MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

**General Comments:** Recommend removal of references to 1,1,1 Trichloroethane and Trichlorotrifluoroethane. The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc.

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**Document Number:** MIL-HDBK-17-3 D Polymer Matrix Composites Volume III. Utilization of Data

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Freon TF Cleaning Liquid (Type 2) in Accordance With MIL-C-81302 and 1,1,1-Trichloroethane Degreasing Agent in Accordance With MIL-T-81533 are listed as Group II fluids for the Critical Fluids Sensitivity and Evaluation (See 4.12.2 on Page 4-110).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302  
MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting 1,1,1-Trichloroethane and CFC-113 from critical fluid sensitivity tests.

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**Document Number:** MIL-HDBK-221

Fire Protection Design Handbook For U.S. Navy Aircraft Powered By  
Turbine Engines

**Level:** 1                    **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-HDBK-221, Notice 1, dated 27 December 1995, does not remove the ODS reference. A notice has been added to the end of Paragraph 2.13.2 as follows:

NOTICE: Paragraph 2.13.2 recommends the use of bromotrifluoromethane, CF3Br, an ozone depleting substance, for this application. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

**ODS Use:** Fire Extinguishing Systems Shall Comply With the Requirements of the Following Specifications: Extinguishing System, Fire Aircraft, High-Rate-Discharge Type, Installation and Test of MIL-E-22285; and Container, Aircraft Fire Extinguishing System, Bromotrifluoromethane, CF3Br, MIL-C-22284 (See 2.13.2 on Page 119).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:** A suitable alternative for Halon has not been identified to date. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative under joint DoD Halon replacement program. Possible future alternatives to Halon 1301 currently undergoing testing include HFC-125 and gas-generators.

---

**Document Number:** MIL-HDBK-223 Coded List Of Materials

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Is A List Of Codes. The Following Are ODSs: Code 73 03 Solvent Carbon Tetrachloride - For Chemical Warfare Munitions. No Instructions Are Given On How To Use The Codes.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** No change required. Information in this handbook is for reference only. Deleting codes for ODS's may make identification of ODS solvents in coded documents more difficult.

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**Document Number:** MIL-HDBK-268

Survivability Enhancement, Aircraft, Conventional Weapon Threats,  
Design and Evaluation Guidelines.

**Level:** 1                    **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-HDBK-268, Notice 1, dated 1 December 1995, has removed the ODS reference. Paragraph 5.2.1.4.4.1(b)(3) has been revised to read:

"Fire of Explosion Extinguishment Systems (MIL-C-22285) Operate on the Principle of Detecting the Initiation of a Flame Front (MIL-D-27729) or Warning of Fire (MIL-F-7872 and MIL-F-23447) by Means of an IR-Sensitive Lead Sulphide Photoelectric Cell, an Ultraviolet (UV) Sensitive Tube or by Means of a Piezoelectric Sensor, and Using this Detection to Trigger the Explosive or Non Pressurized Release of An Extinguishing Agent . However, in "dry bay" compartments...."

**ODS Use:**

Fire of Explosion Extinguishment Systems (MIL-C-22285) Operate on the Principle of Detecting the Initiation of a Flame Front (MIL-D-27729) or Warning of Fire (MIL-F-7872 and MIL-F-23447) by Means of an IR-Sensitive Lead Sulphide Photoelectric Cell, an Ultraviolet (UV) Sensitive Tube or by Means of a Piezoelectric Sensor, and Using this Detection to Trigger the Explosive or Non Pressurized Release of An Extinguishing Agent (e.g. MIL-M-12218. Liquefied Monobromofluoromethane or in Order of Increased Toxicity, Halons 1301,1211,1011,2402, and 1202 Of These Halon Agents, Halon 1301 is Predominately Used). (See 5.2.1.4.4.1(b)(3) on Page 34)

**ODS CHEM 1:**

Halon 1211

**ODS CHEM 2:**

Halon 1301

**Comments:**

**PRIMARY REFS:**

MIL-M-12218

MIL-M-12218

**1ST LEVEL REFS:**

MIL-E-22285

MIL-E-22285, Amendment 2, dated 6 November 1995, removes the ODS reference. In paragraph 3.7, the phrase "(see 6.1.1)" is added at the end of the paragraph.

A new paragraph 6.1.1 is added as follows:

"6.1.1 ODS assessment. Paragraph 3.7 requires the use of bromotrifluoromethane, CF3Br, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

A suitable alternative for Halon has not been identified to date. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative under joint DoD Halon replacement program. Possible future alternatives to Halon 1301 currently undergoing testing include HFC-125 and gas-generators.

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**Document Number:** MIL-HDBK-273 Survivability Enhancement, Aircraft, Nuclear Weapon Threat, Design and Evaluation Guidelines.

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-HDBK-273, Notice 1, dated 27 December 1995, does not remove the ODS reference. A notice has been added to the end of Paragraph 7.1.11 as follows:

NOTICE: Paragraph 7.1.11 recommends the use of bromotrifluoromethane, CF3Br, an ozone depleting substance, for this application. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

**ODS Use:** Applicable Documents (For the Fire Extinguishment Subsystem) are MIL-C-22284, MIL-C-22285, MIL-D-27729, MIL-F-7872, MIL-F-23447 and MIL-M-12218 (See 7.1.11 on Page 57).

**ODS CHEM 1:** Halon 1301 **ODS CHEM 2:**

**PRIMARY REFS:** MIL-M-12218 **Comments:**

**1ST LEVEL REFS:** MIL-C-22284 MIL-C-22284, Revision A, Amendment 1, dated 6 November 1995, removes the ODS references. In paragraphs 1.1 and 3.4.4, the phrase "(see 6.1.1)" is added at the end of the paragraph. A new paragraph 6.1.1 is added as follows: "Paragraphs 1.1 and 3.4.4 require the use of bromotrifluoromethane, CF3Br, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

MIL-E-22285 MIL-E-22285, Amendment 2, dated 6 November 1995, removes the ODS reference. In paragraph 3.7, the phrase "(see 6.1.1)" is added at the end of the paragraph.

A new paragraph 6.1.1 is added as follows:

"6.1.1 ODS assessment. Paragraph 3.7 requires the use of bromotrifluoromethane, CF3Br, an ozone depleting substance. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition."

**General Comments:** A suitable alternative for Halon has not been identified to date. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative under joint DoD Halon replacement program. Possible future alternatives to Halon 1301 currently undergoing testing include HFC-125 and gas-generators.

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**Document Number:** MIL-HDBK-406

Contamination Control Technology Cleaning Materials For Precision  
Precleaning And Use In Clean Rooms And Clean Work Stations

**Level:** P

**Class:** Primary

**Comments:**

**Alternatives Listed In Spec:** Perchloroethylene (O-T-236)

All references to ODSs have been removed from this specification. MIL-HDBK-406, Notice 2, dated 25 August 1994, has removed the ODS references. References to trichlorotrifluoroethane, 1,1,1-trichloroethane (methyl chloroform), freon TDAD 352, freon TWD 602, Trisec, carbon tetrachloride, dichlorodifluoromethane and trichloromonofluoroethane have been deleted from the following paragraphs: 6.1.1.3 on Page 62, 6.1.1.3.1 on Page 65, Table 6-2 on Page 66, Table 6-7 on Page 79, 7.1.4 on Page 90, Table 7-2 on Pages 96-97, Table 7-13 on Page 108, Table 7-14 on Page 109, 7.6 on Pages 132-134, 7.13.4 on Page 146, 7.16 on Pages 150-157, 7.18-7.25 on Pages 161-183, Table 7-22 on Page 184 and Table 7-22 on Page 186). Carbon Tetrachloride Is As A Solvent Is Described In Section 7.6 (Pages 132-134).

**ODS Use:**

The Most Commonly Used Solvents In Vapor Degreasing Are: Trichloroethylene, Perchloroethylene, Trichlorotrifluoroethane, Methylene Chloride, 1,1,1-Methyl Chloroform (Trichloroethane) And Specific Azeotropes (See 6.1.1.3 On Page 62) The following cited references list properties for the various ODS chemicals listed as Primary references: 6.1.1.3.1 on Page 65, Table 6-2 on Page 66, Table 6-7 on Page 79, 7.1.4 on Page 90, Table 7-2 on Pages 96-97, Table 7-13 on Page 108, Table 7-14 on Page 109, 7.6 on Pages 132-134, 7.13.4 on Page 146, 7.16 on Pages 150-157, 7.18-7.25 on Pages 161-183, Table 7-22 on Page 184 and Table 7-22 on Page 186). Carbon Tetrachloride Is As A Solvent Is Described In Section 7.6 (Pages 132-134).

**ODS CHEM 1:**

CFC 113

**ODS CHEM 2:**

Methyl Chloroform

**Comments:**

**PRIMARY REFS:**

Trichlorotrifluoroethane (CFC-113)

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-HDBK-407 Contamination Control Technology Precision Cleaning Methods and Procedures

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride and Freon are Listed on the Corrosion Guide (Table XVI, Pages 76-77). The Physical Properties of Freon 12, 13, 14 and 22 are Listed on Table XXIX (Page 164). Freon TF May Be Substituted for Petroleum in the Procedure for the Determination of Particulate Contamination of Hydraulic Fluids by the Particulate Count Method (See 16.3.1, 1.3 (c) on Page 188). Trichlorotrifluoroethane and Methyl Chloroform are Listed as Commonly Used Solvents for Vapor Degreasing (See 19.2.9.4 on Page 251). In the Note to Section 19.2.9.5 (Page 251), the Navy Recommends the Use of Methyl Chloroform, MIL-T-81533 or O-T-620, in Place of Trichloroethylene. The Note also States that the Navy has Procured Ultrasonic Filter Cleaning Machines Designed and Calibrated to Use Methyl Chloroform, MIL-T-81533. Freon T-WD 602 and Freon T-DA 35 are Listed as Two of the Chemical Methods of Drying (See Table LIV on Page 260). The Characteristics of these Two Drying Methods are Detailed in Table LV (Page 261). The Entry for Freon T-DA 35 Indicates that this Chemical is Used in Conjunction with Freon TF in Specially Designed Vapor Degreasers. Distinguishing Characteristics of the Displacement Drying Method Include the Fact that Freon T-DA 35 and Water are Immiscible (See 19.5.1.1(d) on Page 262). Trichlorotrifluoroethane is listed as a Required Material for the Precision Cleaning of Stainless Steel (19.6.1.2(e) on Page 262), Carbon Steel (19.6.2.2(e) on Page 264), Aluminum (19.6.3.2(e) on Page 265) and Teflon Lined Flexible Hose (19.6.4.2 (c) on Page 267). Solvent is Defined as Meaning Trichloroethylene OR Freon (See 19.6.1.3 on Page 263; 19.6.3.3 on Page 266; and 19.6.4.3 on Page 267). Trichlorotrifluoroethane is Listed as a Required Material for the Cleaning of Pressure Sensing Devices (See 19.6.8.3 (b) on Page 276) and is Used in the Procedure Using the Flow-Through Bourdon Tube (See 19.6.8.4 (a) (5) on Page 276) and Using the Capillary Bourdon Tube (See 19.6.8.4(b)(7) on Page 277). Trichlorotrifluoroethane is Listed as a Required Material for the Cleaning of Pneumatic Systems Metering Valves (19.6.9.2(c) on Page 278), Pneumatic Systems Pressure Transducers (19.6.10.2(d) on Page 279), Stainless Steel Fittings in Pneumatic Systems (19.6.11.2(i) on Page 281) and Pneumatic Pressure Regulators (19.6.12.2(c) on Page 282). For the Cleaning Procedure for Pneumatic Systems Pressure Transducers, Trichlorotrifluoroethane is used as a Degreasing Rinse in Both the Precleaning and Final Cleaning Stages of the Procedure (See 19.6.10.3(a) and 19.6.10.4(b) on Page 280). For the Cleaning of Pneumatic Pressure Regulators, Trichlorotrifluoroethane is Used as a Solvent Rinse in the Procedure For Cleaning Metallic Parts (See 19.6.12.3(a) (8) on Page 283) and as a Flushing Solvent for Both Method A and Method B Cleaning of Gauges (See 19.6.12.3.1 (a)-(b) and 19.6.12.3.2 (d), (g) and (j) on Page 284). Trichlorotrifluoroethane is Listed as a Required Material for the Cleaning of Cap, Tube Fitting, and Chain Used in Pneumatic Systems (See 19.6.13.2(c) on Page 286). Trichloroethane in accordance with O-T-620 is Listed (#14) in the References Section (See 19.7.1.1.14 on Page 288). Solvent, "Freon," Precision Cleaning Agent in accordance with MSFC-SPEC-237A is Listed (#11) in the References Section (19.7.1.3.11 on Page 289). For the Selection or Preparation of Packaging Material, Precision Grade Trichlorotrifluoroethane is the Cleaning Agent Normally Used for Film Cleaning (See 20.4.3 on Page 295). For the Alternate Procedure when Fluorescent Surface Areas are Detected, Carbon Tetrachloride is Listed as One of the Applicable Solvents Under the Chlorinated Aliphatic Solvents (The First of Four Stages of Solvents Used to Swab Fluorescent Areas on Components) (21.12.1.2(a)(1) on Page 325). Carbon Tetrachloride is Listed (#50) Under the Analysis of Part Cleaning Solutions (See 21.21.6.50 on Page 335). For the Preparation of Equipment to be used in Making Particulate Tests, Thoroughly Wash and Rinse the Parts of the Filter Holder with Abundant Amounts of Alcohol or Trichlorotrifluoroethane (See 21.28.5(b) on Page 350). Note that the First Reference Under Section 21.36.1.3 (Page 363) May Require Carbon Tetrachloride. Appendix I Describes Allied Chemical Corporation's Genesolv Solvent Drying System -- The System is Unique in that it Uses Only One Solvent D-1,1,2 Trichloro-1,2,2 Trifluoroethane (Genesolv) and Simple Equipment (See Appendix I on Page 367). Also Note that Table XXIV (Page 144) states that Halide Leak Detectors Detect and Determine Halogenated Hydrocarbon Vapor Concentrations for Such Chemicals as Carbon Tetrachloride, Trichloroethylene and Perchloroethylene.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Carbon Tetrachloride

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend rewriting of the handbook to remove ODS use and to include precision cleaning alternatives that have been identified in various precision cleaning applications.

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**Document Number:** MIL-HDBK-728/5 Radiographic Testing

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Other Commercial Cleaners

**ODS Use:** The Screens May Be Cleaned With 1,1,1 Trichloroethane Or Other Commercial Cleaners That Are Nontoxic And Nonflammable (See 5.3.1 on Page 5.3.5).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of 1,1,1 Trichloroethane.

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**Document Number:** MIL-HDBK-739                      Field Refrigeration Equipment

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant 12 Saturated Gas Temperatures for Condenser Types I-VI(Condensers, Air-Cooled, Refrigerant 12) are Listed in the Table on Page 51. Compressor Capacity Curves Using Refrigerant 12 are Listed in the Figure on Page 91.

**ODS CHEM 1:** CFC 12                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-R-10735  
MIL-R-40633

**General Comments:** Recommend changing of specification to remove tables and references to R-12 and replace with R-134a.

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**Document Number:** MIL-I-11867 K Ice Making Machine, Cube

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC

All references to ODSs have been removed from this specification. MIL-I-11867, Revision K, dated 23 June 1986, has been replaced by A-A-52139. A-A-52139 has removed the ODS reference by requiring the system refrigerant be provided by the manufacturer and that the refrigerant be acceptable to the EPA at the time of manufacture. Note that MIL-I-11867 has been transferred to the US Army Material Command (AMC) Packaging, Storage and Containerization Center, effective 16 December 1993.

**ODS Use:** 3.5.1 Refrigerants Shall Be Type 12, 22 or 502 conforming to BB-F-1421.(HCFC-22 is Class II ODS)

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:** R 502

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-16341 G Ice Making Machines, Flake, Electric, Self-Contained, 1000-Pound/24 Hours

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** Refrigerants shall conform to Type 12 or 22 of BB-F-1421 for Duty A and Type 12, 22, or 502 or BB-F-1421 for Duty B machines (See 3.5.1).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**PRIMARY REFS:** BB-F-1421 **Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of references to R-12 and R-502 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, HFC-134a and R-401A (R-12 alternatives) and R-402A, R-402B, R-404A and R-507 (R-502 alternatives).

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**Document Number:** MIL-I-17563 B Impregnants for Aluminum, Copper, Iron, Magnesium and Zinc Alloy Castings

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Tetrachloroethylene [sic] (O-T- All references to ODSs have been removed from this specification. MIL-I-17563, Revision C, dated 18 September 1992, has removed the ODS reference. The requirement to use tetrachloroethylene (O-T-236) or 1,1,1-Trichloroethane (MIL-T-81533) to clean the test specimens after immersion in lubricating oil but prior to pressure testing (See 4.5.6.7.7 on Page 9 of Revision B) has been eliminated by the addition of Note (1) to Table III (See Page 10 of Revision C). Note (1) requires that "Specimens [for the conditioning test with lubricating oil] shall be cleaned in a suitable degreaser after exposure."

**ODS Use:** The Specimens Shall Then Be Drained and Thoroughly Cleaned with Tetrachloroethylene in Accordance with O-T-236 or 1,1,1-Trichloroethane in Accordance with MIL-T-81533 (See 4.5.6.7.7. on page 9).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-20564 E Ice Cream Plants, Portable

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant Shall Conform to Type 12 of BB-F-1421 (See 3.3.10).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-STD-759

MS 35845

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, and HFC-134a

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**Document Number:** MIL-I-20565 H Ice Cream Cabinets, Mechanically Refrigerated.

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-I-20565 has been cancelled by Revision H, Notice 2, dated 31 August 1993, and is Superseded by A-A-50066.

**ODS Use:** The Condensing Unit Shall Use One of the Refrigerants Specified in BB-F-1421 (See 3.4.3.1). The Moisture Content of the Refrigerant at 100F(38C) Does Not Exceed 10 ppm for R-12 and 45 ppm for R- 22 (See 3.7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-23208 A Indicator, Sight, Liquid, Refrigerant

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** This Specification Covers Liquid Refrigerant Sight Flow Indicators for Systems Using Refrigerant 12 or 22 (See 1.1). Refrigerant Type 12 and Type 22 of BB-C-310 (superseded by BB-F-1421) shall Be Used for the Moisture Element Test (See 4.4.1).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment parts that use an ODS. However, the specification does not require the use of an ODS. No SAO approval is required. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment. Recommend deletion of references to R-12.

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**Document Number:** MIL-I-24718

Insulating Resins, Solventless, Vacuum Pressure Impregnating; General Specification for

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-I-24718, Amendment 1, dated 7 June 1993, removes all ODS references from this specification. "MIL-C-81302 -- Cleaning Compound, Solvent, Trichlorotrifluoroethane" has been deleted from the Applicable Documents section. Also Paragraph 4.6.18(c), which requires the use of MIL-C-81302 as an immersion solvent in the chemical resistance test, is deleted in its entirety.

**ODS Use:** Cleaning Fluid in Accordance with MIL-C-81302 (1,1,2 Trichlorotrifluoroethane) is Used in the Chemical Resistance Test (See 4.6.18 on Page 15, 16).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-25135 E Inspection Materials, Penetrants

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Panels are Then Cleaned By Aqueous Detergent Wash, Tap Water Rinse, Methanol or Acetone Rinse, 10 Minutes in 1,1,1 Trichloroethane With Ultrasonic Agitation and Finally 10 Minutes in Trichlorotrifluoroethane With Ultrasonic Agitation (See 4.5.18.2.2 Page 23).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-STD-271 All references to ODSs have been removed from this specification. MIL-STD-271, Revision F, Notice 1, dated 21 June 1993, removes the ODS references. ODS references (1,1,1-Trichloroethane, Trichlorotrifluoroethane and Freon TF) have been removed from Paragraph 5.6.1 and replaced with acetone, denatured ethanol (ethyl alcohol), isopropanol (isopropyl alcohol) or cleaner/removers supplied by penetrant manufacturers which meet the requirements of MIL-I-25135.

**General Comments:** Recommend deletion of requirement for 1,1,1 Trichloroethane and Trichlorotrifluoroethane cleaning procedures.

---

**Document Number:** MIL-I-3190 F Insulation Sleeving, Electrical, Flexible, Coated, General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-I-3190, Revision F, Amendment 2, dated 28 August 1993, removes all ODS references. "O-T-620 1,1,1 Trichloroethane, Technical, Inhibited (Methyl Chloroform)" has been deleted from the Applicable Documents section. Paragraph 4.7.6.2 has been Revised by deleting "(b) Xylel." and "(c) 1,1,1 Trichloroethane conforming to O-T-620."

**ODS Use:** 1,1,1 Trichloroethane Conforming to O-T-620 is Used in the Swelling Oil and Solvent Resistance Tests (See 4.7.6.2 on Page 11).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-3190/2 A Insulation Sleeving, Electrical, Flexible, Coated Class 130, Type B, Category b

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-I-3190/2, Revision A, Amendment 1, dated 31 May 1995, has removed the direct ODS references. References to 1,1,1-Trichloroethane have been deleted from Tables I and II (Pages 2-3).

**ODS Use:** Page 2,3, Tables I and II, 1,1,1 Trichloroethane (Inhibited) is Referenced as a Performance Requirement under the Oil and Solvent Resistance Tests on Tables I and II.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting the requirement for solvent resistance test using 1,1,1 Trichloroethane.

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**Document Number:** MIL-I-3624 D Ice Making Plant, Block, Self-Contained, Skid Mounted, 1-Ton

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-I-3624 has been Cancelled by Revision D, Notice 1, dated 25 May 1994, and is not superseded by another document.

**ODS Use:** The Refrigerant Shall Conform to Type 12 of BB-F-1421 (See 3.5.1 on Page 7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-43385 B Ice Cream Cabinets, Mechanically Refrigerated, Dispensing, Mobile, Self-Elevating

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) MIL-I-43385 has been Cancelled by Revision B, Notice 1, dated 24 October 1994, and is superseded by A-A-52143. A-A-52143 does not allow the use of any Ozone Depleting Chemicals in either the operation or the manufacture of the Ice Cream Cabinets. This Cancellation Notice is not yet available on DODISS.

**ODS Use:** 3.4.2 The Refrigerant Shall Conform to Type 12, 22 or 502 of BB-F-1421.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 115

**PRIMARY REFS:** **Comments:**

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-43553 B Ink, Marking, Epoxy Base

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-I-43553, Revision B, Amendment 1, dated 23 June 1994, has deleted all ODS references. The second sentence of paragraph 4.6.3.2 has been Revised to read, "These specimens shall be immersed in water, denatured alcohol, methyl alcohol, and a cleaning solvent selected in 4.6.1, for a period of 30 minutes...." Also 1,1,1- Trichloroethane has been deleted from the keyword list (Section 6.8).

**ODS Use:** These specimens shall be immersed in water, 1,1,1 Trichloroethane, Denatured Alcohol, and Methyl Alcohol for 30 minutes (See 4.6.3.2, page 10). 1,1,1 Trichloroethane is also listed in Section 6.8 "Subject Term (Keyword) Listing." (See page 15).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:** Recommend deletion of requirement for immersion in 1,1,1 Trichloroethane for resistance testing since as of December 31, 1995 it will no longer be produced.

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**Document Number:** MIL-I-43682 D Ice Maker-Dispenser: With Water Dispenser Attachment

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) MIL-I-43682, Revision D, Amendment 2, Notice 1, dated 11 October 1994 has been cancelled and any future acquisitions should refer to A-A-52144. A-A-52144 does not allow the use of any Ozone Depleting Chemicals in either the operation or the manufacture of the Icemaker-Dispenser. This Cancellation Notice is not yet available on DODISS.

**ODS Use:** 3.3.1 The Refrigerant Shall Conform to Type 12, 22 or 502 of BB-F-1421. (HCFC 22 is a Class II ODS)

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**PRIMARY REFS:** BB-F-1421

**Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-43705 D Ice Cream Makers; Shake Makers; and Combination Ice Cream and Shake Makers- Soft Serve.

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) MIL-I-43705, Revision D, has been Cancelled by Notice 1, dated 17 September 1997.

MIL-I-43705, Revision D, Draft Amendment 2, dated 6 March 1995, removes the direct ODS reference. Paragraph 3.5.4 has been revised to read "The refrigerant shall be nonflammable, conform to ARI 700, and be an Environmental Protection Agency (EPA) Significant New Alternate Program (SNAP) approved refrigerant with ozone depletion potential (ODP) of 0.05 or less."

**ODS Use:** Refrigerant Shall Conform to BB-F-1421 type 12, 22 or 502 (See 3.5.4).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**PRIMARY REFS:** BB-F-1421 **Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-46058 C Insulating Compound, Electrical (For Coating Printed Circuit Assemblies)

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Isopropyl Alcohol

**Comments:**

All references to ODSs have been removed from this specification. MIL-I-46058, Revision C, Amendment 7, dated 14 September 1993, has removed all ODS references. Paragraph 4.7.1.1(c) has been Revised to state " the test panel shall be cleaned of all traces of rosin flux and other contaminants by scrubbing in suitable solvents normally used to clean contaminants from printed wiring and terminal- board assemblies." Paragraphs 4.7.1.1(c) (1), 4.7.1.1(c) (2) and 4.7.1.1(c) (3) are deleted in their entirety.

**ODS Use:** Once Soldered, the Test Panels Shall Be Cleaned of All Traces of Rosin Flux and Other Contaminants by Scrubbing in any of the Following Solutions, Dependent Upon the Degree and Type of Contamination: 1) Isopropyl Alcohol, 2) Mixture of 35 % by Weight of Isopropyl Alcohol (TT-I-735) and 65 % by Weight of Trichlorotrifluoroethane (MIL-C-81302) or 3) Mixture of 15 % by Weight of Isopropyl Alcohol (TT-I-735) and 85 % by Weight of Trichlorotrifluoroethane (MIL-C-81302) (See 4.7.1.1(c) on Page 10).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-I-51484 Insecticide, D-Phenothrin (Aerosol)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Table I Composition of Aerosol Insecticide Formulation Requires The Use of Dichlorodifluoromethane Conforming to Type 12 of BB-F-1421 and Trichloromonofluoromethane Conforming to Type 11 of BB-F-1421 (See Page 3).

**ODS CHEM 1:** CFC 11 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Insecticide is now being procured under new formulation using HCFC-22 and HCFC-142b. NOTE: Use of this specification in a procurement no longer requires the use of a Class I ODS. Also, formulation of this product using HCFCs has a manufacturing exemption under EPA's non-essential products regulation. Current manufacturer's are working on a NON-ODS formulation.

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**Document Number:** MIL-K-81576 A Kit -- Touch-Up, For Corrosion Control of Weapons

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-K-81576 has been Cancelled by Revision A, Notice 2, dated 31 May 1994, and is not superseded by another document.

**ODS Use:**

Each Kit Includes One 16 Ounce Can of Cleaning Compound, Solvent, Trichlorotrifluoroethane (See Table I on Page 8). The Corrosion Preventive Compound shall be Packaged in 16 Ounce Aerosol Containers, and it shall Conform to the Requirements of MIL-C-85054, Type I, Class A, When Applied (See 3.2.3.1.26 on Page 10). The Corrosion Preventive Compound shall be Packaged in 16 Ounce Aerosol Containers, and it shall Conform to the Requirements of MIL-C-81309, Type II. Propellant shall be Dichlorodifluoromethane (See 3.2.3.1.31 on Page 10). The Cleaning Compound shall be Packaged in 16 Ounce Aerosol Containers and it shall Conform to the Requirements of MIL-C-81302, Type IIA (See 3.2.3.1.33 on Page 10). Preservative Compounds -- MIL-C-85054 (26) Displaces Water and May be Used For Temporary Protection (See Item 8 on Figure 1 on Page 17).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-81309

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**1ST LEVEL REFS:** MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

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**Document Number:** MIL-L-17331 H Lubricating Oil, Steam Turbine and Gear, Moderate Service

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-L-17331, Revision H, Amendment 3, dated 20 March 1995, removes the direct ODS references.

A new paragraph 3.1 is added as follows: "The use of any ozone depleting substance (ODS) in the composition of the lubricating oil under this specification directly or referenced in any federal test method is hereto prohibited. Environmentally safe and non-ODS alternative solvents may be substituted for any previously specified ODSs such as 1,1,1-trichloroethane, trichlorofluoroethane, perchloroethane or other chlorofluorocarbons (CFCs) (see 6.2)."

Paragraph 20.1.1 of Appendix C has been Revised to read "FEDERAL Cleaning Solvents: P-D-680 Type III, isopropyl alcohol, and hexane(s) or heptane or non-aromatic naphtha."

Paragraph 30.2(b) of Appendix C has been revised to read "a dehydrated mixture of 25% iso-propyl alcohol and 75% non-aromatic hydrocarbon solvent."

Paragraph 40.1.1 of Appendix C has been revised to read "The pipe loop shall be dismantled at all take-down joints and allow the fluid to drain. The test valves shall be disassembled and the spool, packagings, o-rings, and sleeve assemblies be examined. After removal of the o-rings, and packings, the valve bodies, spools, sleeve assemblies and other dismantled parts shall be cleaned under a laboratory hood by rinsing first with hexane(s), heptane, or naphtha and then with isopropyl alcohol. Discard any o-rings or packings which appear damaged. Place o-rings or packagings back on parts after they have dried."

Paragraph 40.1.2 of Appendix C has been revised to read "The sump is drained of oil and rinsed four times with replacement solvent P-D-680 Type III, and air dried."

**ODS Use:** Solvent in accordance with MIL-C-81302 is Listed as a Material (See 30.2 of Appendix C on Page 17). The Test Valves are Disassembled, the Spool and Sleeve Assemblies Examined, Cleaned by Washing With Precipitation Solvent in accordance with MIL-C-81302, Wiping with a Chloroform Saturated Lint-Free Tissue to Remove any Naptha Insolubles, and Rinsing Again with Naptha (See 40.1.1 of Appendix C on Page 18). The Sump is Drained of Oil and Rinsed Four Times with Solvent in accordance with MIL-C-81302 and Air Dried (See 40.1.2 of Appendix C on Page 18).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend use of alternatives listed in draft Amendment 3.

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**Document Number:** MIL-L-23398 D Lubricant, Solid Film, Air-Cured, Corrosion Inhibiting, NATO Code Number S-749

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-L-23398, Revision D, Amendment 2, dated 18 January 1994, removes all ODS references. MIL-T-81533 - Trichloroethane, 1,1,1 (Methyl Chloroform) Inhibited, Vapor Degreasing is deleted from the Applicable Documents section. In Table III, Trichloroethylene conforming to O-T-634 is substituted for 1,1,1 Trichloroethane conforming to MIL-T-81533.

**ODS Use:** Trichloroethane Conforming to Specification MIL-T-81533 is Listed as One of the Applicable Test Fluids For the Resistance To Fluids Test (See Table III on Page 15).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** DOD-P-16232

DOD-P-16232, Revision F, Interim Amendment 1, dated 9 September 1992, removes the direct ODS reference in Paragraph 4.8.6.2.2.6. This paragraph has been deleted by Interim Amendment 1. Please note that ODS references are still found in Paragraphs 4.8.4.1(c) and 4.8.5(b).

**General Comments:**

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**Document Number:** MIL-L-24047 A Life Preserver, Yoke Type, Scuba U.S. Navy Mark 3

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-L-24047 has been Cancelled by Revision A, Notice 1, dated 16 April 1987, and is Superseded by MIL-L-24611.

**ODS Use:** The surfaces to which the adhesive is to be applied shall be thoroughly washed, if necessary, with a solvent of methyl chloroform, conforming to O-T-620 so that the dusting materials and any other surface contaminants are completely removed (3.4.3 page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-L-24131 B Lubricant, Colloidal Graphite in Isopropanol

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

MIL-L-24131, Revision C, dated 2 November 1995, removes the ODS references. Paragraph 4.4.3 has been deleted and a new procedure for determining graphite content has been added. This new procedure does not require the use of an ODS.

**ODS Use:** Add 45 to 50 ml of 1,1,1-Trichloroethane (Methyl Chloroform) to the Sample and Stir (See 4.4.3 (c))(2) page 7). Filter the Flocculated Sample Through the Crucible Using Small Rinses of Methyl Chloroform as Necessary to Essentially Complete the Transfer of the Washed Solids. Check the Filtrate to Assure that No Solids have Gone Through. Finally Rinse the filter with 50 ml of Methyl Chloroform Poured from the Sample Beaker (See 4.4.3(d)(1) page7. Wash with 10 ml of Methyl Chloroform and then 50 ml of Isopropanol (See 4.4.3 (d)(3) page 7).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative is methylene chloride.

---

**Document Number:** MIL-L-45403 D Link, Cartridge, Metallic Belt, 7.62MM, M13

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634)

**ODS Use:** The Supplementary Wax Coating Shall Then Be Completely Removed From The Links By Trichloroethylene Or Trichloroethane Vapor, And The Links Dried And Reweighed (4.5.1 page 10).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** DOD-P-16232

DOD-P-16232, Revision F, Interim Amendment 1, dated 9 September 1992, removes the direct ODS reference in Paragraph 4.8.6.2.2.6. This paragraph has been deleted by Interim Amendment 1. Please note that ODS references are still found in Paragraphs 4.8.4.1(c) and 4.8.5(b).

**General Comments:** Recommend deleting 1,1,1-trichloroethane and use only O-T-634 (trichloroethylene). If another alternative is required, recommend a hot aqueous wash with drying or a Terpene or Petroleum Hydrocarbon cleaner followed by forced air drying.

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**Document Number:** MIL-L-45923 A Link, Cartridge: Metallic Belt, Caliber .50, M9

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634) MIL-L-45923, Revision E, dated 19 August 1993 does not delete the ODS references.

**ODS Use:** The supplementary wax coating shall then be completely removed from the links by Trichloroethylene or Trichloroethane vapor degreasing, and the links dried and weighed (4.6.1.2, page 8).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend a hot aqueous wash with drying or a Terpene or Petroleum Hydrocarbon cleaner followed by forced air drying.

---

**Document Number:** MIL-L-46010 B Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

All references to ODSs have been removed from this specification. MIL-L-46010, Revision D, dated 2 December 1994, has removed the ODS references. Paragraph 4.5.2.2 of Revision B, Amendment 2, dated 5 September 1990, has been revised to read "The panels shall be pre-cleaned with aliphatic naphtha conforming to TT-N-95 or any environmentally safe cleaner that sufficiently cleans surfaces to pass ASTM F22 (this paragraph is now numbered 4.5.2.1 in Revision D). The references to MIL-T-81533 and MIL-C-81302 in Table IV of Revision B, Amendment 2, dated 5 September 1990, have been deleted (this table is now numbered Table II in Revision D). Letter From US Army Belvoir Research, Development, and Engineering Center, dated 19 July 1993, Authorizes Heptane, Hexane or Petroleum Naptha and Acetone (or alternately will Pass Water Break Test ASTM F22) for Use in ASTM Test Method D2625 Called out in This Specification.

**ODS Use:** The Panels shall be Pre-Cleaned with 1,1,1-Trichloroethane Conforming to MIL-T-81533 (See 4.5.2.2, Revised, on Page 3 of Amendment 2 and 4.5.2.1 on Page 7). Both MIL-T-81533 and MIL-C-81302 are Listed as Applicable Test Fluids on Table IV (Page 14). Appendix (Not Mandatory for Spec) page 16, 30.2-30.6 Vapor Degrease with 1,1,1, Trichloroethane according to MIL-T-81533. (Recommended surface treatment prior to lubrication.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting 1,1,1-trichloroethane and use only O-T-634 (trichloroethylene). If another alternative is required, recommend a hot aqueous wash with drying or a Terpene or Petroleum Hydrocarbon cleaner followed by forced air drying.

---

**Document Number:** MIL-L-52733 A Laboratory, Airmobile, Aviation Fuel

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Unless Otherwise Specified (See 6.2), The Government Will Furnish Two Fire Extinguishers, Vaporizing Liquid, Bromochlorodifluoromethane, 5-Pound (3.4 Page 4).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Bromochlorodifluoromethane (Halon-1211)

**1ST LEVEL REFS:** MIL-C-53039 All references to ODSs have been removed from this specification. MIL-C-53039, Revision A, Amendment 2, dated 19 May 1993, deletes the required use of 1,1,1-Trichloroethane to reduce the volume of the coating (See Paragraphs 3.8 and 4.3.14).

MIL-C-46168 All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** Recommend replacement with a suitable dry chemical extinguisher having an equivalent UL rating.

---

**Document Number:** MIL-L-60326 Lubricant, Fluorocarbon Telomer Dispersion (For Use With Ammunition)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

Defense Supply Center Richmond (DSCR) now procures an equivalent to this lubricant that does not contain CFC-113. The equivalent lubricant contains HCFC-141b as the carrier/dispersion solvent and HFC-134a as the propellant. New NSN for a 16oz aerosol can is 9150-01-443-9003. DSCR is in the process of cancelling MIL-L-60326 (per PHONECON 15 December 1997).

**ODS Use:** The Lubricant Shall Consist of the Percent Fluorocarbon Dispersed in 1,1,2 Trichloro 1,2,2 Trifluoroethane (See 3.1, amended, on Page 1 of Amendment 1). Paragraphs 3.1.2 (Pages 2-3) and 4.3.3 (Page 6) Outline Physical Properties For Trichlorotrifluoroethane, Including Density, Boiling Point, Density of Lubricant, Viscosity and Appearance.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Recommend cancellation of this specification since no commercial products are manufactured to this specification. If an alternative is desired, recommend reformulation of lubricant to replace CFC-113 carrier solvent with an HCFC, HFC, or petroleum solvent carrier.

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**Document Number:** MIL-L-61002

Labels, Pressure Sensitive Adhesive, For Bar Codes and Other Marking

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

U.S Army Material Command Logistics Support Activity correspondence, dated 15 February 1994, alleviates activities from performing required tests as per MIL-L-61002 involving Class I ODSs until subject specification is Revised. Acceptable ODS solvent substitutes exist and are covered by various specifications, including O-T-236, P-D-680, TT-T-291 (Type I), ASTM-D4081, ATMS-D4376 and others. Expected completion date is fourth quarter FY 94. The U.S Army Material Command Logistics Support Activity POC is Mr. Joseph P. Zagaursky, DSN 795-7951. MIL-L-61002, Amendment 1, dated 10 January 1992, does not remove the ODS reference

**ODS Use:** The test specimens shall be immersed for 15 minutes + or - 1 minute in the 1,1,1-Trichloroethane conforming to O-T-620 (4.6.3.2 page 15). For Page 30, Table VI (Note: This section is not mandatory), MIL-C-81302c type IIa and O-T-620 are listed as solvents.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-L-81329 C Lubricant, Solid Film, Extreme Environment, NATO Code Number S-1737, Metric

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-L-81329, Version C, Amendment 1, dated 12 January 1994, removes all ODS references. MIL-T-81533 has been deleted from the Applicable Documents section. Paragraph 4.6.2.1(b) has been Revised by deleting the phrase "trichloroethane conforming to MIL-T-81533" and substituting the phrase "aliphatic naphtha conforming to TT-N-95" in Lines 1 and 2 and deleting the word "trichloroethane" and substituting the phrase "aliphatic naphtha (conforming to TT-N-95)" in Line 7.

**ODS Use:** The Panels shall be Precleaned Using Trichloroethane Conforming to MIL-T-81533 (See 4.6.2.1.b on Page 6).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-L-83795 A Layout Dye, Blue

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-L-83795, Revision B, dated 3 October 1994, removes the ODS reference in paragraph 3.3.11.2. Paragraph 3.3.11.2 has been renumbered as paragraph 3.4.2 (Page 4 of Revision B) and has been revised to require that the pressurized container contain 25 to 30 percent by weight of isobutane/propane propellant.

**ODS Use:** Pressurized Container Must Contain 35 to 45 Percent by Weight of Propellant Conforming to BB-F-1421, Type 12 (See 3.3.11.2 on Page 4).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-L-87132 A Lubricant, Cetyl Alcohol, 1-Hexadecanol, Application to Fasteners

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Fluorocarbon Solvent shall be Trichlorotrifluoroethane in Accordance with MIL-C-81302 or Trichlorotrifluoroethane Modified with Butyl Cellosolve (2-Butoxyethanol) in Accordance with Table II (See 3.1.3 on Page 4). The Fluorocarbon Solvent is Used to Prepare the Type II Fluorocarbon Base (See 3.2.2 on Page 5).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend use of Type I or III only. Type II shall not be used. If a replacement for Type II is required recommend reformulation of lubricant to replace CFC-113 carrier solvent with an HCFC or HFC carrier.

---

**Document Number:** MIL-L-87177 A Lubricants, Water Displacing, Synthetic

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** For the Determination of Solubility in Freon TF Test, the Test Panels (After Dipping in Boiling 95 Percent Methanol and Drying For One Hour) Shall be Rinsed Twice With Fresh Freon TF and Examined Visually (See 4.6.3 page 10).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-S-22805 All references to ODSs have been removed from this specification. MIL-S-22805, Revision B, dated 31 March 1993 deletes the requirement to use R-12 propellant (See Paragraph 3.3.2 on Page 6 of Revision A) and substitutes a requirement to use R-22 or R-134a (See 3.3.2.1 and 3.3.2.2 on Page 4 of Revision B). MIL-S-22805, Revision B, Amendment 1, dated 16 December 1993, deletes references to R-22.

**General Comments:** Recommend changing solvent test method to an alternative solvent identified by the preparing activity.

---

**Document Number:** MIL-M-10891 C Methyl Phosphonic Dichloride, Technical

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Spectrometer: The Sensitivity Of The Spectrometer Should Be Such That The Signal-to-noise Ratio Is At Least 15 To 1 for A 1 Percent Solution By Weight Of Ethyl Benzene In Carbon Tetrachloride. (...) The Total Integral Of The Three Groups In The Spectrum Of A 5 Percent Solution By Volume Of Ethyl Benzene In CC14, The Average Oeviation Of The Integrals Will Not Exceed (underscore) + 2 Percent For 5 Successive Scans (4.4.4.2.1 Page 7).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-M-12218 C Monobromotrifluoromethane (Liquified) Technical Grade For Fire Extinguisher

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Covers Technical Grade Monobromotrifluoromethane For Specialized Fire Extinguisher Applications.

**ODS CHEM 1:** Halon 1301 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-M-46263 Max-2 Explosive

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Determination Of Composition A-4 Content: Place An Accurately Weighed 1.0g Specimen Of Moisture-free MAX-2 In A Tared, Sintered Porcelain Cruable And Extracted With 10 Successive 20 Milliliter Portions Of Hot Carbon Tetrachloride (4.3.2.1 Page 8).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative is chloroform.

---

**Document Number:** MIL-M-51103 B Magnesium Oxide, Technical

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Iodine Number: (...) Rinse A 100ml Automatic Pipet Equipped With A Drying Tube On The Air Inlet With 0-10N Solution Of Iodine In Anhydrous Carbon Tetrachloride (4.2.4.9 Page 10).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative is methylene chloride.

---

**Document Number:** MIL-M-51231 Mask, Gas, Rocket Propellant, M26A1

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Gaslife, carbon tetrachloride, the CCl<sub>4</sub> gas life shall be determined in accordance with method used by Bureau of Mines which is given in Appendix (4.6.5 page 12). Carbon Tetrachloride is an applicable reagent for the Bureau of Mines Canister Testing Apparatus. See Appendix 10.3 page 16, 20.0 page 23, 20.8 page 26.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-M-51500                      Methylphosphonic Difluoride, Technical

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Spectrometer Specification: The Total Integral Of Three Groups In The Spectrum Of A 5 Percent Solution By Volume Of Ethyl Benzene In Carbon Tetrachloride, The Average Deviation Of The Integrals Will Not Exceed 2 Percent For Five Successive Scans (4.4.4.2a4 Page 9).

**ODS CHEM 1:** Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-M-5631 C Mouton (For Flight Clothing)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Stoddard Solvent, Tetrachloroet

**ODS Use:** A Sample Of The Wool Yarn Weighing Approximately 5g Shall Be Extracted In A Soxholet Extractor With Either Carbon Tetrachloride, Stoddard Solvent, Or Tetrachloroethylene For A Period Of 4 Hours (4.5.9.2 Page 8).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of carbon tetrachloride.

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**Document Number:** MIL-M-9950 A Missile Components, Liquid Oxygen, Liquid Nitrogen, Gaseous Oxygen, Gaseous Nitrogen, Instrument Air, Helium And Fuel Handling Systems; Cleaning And Packaging For Delivery

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** A Large Triped Stand Shall Be Covered With Aluminum Foil And The Foil Rinsed Twice With Trichlorotrifluoroethane. (...) The Funnel And Beaker Shall Be rinsed Twice With Trichlorotrifluoroethane. (...) Both Ends of The Component Shall Be Wiped With A Clean Cloth Or Absorbent Paper Moistened With Trichlorotrifluoroethane (...) Approximately 200ml Of Trichlorotrifluoroethant Persquare Foot Of Inner Surface Shall Be Used (4.2.5 Page 9). For This Purpose the Final Solvent Rinse Shall be Performed With Trichlorotrifluoroethane (MIL-C-81302), Demineralized Water or Equivalent.... (See 4.2.1 on Page 7).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113  
**Comments:**

**PRIMARY REFS:** MIL-C-81302  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-P-27401

**General Comments:** NAVAIR has proposed the following contract language:

Delete trichlorotrifluoroethane as follows. Paragraph 4.2.1 Inspection No. 1 - particulate inspection Inspection... For this purpose the final solvent rinse shall be performed with demineralized water or equivalent, using a measured amount of 200 milliliters of rinse fluid per square foot of component inner (or effective) surface for the rinse.... Substitute perchloroethylene for trichlorotrifluoroethane as follows. Paragraph 4.2.5 Inspection No. 5 - (referee test): infrared and ... A large tripod stand shall be covered with aluminum foil and the foil rinsed twice with perchloroethylene. A large sheet of aluminum foil shall be placed over the tripod and fashioned into a funnel to allow the perchloroethylene to be used for the rinse wash, to run into a beaker placed beneath it. The funnel and the beaker shall be rinsed twice with perchloroethylene. The perchloroethylene used for rinsing and analysis shall be ACS spectro grade or better... Both ends of the component shall be wiped with a clean cloth or absorbent paper moistened with perchloroethylene. The component shall be placed upright on the funnel. A perchloroethylene-rewashed glass wash bottle employing a glass spout, shall be used to rinse down thoroughly the entire inner surface of the component. Approximately two hundred milliliters (ml) of perchloroethylene per square foot of inner surface shall be used. The effluent solvent shall be examined by either of the following, or equivalent methods: (1) The collected perchloroethylene shall be measured... If concentration of the sample is required, a blank of the reagent, perchloroethylene, shall be... (2) The collected perchloroethylene shall be evaporated to dryness and analyzed by gravimetric method for nonvolatile residue. A blank sample of perchloroethylene of the same volume shall also be run, evaporated, weighed...

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**Document Number:** MIL-O-23678 B Oxygen Systems, Portable, High Pressure, Aircraft

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-O-23678, Revision B, Amendment 2, dated 29 September 1995, removes the ODS references. Paragraph 3.4.2 has been revised to read "Prior to assembling, all internal surfaces of the system shall be degreased and cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:** Prior to Assembling, All Internal Surfaces of the System shall be Degreased by Flushing with a Cleaning Compound Conforming to MIL-C-81302 or by Using a Vapor Phase Degreaser in Accordance with MIL-T-81533. Components shall be Cleaned by Immersing, Scrubbing or Pressure Spraying with MIL-C-81302 Cleaning Compound or Ultrasonics may be Used in Conjunction with Vapor Degreasing or MIL-C-81302 Cleaning Compound (See 3.4.2 on Page 3).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the components can be dried adequately use of the Navy Oxygen Cleaner (NOC) aqueous cleaning process may also be acceptable.

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**Document Number:** MIL-O-27210 F Oxygen, Aviator's Breathing, Liquid and Gas

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Table I (Page 4) lists constituent concentrations for halogenated compounds (among others): refrigerants (freons, etc) and solvents (Trichloroethylene, Carbon Tetrachloride, etc).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:** Freon

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

Freon

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-P-116 J Preservation, Methods of

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**ODS Use:** Cleaning Methods C-1 (Any Process), C-3, C-5, C-7 and C-8 Use Solvents conforming to O-T-620 and MIL-T-81533 (See Section 3.3 on Pages 8-9). For Preservative Type P-3, CFC-113 Conforming to Specification MIL-C-81309 is Used for Conditions when Salt Spray is Expected to be Encountered (See Table II on Page 40).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81309

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-P-14553 C Primer Coating; Dipping, Automotive

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test for olefinic or cyclo-olefinic compounds: Dissolve the first sample in 1 ml of Carbon Tetrachloride and add 1 drop of 1 percent bromine in Carbon Tetrachloride (4.4.3.3, page 10).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** Recommend using test for olefinic or cyclo-olefinic compounds in FED-STD-141 as modified by FED-STD-141, Revision C, Notice 2, dated 10 December 1993 (Test Method 7356.1).

---

**Document Number:** MIL-P-14790 Plastic Sheet And Strip (Polydefin)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-P-14790 has been Cancelled by Notice 2, dated 19 May 1994, and is not superseded by another document.

**ODS Use:** Weigh a strip of the material on an analytical balance. Place Weighed Sample Into A "Pipe Bomb" (Or Other Suitable Pressure Bomb) With The Vessel three-quarters Full Of Trichlorotrifluoroethane (Freon 113 Or Equivalent). The sample should be completely immersed in the Freon.(See 4.3.7 page 9)

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-P-16406 A Paint, Black, High-Gloss, Quick Drying

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-P-16406, Revision A, has been Cancelled by Notice 1, dated 15 October 1996, and is not superseded by another document.

**ODS Use:** Carbon Tetrachloride Resistance: When Tested As In 4.4.11 The Paint Shall Show No Wrinkling, Blistering, Softening, Loss Of Adhesion, Or Other Film Defects (3.4.6 Page 4).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** FED-STD-141

FED-STD-141, Revision C, Notice 2, dated 10 December 1993, removes the direct ODS references. For Test Method 7371, Carbon Tetrachloride has been replaced by Hexanes. For Test Method 7356, the 1 ml of carbon tetrachloride and 1 drop of 1 percent bromine in carbon tetrachloride has been replaced by acetone and a 1 percent potassium permanganate solution, respectively.

**General Comments:** Recommend deletion of carbon tetrachloride resistance test due to it no longer being a commonly used solvent other than in laboratory analysis.

---

**Document Number:** MIL-P-17449 Powder, Propellant, Cordite N

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-P-17449 has been made Inactive for new design by Notice 1, dated 20 December 1995.

**ODS Use:** Two 1.25g Samples Wrapped In Separate Filter Papers To Be Placed In The Same Extraction Thimble To Provide Samples For The Nitrocellulose and Potassium Sulphate Determinations And A 5g Sample For A Carbon Tetrachloride Extract For The Nitroglycerine Determination Extract The Samples With Carbon Tetrachloride (4.2.1b Page 7).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative is chloroform.

---

**Document Number:** MIL-P-19264 A Propellant, Cannon, NACO

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

Indian Head Division, Naval Surface Warfare Center (Code 8420) has indicated that MIL-P-19264, Revision B, dated 10 November 1993, has removed the direct ODS references. This Revision is not yet available on DODISS.

**ODS Use:** Add 20ml Of Carbon Tetrachloride And Titrate With Standard 0.1N Sodium Thiasulfate To A Starch End Point (4.3.6.2.2.3 Page 18).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** MIL-P-231

MIL-P-231, Revision A, has been made Inactive For New Design by Notice 1, dated 20 December 1995.

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative is methylene chloride.

---

**Document Number:** MIL-P-19644 C Plastic Molding Material (Polystyrene Foam, Expanded Bead)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Toluene (Commercial Grade, J)

**ODS Use:** Reagents [For the Moisture Content Determination] include either Toluene, Commercial Grade, JAN-T-171, Grade B, Specific Gravity 0.864 to 0.874 or Carbon Tetrachloride, MS36030. Either Toluene or Carbon Tetrachloride shall be Used Throughout the Entire Procedure but shall not be Mixed (See 4.3.13.3 on Page 11). A 50 Gram Sample of the Plastic is Dissolved in 300 ml. of Toluene or Carbon Tetrachloride and Refluxed Through a Dean-Stark Tube. The Condenser is Rinsed with About 20 ml. of Toluene or Carbon Tetrachloride. Once the Contents of the Tube are Stirred, the Water Volume and Temperature are Recorded (See 4.3.13.4 on Page 11).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of carbon tetrachloride.

---

**Document Number:** MIL-P-197 G Packaging of Antifriction Bearing, Associated Parts and Subassemblies

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

All references to ODSs have been removed from this specification. MIL-P-197, Revision H, dated 29 July 1994, does not reference an ODS. MIL-P-197, Revision G, Amendment 1, dated 19 November 1993, removes the ODS references (requirement to use Freon TF in package cleaning). The fifth and sixth sentences of Paragraph 6.3.1 (on Page 23) are Revised to read "A recommended method is to have the package blasted with absolutely clean dry air or remove static electricity charge with an appropriate solvent. Once entering the process area and placed in a laminar flow hood, the package should be washed again with the appropriate solvent for approximately 5 to 10 seconds to remove exterior contaminants. The package should then be placed in a clean container ready to be cut open." MIL-P-197, Revision G, Amendment 1, dated 19 November 1993, also Revised the second and third sentences of Paragraph 3.3.1.3.2 (on Page 9) to read "The cleaning process shall include sprays, ultrasonics and vapor rinsing in accordance with applicable laws and regulations. Class I Ozone Depleting Compounds (ODC's) [sic] shall not be used as solvents."

**ODS Use:** A Recommended Method [of Cleaning the Exterior of the Bearing Package Before Opening] is to Have the Package Blasted with Absolutely Clean Dry Air or Remove Static Electricity Charge with a Solvent such as Freon TF. Once Entering the Processing Area and Placed in a Laminar Flow Hood, the Package should be Washed Again with Freon TF Solvent For Approximately 5 to 10 Seconds to Remove Exterior Contaminant Before Being Placed in a Clean Container Ready to be Cut Open (See 6.3.1 on Page 23).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-P-19644

MIL-C-52211

**General Comments:**

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**Document Number:** MIL-P-21415 C Protective Finish and Painting For Polaris Fleet Ballistic Missile  
**Level:** 1 **Class:** ODS **Comments:**  
**Alternatives Listed In Spec:** MIL-P-21415, Revision C, has been Cancelled by Notice 1, dated 16 October 1996, and is not superseded by another document.

**ODS Use:** Vehicle Exterior Surfaces of Unpigmented Rubber, Other than Silicone Rubber, shall be Carefully Hand Cleaned with a Solvent, such as Solvent Conforming to O-T-620 (See 3.3.1.1 on Page 13). Vehicle Exterior Surfaces of Structural Plastics shall be Cleaned with an Effective Solvent, such as Solvent Conforming to O-A-51 or O-T-620 (See 3.3.2.1 on Page 13). Unless Electrical or Other Functional Reasons Prohibit Painting, Exterior Surfaces of Molded Plastics and Ceramics shall be Solvent Wiped Using a Suitable Solvent such as Solvent Conforming to O-T-620 (See 3.3.3 on Page 14).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-S-5002 All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."  
TT-C-490 TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** MIL-P-21929 C Plastic Material, Cellular Polyurethane, Foam-in-Place, Rigid (2 Pounds per Cubic Foot)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-P-21929, The foam product that previously required CFC-11 as the blowing agent has been reformulated to use HCFC-141b and thus this specification no longer requires the use of a Class I ODS.

**ODS Use:** Specification Does Not Explicitly Call Out an ODS. However, in the Stock System, the Only Product Listed is Stanthane, by Expanded Rubber Plastic Corp. This Product Contains 25% CFC-11.

**ODS CHEM 1:** CFC 11

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-P-22332 B Painting, Priming, Exterior and Interior

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Take two test tubes and place 2 drops of the Distillate in each . Dissolve the first sample in 1 mL of Carbon Tetrachloride and add 1 drop of 1 percent Bromine in Carbon Tetrachloride (See 4.4.3.3, page 14).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-P-22581 C Plastic Tiles, Vibration Damping, Type III

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Tile Strips Shall Be Bonded With Adhesive Conforming To MIL-A-24456 To A Steel Bar Which Has Been Cleaned By Sand Blasting, Followed By Wiping With 1,1,1 Trichloroethane Conforming To O-T-620 (4.5.6.1.2 Page 9).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, Acetone, etc.

---

**Document Number:** MIL-P-231 A Propellant, Pyrocellulose

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-P-231, Revision A, has been made Inactive For New Design by Notice 1, dated 20 December 1995.

**ODS Use:** Total Moisture: Transfer A Weighed Portion Of 100 to 200g of The Sample To A 500ml Ballon Flask And Add 200ml Of Carbon Tetrachloride. Fill the Graduated Portion Of A Moisture Tube With Carbon Tetrachloride. (...) Disconnect The Apparatus And Wash The Water Layer With Fresh Carbon Tetrachloride (4.3.6 Page 6).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. NAVAIR has proposed the following modifications:

Substitute as follows. Paragraph 4.3.6 Total Moisture - Transfer a weighed portion of 100 to 200 gm. of the sample to a 500 ml dry, round bottom flask. Add 200 ml of dry benzene (distilled from calcium hydride). Connect the flask with a Dean-Stark apparatus fitted with an efficient water cooled condenser so that there will be no loss of vapors. Connect a calcium chloride tube to the top of the condenser to keep out atmospheric moisture. Heat the flask by means of a suitable steam, hot water, or oil bath so that the distillate falls from the end of the reflux condenser in a steady stream. Continue heating until the volume of the collected water remains constant for three successive readings taken at 30 minute intervals. Remove the apparatus from the bath and allow to cool to room temperature. The amount of collected water is read directly from the graduations of the Dean-Stark apparatus. Determine the volume of the water layer to the nearest 0.01 ml. Percent total moisture...

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**Document Number:** MIL-P-23377 F Primer Coatings: Epoxy, Chemical and Solvent Resistant  
**Level:** 1 **Class:** ALTAVAIL **Comments:**  
**Alternatives Listed In Spec:** MIL-P-23377 Class I and II Pri All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**ODS Use:** Class 2 Primers shall meet a Maximum Volatile Organic Compound (VOC) Content of 340 g/l when Tested as in 4.7 without the Use of 1,1,1-Trichloroethane or Other Halogenated Solvents. Class 3 Primers shall Contain an Inhibited Grade of 1,1,1-Trichloroethane such as Dow Chemical's CHLOROTHENE SM or Equivalent as the Primary Solvent, in Order to Meet the Same VOC Requirement (See 3.4.2 on Page 5). The Admixed Primers shall be Compatible with any Thinner Meeting MIL-T-81772, Type II (For Class 1 and 2 Primers) or 1,1,1-Trichloroethane (For Class 3 Primer) (See 3.4.3 on Page 5). When the Admixed Primer is Diluted with MIL-T-81772, Type II (For Class 1 or 2 Primers) or 1,1,1-Trichloroethane (For Class 3 Primer) Thinner, there shall be No Evidence of Incompatibility; and the Material shall be Suitable For Spray Application (See 3.9.2 on Page 8). Add a Sufficient Amount of MIL-T-81772, Type II (For Class 1 or 2 Primers) or 1,1,1-Trichloroethane (For Class 3 Primer) Thinner to Achieve Normal Spray Viscosity (See 4.7.14 on Page 17).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-C-83286 All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

**General Comments:** Delete Class III Coatings. NAVAIR has identified MIL-P-53022 type II as an acceptable substitute for use on aircraft support equipment and launch and recovery systems.

---

**Document Number:** MIL-P-25508 E Propellent, Oxygen

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634)

**ODS Use:** For the Alternate Particulate Test: The Particles Deposited in the Beaker shall be Removed by Flushing with a Wash Bottle Containing Approximately 50 milliliters of Trichloroethylene, MIL-C-81302 or Precision Cleaning, which has been Previously Filtered through a 1.2-Micron Millipore or Equivalent Membrane Filter. The Beaker shall be Washed Four Times. The Filter shall then be Washed with an Additional 50 milliliters of Filtered Trichloroethylene or Precision Cleaner (See 4.5.5.2 on Pages 12-13).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting MIL-C-81302 from test method.

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**Document Number:** MIL-P-26539      D      Propellants, Nitrogen Tetroxide

**Level:** 1      **Class:** ODS      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test Preparation: Set the temperature of a circulating low temperature Freon TF bath or equivalent, to 21.2 F. (4.5.4.2.1 page 21) Preparation of apparatus: Rinse thoroughly with filtered trichlorotrifluoroethane (4.5.8.2 page 29 and page 31) Trichlorotrifluoroethane is an applicable reagent for the test (4.5.8.4 and 4.5.8.6 page 31).

**ODS CHEM 1:** CFC 113      **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
Freon TF

**1ST LEVEL REFS:**

**General Comments:** The following is proposed contract language suggested by NAVAIR:

Substitute an ethylene glycol/water bath for Freon TF bath as follows. Paragraph 4.5.4.2.1 Preparation.... Set the temperature of a circulating low temperature ethylene glycol/water bath, or equivalent, to 21.2o +/- 1.8o F (-6o C +/- 1o C). ...

Substitute acetone for trichlorotrifluoroethane (Refrigerant - 113) as follows:

Paragraph 4.5.8.2. Preparation of Apparatus.... Then rinse with warm water and alcohol. Rinse thoroughly with filtered acetone (ACS reagent grade). Drain for a few seconds, then air or oven dry. Ensure that all glass and plastic tubing attached to the solvent filtering dispenser is clean by flushing thoroughly with filtered acetone (ACS reagent grade) and thoroughly dry.

Substitute chloroform for trichlorotrifluoroethane as follows:

Paragraph 4.5.8.4 Procedure. Assemble the type of apparatus shown in Figure 5. Place the tip of the delivery spout of the solvent filtering dispenser in direct contact with the top membrane filter. Introduce chloroform until the reservoir is full. Apply vacuum to the flask and allow approximately 250 ml of the chloroform to pass from the solvent filtering dispenser through the membranes and into the vacuum flask....

Delete and substitute as follows:

Paragraph 4.5.8.6 Reagents and Equipment. The following reagents and equipment shall apply as test conditions of Paragraph 4.5.8.    a. Reagents (1) Isopropyl alcohol, reagent grade (2) Filtered acetone (ACS reagent grade) (3) Distilled water (4) Liquid Detergent, water-soluble (5) Chloroform (ACS reagent grade)

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**Document Number:** MIL-P-27401 C Propellent, Pressurizing Agent, Nitrogen

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Particles Deposited in the Beaker shall be Removed by Flushing with a Wash Bottle Containing Approximately 50 Milliliters of Trichlorotrifluoroethane MIL-C-81302 or Equivalent Cleaner, which has been Previously Filtered through a 1.2 Millipore or Equivalent Membrane Filter. The Beaker shall be Washed Four Times. The Filter shall then be Washed with an Additional 50 Milliliters of Filtered Trichlorotrifluoroethane (See 4.5.10.2 on Page 14).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend using particulate content test method in Paragraph 4.5.10.1. Do not use alternate test method in Paragraph 4.5.10.2. Recommend deleting Paragraph 4.5.10.2.

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**Document Number:** MIL-P-43155 F Printing Plant, Special Warfare, Transportable, (Lightweight) Model 800

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Government furnished property indicated in Table I will be furnished to the contractor by the Government, and shall be a part of the printing plant (3.8, page 7). One Halon 1211 Fire Extinguisher will be furnished to the contractor (Table I, page 8). (Amendment 1, page 1).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Bromochlorodifluoromethane (Halon-1211)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a suitable dry chemical extinguisher having an equivalent UL rating.

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**Document Number:** MIL-P-46843 C Printed Wiring Assemblies, Production of

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-P-46843 has been Cancelled by Revision C, Notice 3, dated 12 June 1995, and is not superseded by another document. MIL-P-46843 has been made inactive for new design after 8 July 1991 by Revision C, Notice 2, dated 8 July 1991. For new design use MIL-STD-2000.

**ODS Use:**

Solvents Conforming to O-T-620 and MIL-C-81302 are Listed as Applicable Solvents on Table I (Page 25). MIL-C-81302 (Type 2) and O-T-620 are Listed as Applicable Cleaning Solvents in Section 6.4.a (Page 37). MIL-C-81302, Type 2, is a Component of Cleaning Solutions 1, 2, 3 and 6 (See 6.4.b on Page 37). Trichlorotrifluoroethane is a Component of Cleaning Solutions 4 and 5 (See 6.4.b on Page 37).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

CFC 113

**Comments:**

**PRIMARY REFS:**

O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-C-81302

**1ST LEVEL REFS:**

MIL-I-46058

All references to ODSs have been removed from this specification. MIL-I-46058, Revision C, Amendment 7, dated 14 September 1993, has removed all ODS references. Paragraph 4.7.1.1(c) has been Revised to state " the test panel shall be cleaned of all traces of rosin flux and other contaminants by scrubbing in suitable solvents normally used to clean contaminants from printed wiring and terminal- board assemblies." Paragraphs 4.7.1.1(c) (1), 4.7.1.1(c) (2) and 4.7.1.1(c) (3) are deleted in their entirety.

MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-P-50265                      Primer, Electric, XM114 Parts For , The Loading Assembling, And Packing

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Freon TF And Water Immersion - The Primer Assembly Shall Comply With The Pin and Cup resistance requirements. After Freon TF And Water Immersion (3.4. Page 3).  
The Primer Assembly Shall Be Immersed For 48 Hours In Freon TF (4.4.2.2 Page 11).

**ODS CHEM 1:** CFC 113                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of Freon TF with alternative solvent identified by the preparing activity. A proposed alternative is chloroform.

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**Document Number:** MIL-P-50884 C Printed-Wiring, Flexible And Rigid-Flex

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-P-50884, Revision C, Amendment 4, dated 9 April 1993, does not remove the ODS references.

**ODS Use:** Testing (Solder Mask Cure And Adhesion) Shall Be Done Prior To And Subsequent To Soldering Using A RMA Flux (Or Equivalent) In Accordance With MIL-F-14256 And Defluxing Using Trichloroethane 1,1,1 (Or Equivalent) (See 4.8.4.1 On Page 36).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-I-46058

All references to ODSs have been removed from this specification. MIL-I-46058, Revision C, Amendment 7, dated 14 September 1993, has removed all ODS references. Paragraph 4.7.1.1(c) has been Revised to state " the test panel shall be cleaned of all traces of rosin flux and other contaminants by scrubbing in suitable solvents normally used to clean contaminants from printed wiring and terminal- board assemblies." Paragraphs 4.7.1.1(c) (1), 4.7.1.1(c) (2) and 4.7.1.1(c) (3) are deleted in their entirety.

MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:** Replace 1,1,1 Trichloroethane with NON-ODS cleaner normally used for electronics defluxing. Benchtop type defluxing cleaners include Isopropyl Alcohol, Isopropyl Alcohol/Ethyl Alcohol, EC-7M, Ionox BC, etc. Acceptable defluxing cleaners used in manufacturing are tested under the IPC phase 2 testing program.

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**Document Number:** MIL-P-51529                      Packaging of Decontaminating Agent DS2 in 1-1/3 Quart Can and 5  
Gallon Pail

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), T

**ODS Use:** The Cans shall be Cleaned by Vapor Degreasing (Finish 4.10 of MIL-STD-171) Using a Solvent Conforming to O-T-634, Type II, or MIL-T-81533 (See 3.3.1.2 on Page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**General Comments:** Delete MIL-T-81533 and investigate addition of aqueous, semiaqueous, or hydrocarbon cleaning processes.

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**Document Number:** MIL-P-52632 D Power Plant, Utility, MUST Hospital System

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Refrigerant Employed shall Conform to BB-F-1421, Type 114. The Amount of Refrigerant Charge For System No. 1 (Lower) shall be 39 Pounds of Refrigerant R-114 and For System No. 2 (Upper) shall be 36 Pounds of Refrigerant R-114 (See 3.12.2.3 on Page 16). Section 3.23 (Page 20) Requires the Government to Provide 1 Fire Extinguisher (NSN 4210-00-555-8837) which Contains 2-3/4 Pounds of Halon 1301. R-114 is Used for the Leak Test (See 4.6.3.9.1 on Page 34). For the Refrigeration Moisture Content Test, After an Additional Period of 1 Hour [of Continuous Operation], Withdraw a Sample of Refrigerant Vapor from the Low Pressure Side and Determine the Moisture Content by One of the Methods Specified in BB-F-1421 (See 4.6.3.9.2 on Page 34).

**ODS CHEM 1:** CFC 114 **ODS CHEM 2:** Halon 1301

**Comments:**

**PRIMARY REFS:** BB-F-1421  
BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-114 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-124, HFC-236fa and HFC-134a. Recommend replacement of Halon 1301 extinguisher with a CO2 extinguisher having an equivalent UL rating. Change reference to BB-F-1421 to ARI Standard 700.

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**Document Number:** MIL-P-55110 D Printed Wiring Board, General Specification for

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-P-55110, Revision E, dated 22 December 1993, removes the ODS references by stating that defluxing procedure is at the contractor's discretion; both polar and nonpolar solvents may be required (6.5.1 page 33). 1,1,1-Trichloroethane is no longer referenced as an applicable solvent for defluxing (Paragraph 4.8.4.1).

**ODS Use:** For the Testing of Solder Mask Cure and Adhesion: Testing shall be done Prior to and Subsequent to Soldering Using a RMA Flux, Or Equivalent, in accordance with MIL-F-14256 and Defluxing Using Trichloroethane 1,1,1 or Equivalent (See 4.8.4.1 on Page 25).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

MIL-I-46058

All references to ODSs have been removed from this specification. MIL-I-46058, Revision C, Amendment 7, dated 14 September 1993, has removed all ODS references. Paragraph 4.7.1.1(c) has been Revised to state " the test panel shall be cleaned of all traces of rosin flux and other contaminants by scrubbing in suitable solvents normally used to clean contaminants from printed wiring and terminal- board assemblies." Paragraphs 4.7.1.1(c) (1), 4.7.1.1(c) (2) and 4.7.1.1(c) (3) are deleted in their entirety.

**General Comments:**

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**Document Number:** MIL-P-7254 F Propellant, Nitric acid

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Calibration: Prepare a series of water standards containing (...) g H<sub>2</sub>O/ml of acetonitrile solution and a series of reference beam compensating solutions substituting tetrachloromethane for the water (4.5.8.3 page 13). Carbon Tetrachloride is an applicable test reagent (4.5.8.4 page 16).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane

**1ST LEVEL REFS:** MIL-P-27401

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative to carbon tetrachloride is chloroform.

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**Document Number:** MIL-P-82823                      Primer, Adhesive, Chlorinated Rubber Base

**Level:** 1                      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-P-82823 has been Cancelled by Notice 1, dated 25 February 1993, and is not superseded by another document.

**ODS Use:** For the Peel Strength, Rubber-To-Metal Test: Clean Bonding Surfaces of Steel Strips by Vapor Degreasing with 1,1,1-Trichloroethane Conforming to MIL-T-81533. Gritblast with 60-Mesh Sand or 100- to 200-Mesh Zirconium Silicate, then Repeat Vapor Degreasing Process (See 4.5.5.a on Page 8).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-P-85891 A Plastic Media, For Removal of Organic Coatings

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The solvent shall be prepared from Trichlorotrifluoroethane and fluid conforming to P-D-680. Two solvent mixtures shall be prepared to yield the following: specific gravities: mixture A shall be 0.1 greater than the specific gravity of the finished product (for types 2, 3, and 4, use pure Trichlorotrifluoroethane or prepare a blend of P-D-680 and a perfluoroalkane solvent, such as 3M fluorinet, FC-5311, with a specific gravity of 2.03). Mixture B shall be 0.10 less than the specific gravity of the finished product. (4.5.9.1 page 15).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:** Recommend replacement of solvent preparations containing Trichlorotrifluoroethane with an HFC or PFC fluid which gives equivalent specific gravities.

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**Document Number:** MIL-P-87896 Propellent, Nitrogen Trifluoride

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Prior to Performing the Total Reactive Fluorides Test, the Individual Components of the Test Apparatus must be Flushed with Trichlorotrifluoroethane (See 4.5.1.1 on Page 5).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with an aqueous cleaning process or acetone.

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**Document Number:** MIL-R-10735 K Refrigeration Units, Mechanical, Panel Type, Gasoline Engine

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant Shall Be Type 12 of BB-F-1421 (See 3.4.6).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-R-12574 K Refrigeration Units, Mechanical Panel Type for Refrigerator, Field, Portable (150 cubic foot)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-R-12574, Revision K, Amendment 2, dated 15 March 1990, does not remove the ODS reference. MIL-R-12574 has been replaced by MIL-R-0012574, Revision L, dated 22 May 1992. MIL-R-0012574 has removed the direct ODS reference by Revisionising Paragraph 3.4.4 (Page 8 of MIL-R-12574) to read "The refrigerant shall be R-134a (Tetrafluoroethane)" (See 3.3.4 on Page 6 of MIL-R-0012574).

**ODS Use:** The Refrigerant Shall Conform to Type 12 of BB-F-1421 (See 3.4.4 on Page 8). Each Complete Refrigeration Unit Shall be Evacuated and Dehydrated, and Operationally Charged with The Refrigerant Specified in 3.4.4 (See 3.5.2.3 on Page 10). (Note: MIL-R-0012574L is Used in Lieu of This Specification)

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421 **Comments:** BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-STD-759  
MIL-C-46168 All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:**

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**Document Number:** MIL-R-13312 N Refrigeration Units, Mechanical, Panel Mounted for Refrigerator, Prefabricated, Panel Type

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-R-13312, Revision N, Amendment 1, dated 15 March 1990, does not remove the ODS reference. MIL-R-13312 has been replaced by MIL-R-0013312, Revision P, dated 19 June 1992. MIL-R-0013312 removes the direct ODS reference by Revisionising Paragraph 3.3.8 (Page 7 in MIL-R-13312) to read "Refrigerant shall be type R-134a (Tetrafluoroethane)" (See 3.3.4 on Page 6 of MIL-R-0013312).

**ODS Use:** Refrigerant Shall Be Type 12 of BB-F-1421 (See 3.3.8 on Page 7).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421 **Comments:** BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-P-23377 All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

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**Document Number:** MIL-R-16417 J Repair kits, CO2, inflatable life preservers

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-R-16417, Revision J, Notice 1, Dated 10 December 1990, NAVSEA 03G1 has proposed an update to eliminate the use of Methyl Chloroform from the specification. The change has been submitted to the NAVSEA specification control board and reads, "Delete Methyl Chloroform from sections 3.8.1 (a) and 3.8.1.1 (c) and substitute Bio-Tek #134 Hi-Solv."

**ODS Use:** Instruction for repairing small damaged areas: wipe the repair area and coat side of patch with Methyl Chloroform and allow to dry thoroughly (3.8.1 (a) page 3). Instructions for repairing large damaged areas: wipe the coated side of the patch, and also an area inside the damaged area large enough to take a patch, with Methyl Chloroform and allow to dry thoroughly (3.8.1.1 (c) on page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Methyl Chloroform

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** MIL-R-16743 E Refrigerating Plants and Systems, Mechanical and Refrigeration System Components Dichlorodifluoromethane Type 12, Naval Shipboard

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-R-16743, Revision F, dated 1 March 1991, does not remove the ODS references.

**ODS Use:** The Refrigerating Equipment Shall Be Designed For Use with Dichlorodifluoromethane (See 3.3 on Page 5). All Refrigerant Containing Components Exclusive of Valves and Fittings Shall Be Cleaned, Dehydrated, Provided with Holding Charge of Refrigerant and Sealed Prior to Delivery (See 3.3.1 on Page 5). Paragraph 1.1 and Paragraph 30.1.5(f) of Appendix A indicate that the refrigerant shall be R-12 (dichlorodifluoroethane).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of reference to R-12 and replacing with HFC-134a.

---

**Document Number:** MIL-R-17852 C Reducers, Oxygen Pressure

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-R-17852, Revision C, Amendment 1, dated 29 September 1995, has removed the ODS references. Paragraph 3.5.3.4 has been revised to read "Prior to assembling, all internal surfaces of the reducer shall be degreased and all components shall be cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:** Prior to Assembling, All Internal Surfaces of the Reducer Shall Be Degreased by Flushing with a Cleaning Compound Conforming to MIL-C-81302 or by Using a Vapor Phase Degreaser in Accordance with MIL-T-81533 (See 3.5.3.4 on Page 5). Components Shall Be Cleaned by Immersing, Scrubbing or Pressure Spraying with MIL-C-81302 or Ultrasonics may be used in Conjunction with MIL-C-81302 Cleaning Compound (See 3.5.3.4 on Page 5).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

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**Document Number:** MIL-R-21098 E Refrigerators; Frozen Food Cabinets; and Combination Refrigerators-  
Frozen Food Cabinets, Mechanically Refrigerated, Commercial, Self  
Contained, Naval Shipboard

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The Condensing Units Shall Be Designed for Operation with Refrigerant 12 (Dichlorodifluoromethane) or Refrigerant 22 (Monochlorodifluoromethane) Conforming to BB-F-1421 (See 3.5.2 on Page 7). All Refrigerant Containing Parts on the High Pressure Side of the Refrigeration System Shall Withstand, Without Damage, an Air and Gas Test of 300 Pounds per Square Inch (PSIG) for R22 and 235 PSIG for R12 Refrigerants (See 4.4.4 on Page 22). The Refrigerant Containing Parts on the Low Pressure Side of the Refrigeration System Shall withstand without Damage an Air and Gas Test of 150 PSIG for R22 and 140 PSIG for R12 Refrigerants (See 4.4.4 on Page 22).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421

**Comments:**

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-R-22928 E Receivers, Liquid Refrigerant, R12

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-R-22928, Revision B, Notice 1, dated 3 August 1987, does not remove the direct ODS reference.

**ODS Use:** Receiver Shall Be Suitable for Storage of Liquid Refrigerant 12, Conforming to Type 12 of BB-F-1421 (See 3.4 on Page 4).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-R-24085 A Refrigerating Unit Centrifugal for Air Conditioning

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The unit shall be designed to chill circulating water for air conditioning application by use of a centrifugal compressor utilizing R-11 as the refrigerant unless otherwise specified (see 6.1). Where refrigerant other than R-11 is specified the pressure ranges of gages, switches and pressure tests shall be compatible with the refrigerant specified (see 3.2 on page 4).

**ODS CHEM 1:** CFC 11 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)

**1ST LEVEL REFS:** MIL-R-16743 MIL-R-16743, Revision F, dated 1 March 1991, does not remove the ODS references.

**General Comments:** Recommend Cancellation of this specification or making this specification inactive for new design since the U.S. Navy no longer uses CFC-11 centrifugal chillers on ships except in a few older ships which will eventually be retired or have the units replaced.

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**Document Number:** MIL-R-2470 E Refrigerators, Mechanical, Mortuary

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) MIL-R-2470 has been Cancelled by Revision E, Notice 1, dated 31 August 1993, and is Superseded by A-A-50056.

**ODS Use:** The Refrigerant Shall Conform to Type 12, 22, or 502 of BB-F-1421 (See 3.3.8 on Page 5).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**Comments:**

**PRIMARY REFS:** BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-R-36554

Refrigerator, Mechanical: Biologicals, and Whole Blood, Portable, Field

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-R-36554 has been Cancelled by Notice 1, dated 13 December 1988, and is not superseded by another document.

**ODS Use:** Refrigerant shall be dichlorodifluoromethane conforming to type 12 of BB-C-310 (3.3.5 page 5). **Comments:** BB-C-310 is cancelled and superseded by BB-F-1421.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-R-3860 E Refrigerators, Mechanical, Biological, Low Temperature

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) MIL-R-3860 has been Cancelled by Revision E, Notice 1, dated 24 October 1994, and is superseded by A-A-52146. A-A-52146 does not allow the use of any Ozone Depleting Chemicals in either the operation or the manufacture of the Low-Temperature Refrigerators. This Cancellation Notice is not yet available on DODISS.

**ODS Use:** There Shall Be No Refrigerant Leaks and the Moisture Content of Refrigerant at 100 Degrees F Shall Not Exceed 10 ppm for the Type 12 Refrigerant and 45 ppm for the Type 22 Refrigerant After Completion of Test Specified in 4.5.2.5 (See 3.1.2 on Page 4). Refrigerants shall Conform to Type 12 or Type 22 of BB-F-1421 (See 3.4.7 on Page 6).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421 **Comments:**  
BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HFC-134a, R-404a and R-507.

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**Document Number:** MIL-R-39016 D Relays, Electromagnetic, Established Reliability, General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-R-39016, Revision E, dated 18 July 1994, has deleted the ODS reference to freon.

**ODS Use:** SMALL PARTICLE INSPECTION: Perform small particle cleaning on relays, cans and any other internal parts and subassemblies that constitute the final assembly (See Section 60 on Page 46 of Appendix A). **Comments:** Appendix A May be used as a guideline (See 4.8.2 on Page 21).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-R-39017 E Resistors, Fixed, Film (Insulated) Established Reliability, General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-R-39017, Revision E, Amendment 2, dated 7 January 1993, has removed the ODS references. Paragraph 4.7.14(d) has been deleted in its entirety.

**ODS Use:** Post Test Conditioning: The Resistors Shall Be Inserted In A Vapor Degreasing Apparatus Containing Boiling 1-1-1 Trichloroethane For 1.5 + .5, Minutes (4.7.14d Page 29).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**

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**Document Number:** MIL-R-40633 C Refrigeration Units, Mechanical (Remote Type) For Refrigeration, Prefabricated, Panel Type

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Refrigerant Shall Conform to Type 12 of BB-F-1421 (See 3.4.6 on Page 7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-STD-279

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-R-43031 E Refrigeration Units, Mechanical, Panel Type

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant Shall Conform to Type 12 of BB-F-1421 (See 3.4.9 on Page 7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-STD-279

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-R-43592 A Refrigerators, Mechanical, Explosion Proof

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The Refrigerant shall Conform to Type 12, 22 or 502 of BB-F-1421 (See 3.3.3 on Page 4).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**PRIMARY REFS:** BB-F-1421 **Comments:**  
BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of references to R-12 and R-502 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, and HFC-134a (R-12 alternatives) and R-402A, R-402B, R-404A and R-507 (R-502 alternatives).

---

**Document Number:** MIL-R-43891 A Refrigeration Unit, Electric, For Insulated Military Van Containers

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-R-43891, Revision A, Amendment 1, dated 4 June 1979, does not remove the ODS references. MIL-R-43891, Revision A, Amendment 1, dated 4 June 1979, has been Superseded by MIL-R-0043891, Revision B, dated 20 March 1992. MIL-R-0043891 has replaced all references to CFC-12 with the non-ODS refrigerant R-134a.

**ODS Use:** The Refrigerant Shall Be Type 12 of BB-F-1421 (See 3.5.9 on Page 7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-STD-279

**General Comments:**

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**Document Number:** MIL-R-43900 B Refrigerators, Freezers, Prefabricated, Mechanical Commercial Walk-In

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** Refrigerant Shall Conform to Type 12, 22 or 502 of BB-F-1421 (See 3.4.2).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** R 502

**Comments:**

**PRIMARY REFS:** BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

BB-F-1421 BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of references to R-12 and R-502 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22, and HFC-134a (R-12 alternatives) and R-402A, R-402B, R-404A and R-507 (R-502 alternatives).

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**Document Number:** MIL-R-44035 A Refrigeration Unit, Mechanical

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Refrigerant Shall Conform to Type 12, of BB-F-1421 (See 3.3.5 on Page 6). Each Complete Refrigeration Unit Shall Be Evacuated and Dehydrated, and Operationally Charged With the Refrigerant Conforming To Type 12 of BB-F-1421 (See 3.4.2 on Page 8).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-R-46082 B Retaining Compounds Single Component, Anaerobic

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** One Milliliter Of The Compound Shall Be Placed In 10ml Of A Solution Of 1,1,1-Trichloroethane Containing 5 Percent By Volume Of Acetone (Amendment 6.4.6.1.4 Page 1).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-S-22473

All references to ODSs have been removed from this specification. MIL-S-22473, Revision E, Amendment 8, dated 18 November 1993, deletes the use of 1,1,1-Trichloroethane in the solubility test (Paragraph 4.6.1.4 has been deleted entirely).

MIL-S-22473, Revision E, Interim Amendment 7, dated 30 July 1993, deletes the use of 1,1,1-Trichloroethane for degreasing the surface of parts:

"The Solvent 1-1-1 Trichloroethane is no longer mandated for degreasing the surface parts. Solvent selection is left to the discretion of the manufacturer (See Page 1 of Interim Amendment 7).

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible alternative for 1,1,1-trichloroethane is trichloroethylene.

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**Document Number:** MIL-R-52915 A Recharge / Service Kit, Fire Extinguisher, Monobromotrifluoromethane (CF3Br), Skid Mounted, Electric- Motor Driven

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-R-52915, Revision B, dated 30 September 1994, does not remove the ODS references. Revision B also adds a reference to Halon 1301 in paragraph 3.1 (Page 3): "The recharge/recovery unit shall be capable of filling 5-, 7-, and 14-pound fire extinguisher cylinders with monobromotrifluoromethane from a 150-pound halon supply cylinder. The monobromotrifluoromethane (Halon 1301) shall conform to MIL-M-12218 and be supplied in a cylinder with a dip tube installed."

**ODS Use:** This Specification Covers a Monobromotrifluoromethane Recharge/Recovery Unit Operated With Compressed Air For Charging and Evacuating a CF3Br Fire Extinguisher (See 1.1 on Page 1). The Kit Shall Consist of a Pump, an Electric Motor, and All Necessary Piping, Hoses, Valves, Scales, Storage Box, Lifting Device, and Brackets Required For Functional Completeness When Charging a Monobromotrifluoromethane (Halon 1301) Fire Extinguisher From a 150-Pound Storage Cylinder (See 3.2 on Page 4).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:** MIL-C-81751

All references to ODSs have been removed from this specification. MIL-C-81751, Revision B, Amendment 1, dated 12 January 1994, removes the ODS reference. MIL-T-81533 has been deleted from the applicable documents section. Also the phrase "with a suitable solvent such as trichloroethylene, O-T-634; perchloroethylene, O-T-236; or 1,1,1-Trichloroethane, MIL-T-81533" (See 3.4.3 on page 8, Line 10, after "TT-C-490") has been deleted.

MIL-C-81797

All references to ODSs have been removed from this specification. MIL-C-81797, Revision A, dated 12 January 1994, has removed the ODS reference in Paragraph 3.4.3.

**General Comments:** Specification is for equipment parts that use an ODS. However, the specification does not require the use of an ODS. No SAO approval is required. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment.

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**Document Number:** MIL-R-81202 D Receiver Assembly, Nitrogen, For LAU-7 Series Launchers

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Ethyl Alcohol, Isopropyl Alcohol MIL-R-81202, Revision D, Amendment 1, dated 23 June 1995, deletes the ODS references. Amendment 1 deletes Freon TF and Trichlorotrifluoroethane (113) from Paragraphs 6.7.2.1.1 and 6.7.2.2.1.

**ODS Use:** It is Suggested that Parts be Flushed with Freon TF or Trichlorotrifluoroethane, Isopropyl Alcohol or Ethyl Alcohol (See 6.7.2.1.1 on Page 24). Water, Freon TF or Trichlorotrifluoroethane May Be Used to Flush the Receiver (See 6.7.2.2.1 on Page 24).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** Freon TF  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend use of Isopropyl Alcohol or Ethyl Alcohol as specified. Delete references to Freon TF and Trichlorotrifluoroethane from the specification.

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**Document Number:** MIL-R-81261 A Rain Repellent, Glass Window and Windshield, For In-Flight Application

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Other Repellent Formulations

**ODS Use:** Freon TF, (94.95 parts by volume) is an ingredient in one Acceptable Repellent Formulation (See 6.4. on page 12).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:** MIL-P-23377 All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:** Recommend cancellation of specification since it is no longer used.

---

**Document Number:** MIL-R-81835 Remover, Organic Coating, Hot Tank Type

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, as referenced in MIL-R-81835, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**ODS Use:** 6.1 on page 9, Rinse With Warm Water and Spray the Parts with a Water Displacing Preservative, MIL-C-81309.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81309

All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**1ST LEVEL REFS:** MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** MIL-C-81309 has been reformulated to remove ODS.

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**Document Number:** MIL-R-82047 B Refrigerators, Mechanical, Storage Stand (For Bulk Milk Dispensers)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The refrigerant shall be dichlorodifluoromethane (CFC 12) or chlorodifluoromethane (HCFC-22). The refrigerants shall conform to applicable standards of the American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. (See 3.7.3 on Page 6)

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** OO-D-450  
All references to ODSs have been removed from this specification. OO-D-450, Revision C, Amendment 1, dated 12 February 1993, removes the ODS references. Paragraph 3.6.3 (which references R12) has been Revised to read "Fluorocarbon refrigerants shall conform to BB-F-1421. Refrigerants which would harm the earth's ozone layer shall not be used."

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-R-83404 Rocket Motor Manufacturing, Rocket Motor SR110-AD-1

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634)

**ODS Use:** Trichloroethylene Per O-T-634 or 1,1,1-Trichloroethane Per MIL-T-81533 Shall Be Used For Cleaning of Parts and Components of the Rocket Motor (See 4.3 on Page 3).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Metal Cleaning: The majority of general metal cleaning applications previously performed by solvent immersion or vapor degreasing with Class I ODS solvents can be replaced with aqueous (alkaline, surfactant , etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 Type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-entry KNI 2000, etc. Wipe Solvent: Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

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**Document Number:** MIL-R-83536 Relays, Electromagnetic, Established Reliability, General Specification For

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Freon Is An Applicable Solvent For The Small Particle Inspection (Appendix A 60 Pages 63-34).

**ODS CHEM 1:** Freon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:** For particle inspection, recommend deletion of references to freon and replacement with HFC or PFC.

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**Document Number:** MIL-R-914 Resistor Networks, Fixed, Film, Surface Mount, Established Reliability,  
General Specification For

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Perchloroethylene (O-T-236), I All references to ODSs have been removed from this specification. MIL-R-914, Amendment 1, dated 1 September 1993, removes the ODS reference. Paragraph 4.7.6(b) has been Revised to reads " If necessary, a soft cloth moistened with 91% isopropyl alcohol or suitable solvent shall be used to remove all remaining flux."

**ODS Use:** Residue Flux Shall Be Removed From The Terminations By Rinsing In A Suitable Solvent, eg 1,1,1 Trichloroethane, Perchloroethylene, Isopropyl Alcohol, Or Freon T-E35 (4.7.6b Page 31).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Freon T-E35

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Freon T-E35

**1ST LEVEL REFS:** MIL-STD-202 All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-R-9198 C Regulator, Oxygen, High Pressure, Type MA-1

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Component Cleaning of Regulator by Immersing, Scrubbing, Spraying or Ultrasonics and Vapor Degreasing with MIL-C-81302 (See 3.11.2 on Page 8).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-STD-1359

**General Comments:** Recommend replacing MIL-C-81302 with another solvent such as Trichloroethylene, HCFC-225 or HCFC-141b. Solvent should be oxygen compatible. If the assembly can be dried adequately, the Navy Oxygen Cleaner (NOC) aqueous cleaning process may be acceptable.

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**Document Number:** MIL-S-12730 E Signals, Illumination, Red Star, Distress, Parachute, M131 Parts And Loading, Assembling And Packing

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Moisture Content: A 50g Sample (Underscore) + 0.1g Shall Be Added To A 500ml Volumetric Flask Containing Approximately 300 To 400ml Mixture Of Carbon Tetrachloride/Methanol 50/50. (4.5.2 Page 47).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible alternative to carbon tetrachloride is methylene chloride.

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**Document Number:** MIL-S-13565 D Sinks, Photographic Processing, Temperature Controlled

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.9.1 Page 8 Requires Use of R-12 Based Refrigeration Unit Using R12, BB-F-1421.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** MIL-S-14195 A Styrene Monomer

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Recrystallized TBC: A Preliminary Recrystallization Shall Be Made By Dissolving 4g Of TBC In 5g Of Carbon Tetrachloride. (...) To Prepare The Crystals Of TBC For The Stock TBC Solution, 21g Of TBC Shall Be Dissolved In 30g Of Carbon Tetrachloride Using Heat (4.5.7.2.2d Page 10).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Page 10, Paragraph 4.5.7.2.2.d: delete Method B in 4.5.7.2 and subsequent Paragraphs; use only Method A; carbon tetrachloride is prohibited and shall not be used.

---

**Document Number:** MIL-S-14760 Silica (For Use In Ammunition)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Suspension - Major Defect - (Defect Code 08001).-Transfer Three Grams of Silica To A Tube Containing 100 ml of Trichlorotrifluoroethane and Shake For Two (2) Minutes To Dispense the Silica (See 4.3.5 on Page 8).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-S-22473 E Sealing, Locking and Retaining Compounds: (Single Component)

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

All references to ODSs have been removed from this specification. MIL-S-22473, Revision E, Amendment 8, dated 18 November 1993, deletes the use of 1,1,1-Trichloroethane in the solubility test (Paragraph 4.6.1.4 has been deleted entirely).

MIL-S-22473, Revision E, Interim Amendment 7, dated 30 July 1993, deletes the use of 1,1,1-Trichloroethane for degreasing the surface of parts:

"The Solvent 1-1-1 Trichloroethane is no longer mandated for degreasing the surface parts. Solvent selection is left to the discretion of the manufacturer (See Page 1 of Interim Amendment 7).

**ODS Use:** One Milliliter of the Compound Shall be Placed in 10 ml of a Solution of 1,1,1 Trichloroethane Containing 5 % by Volume of Acetone (See 4.6.1.4 on page 1 of amendment 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-S-22805 A Spray Kit, Self Pressurized

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-S-22805, Revision B, dated 31 March 1993 deletes the requirement to use R-12 propellant (See Paragraph 3.3.2 on Page 6 of Revision A) and substitutes a requirement to use R-22 or R-134a (See 3.3.2.1 and 3.3.2.2 on Page 4 of Revision B). MIL-S-22805, Revision B, Amendment 1, dated 16 December 1993, deletes references to R-22.

**ODS Use:** 3.3.2 on Page 3, The Can Shall be Pressurized with 15 Ounces Net Weight of Propellant No. 12 (Dichlorodifluoromethane) Conforming to BB-F-1421.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-S-22833 C Strainers, Sediment, Refrigerant -12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Design And Constrution Of The Strainer Shall Be As Specified Herein And In Accordance With MS17242 For Use With Refrigerant Conforming To Type 12 Of BB-F-1421 (See 3.4 On Page 3). For The Capacity Test, The Strainer Shall Be Connected To A Refrigeration System Or Testing apparatus Having A Capacity Equal To Or In Excess Of The T.R. Rating Of The Strainer To Be Tested (See 4.3.1 On Page 7).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MS-17242

**General Comments:** Specification is for equipment parts that use an ODS. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment. Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

---

**Document Number:** MIL-S-43852 B Sandwich Unit, Mechanically Refrigerated

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-S-43852 has been Cancelled by Revision B, Notice 2, dated 11 October 1994, and is superseded by A-A-52147. A-A-52147 does not allow the use of any Ozone Depleting Chemicals in either the operation or the manufacture of the Sandwich Unit. This Cancellation Notice is not yet available on DODISS.

**ODS Use:** 3.3.2 Refrigerant Shall Conform to Type 12 of BB-F-1421.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-S-43926 J Suit, Chemical Protective

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride Absorption: When Tested In Accordance With 4.4.5, The Carbon Tetrachloride absorption Of the Laminate Material In The End Item Shall Show No Individual Sample Result Less Than 1.3 mg/cm<sup>2</sup> (3.10 Page 51) And (Table IV Page 73).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** MIL-C-44034 The reference to "Halon" as an absolute white standard in this specification is not considered an ODS reference.

MIL-C-43858

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** MIL-S-45344 H Semitrailer, Van; Commercial (Furniture, Personnel, Refrigerator, Cargo, And Side Curtain) 7 To 35 Ton

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** The Refrigerant Shall Be Dichlorodifluoromethane Or Monochlorodifluoromethane (3.8.3.9 Page 21).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of reference to dichlorodifluoromethane (R-12) and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include R-507, HFC-134a and R-404A.

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**Document Number:** MIL-S-45743 E Soldering, Manual Type, High Reliability Electrical and Electronic Equipment

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-S-45743 has been Cancelled by Revision E, Interim Amendment 4, Notice 2, dated 27 February 1995, and is superseded by MIL-STD-2000A. MIL-S-45743, Revision E, Interim Amendment 4, Notice 1, dated 15 October 1976, makes MIL-S-45743 Inactive for new design. For new design use MIL-STD-2000.

**ODS Use:**

Trichlorotrifluoroethane (MIL-C-81302, Type II) and 1,1,1-Trichloroethane (O-T-620) are Listed as Cleaning Solvents (See 6.3.a(3) and 6.3.a(4) on Page 21). Trichlorotrifluoroethane (MIL-C-81302, Type II) is listed as a Constituent of Cleaning Solutions (1), (2), (3), and (6) (See 6.3.b on Page 21). Tetrachlorodifluoroethane (CFC-112) is Listed as a Constituent of Cleaning Solutions (4) and (5) (See 6.3.b on Page 21).

**ODS CHEM 1:**

CFC 113

**ODS CHEM 2:**

CFC 112

**Comments:**

**PRIMARY REFS:**

MIL-C-81302

Tetrachlorodifluoroethane (CFC-112)

**1ST LEVEL REFS:**

MIL-P-46843

MIL-P-46843 has been Cancelled by Revision C, Notice 3, dated 12 June 1995, and is not superseded by another document. MIL-P-46843 has been made inactive for new design after 8 July 1991 by Revision C, Notice 2, dated 8 July 1991. For new design use MIL-STD-2000.

MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-S-46163 A Sealing Lubricating and Wicking Compounds: Thread-Locking, Anaerobic, Single-Component

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-S-46163, Revision A, Amendment 2, dated 7 May 1993, does not delete the ODS references.

**ODS Use:** One Milliliter of the Compound shall be Placed in 10 mL of a Solution of 1,1,1 Trichloroethane Containing 5 percent By Volume of Acetone (See 4.6.1.4 Page 1 of Amendment #2)

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A proposed alternative to 1,1,1-trichloroethane is trichloroethylene.

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**Document Number:** MIL-S-5002 D Surface Treatments and Inorganic Coatings For Metal Surfaces of Weapons Systems

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Perchloroethylene (O-T-236) All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."

**ODS Use:** Vapor Degreasing Shall Be Performed Using Either Perchloroethylene Conforming to O-T-236 or 1,1,1-Trichloroethane Conforming to MIL-T-81533 or O-T-620 (See 3.4.1 on Page 4) 1,1,1-Trichloroethane is Also Used in the Acid Acceptance Test (See 3.4.1.1 on Page 4).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-T-81533

**1ST LEVEL REFS:** MIL-F-7179 All references to ODSs have been removed from this specification. Please Note: MIL-C-85054, Revision B, dated 5 November 1994, as referenced in MIL-F-7179, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION FOR MIL-C-85054 IS FLAMMABLE; USE WITH CAUTION.

MIL-C-81751 All references to ODSs have been removed from this specification. MIL-C-81751, Revision B, Amendment 1, dated 12 January 1994, removes the ODS reference. MIL-T-81533 has been deleted from the applicable documents section. Also the phrase "with a suitable solvent such as trichloroethylene, O-T-634; perchloroethylene, O-T-236; or 1,1,1-Trichloroethane, MIL-T-81533" (See 3.4.3 on page 8, Line 10, after "TT-C-490") has been deleted.

**General Comments:**

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**Document Number:** MIL-S-52744 A Service Unit, Refrigeration System

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-S-52744 has been Cancelled by Revision A, Amendment 1, Notice 1, dated 25 November 1994, and is not superseded by another document.

**ODS Use:** 5.1 and 5.2 Requires Testing of Charging System by Filling with R114.

**ODS CHEM 1:** CFC 114

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorotetrafluoroethane (CFC-114)

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-S-62472 A Semitrailer, Van: Expansible, Exhibition, 12-Ton, Commerical

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The fire extinguishers shall be in accordance with National Fire Protection Association No.10. Two of the extinguishers shall be 20-pound, 1211 Halon Type (3.1.1.8 pg 8).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:**

**General Comments:** Replace Halon 1211 portables with dry chemical extinguishers having equivalent UL ratings.

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**Document Number:** MIL-S-62546                      Sensor, Fire, Optical

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** In the Scope of The Document, Specification Covers Components of Halon 1301 Automatic Fire Extinguishing Systems Used in Military Vehicles. Specification itself does not require Halon 1301.

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancelling the specification when ODS equipment is no longer required.

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**Document Number:** MIL-S-7916 C Sealing Compound, Thread and Gasket, Fuel, Oil and Water Resistant

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-S-7916, Revision D, dated 28 June 1994, has deleted the ODS requirement from paragraph 4.4.4. Paragraph 4.4.4 has been revised to read "All metal panels shall be cleaned by wiping with bleach cheesecloth dampened with methyl ethyl ketone."

**ODS Use:** All Metal Test Plates, Panels and Jogs Shall Be Cleaned by Immersion in Boiling Methyl Chloroform, Conforming to MIL-T-81533 (See 4.4 on Page 6).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:**

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**Document Number:** MIL-S-82793 Sealant, UF 3195

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-S-82793 has been Cancelled by Notice 1, dated 11 February 1993, and is not superseded by another document.

**ODS Use:** 4.5.1.4.2 on page 6, Place Steel Adhesion Discs in Vapor Degreaser and Spray with Methyl Chloroform Conforming to MIL-T-81533. 4.5.1.4.d. Solvent Wipe Discs Using Lint Free Cloth and Methyl Chloroform.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-S-83318 A Sealing Compound, Low Temperature Curing, Quick Repair Integral Fuel Tanks and Fuel Cell Cavities

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Methyl Ethyl Ketone

**ODS Use:** Vapor degrease using 1,1,1 Trichlorethane or solvent degrease using 1,1,1 Trichloroethane or methyl ethyl ketone (MEK) (4.7.1.2 (a) pg 12).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-S-8802 MIL-S-8802, Revision F, Amendment 3, dated 3 May 1993, does not remove the ODS references in Paragraph 4.6.6.2 (on Page 19). All other ODS references have been removed.

**General Comments:** Recommend deleting the reference to 1,1,1 trichlorethane and investigate the use of naphtha or low vapor pressure petroleum/terpene hydrocarbons, such as Electron, PF Degreaser, or P-D-680 Type III.

---

**Document Number:** MIL-S-83430 A Sealing Compound, Integral Fuel Tanks And Fuel Cell Cavities,  
Intermittent Use To 360 Degree F

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Ketone MIL-S-83430 has been Cancelled by Revision A, Amendment 3, Notice 2, dated 5 October 1994, and is not  
superseded by another document.

**ODS Use:** Panel Preparation for Test Methods: Vapor Degrease (Panels) Using Trichloroethane Or Solvent Degrease Using Trichloroethane Or Ketone (4.6.6.2a Page 14).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-S-83474 Shims, Molded, Filled Resin Compound And Sheet Prepreg

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Preparation for parts for acceptance testing: Vapor Degrease Parts With 1,1,1 - Trichloroethane, Inhibited, Conforming To MIL-T-81533 (See 4.3.1.2 On Page 5).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting vapor degreasing and replace with aqueous parts washing procedures, such as use of a power washer (Mart, Better Engineering, etc.) with an aqueous cleaning solution (Brulin 815GD, Daraclean 282, Turco 3878 LF-NC, etc.).

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**Document Number:** MIL-S-83504 A Switches, Dual In-Line Package (DIP), General Specification For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-S-83504, Revision A, Amendment 1, dated 20 September 1993, removes the ODS references (Paragraphs 4.8.18 (d) (1) and 4.8.18 (d) (2) deleted).

**ODS Use:** Switches Shall Be Tested In Accordance With Method 215 Of MIL-STD-202. The Following Details And Exceptions Shall Apply: d) Solvent Solutions: 1) 1,1,1 Trichloroethane 2) Azeotrope Of Trichlorotrifluoroethane And Methylene Chloride (Freon TMC) (4.8.18 Page 15).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Freon TMC

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-S-8802 F Sealing Compound, Temperature Resistant, Integral Fuel Tanks and Fuel Cell Cavities, High Adhesion

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Ketone MIL-S-8802, Revision F, Amendment 3, dated 3 May 1993, does not remove the ODS references in Paragraph 4.6.6.2 (on Page 19). All other ODS references have been removed.

**ODS Use:** Step (a) in the Preparation of Test Panels For Application of a Chemical Conversion Coating Requires Vapor Degreasing Using 1,1,1 Trichloroethane or Solvent Degreasing Using Trichloroethane or Ketone (See 4.6.6.2 on Page 19).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-P-23377 All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:** Recommend Solvent Degreasing Using Acetone Only.

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**Document Number:** MIL-STD-1250 A Corrosion Prevention And Deterioration Control In Electronic Components And Assemblies

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Close Tolerance Parts, Not Exposed To Outdoor Atmosphere, May Be Protected By Corrosion Preventive Compounds Such As MIL-C-81309, MIL-C-16173, MIL-C-11796, MIL-L-87177, Or MIL-C-85054 (See 5.4.2.e On Page 17). Where Close Tolerance Precludes Other Protective Finishes, or For Field Repair, Water Displacing Corrosion Preventive Compounds In Accordance With MIL-C-81309, MIL-C-85054, Or MIL-L-87177 Shall Be Used To Coat Metal Surfaces Against Moisture, Fingerprints, And Corrosion. For External Surfaces Exposed To The Elements, Use MIL-C-85054 Or MIL-C-81309, Type II. For the Interior Of Electrical Connectors, Use MIL-C-81309, Type III Only (See 5.16.3 On Page 33).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-81309 All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

**1ST LEVEL REFS:** MIL-C-11796  
MIL-S-5002

All references to ODSs have been removed from this specification. MIL-S-5002, Revision D, Amendment 1, dated 24 March 1994, removes the ODS references (deletes O-T-620, MIL-T-81533, MIL-M-6874, and ASTM-D3443). Paragraph 3.4.1 has been Revised to read " vapor degreasing shall be performed using either perchloroethylene conforming to O-T-236 or trichloroethylene conforming to O-T-634." Paragraph 3.4.1.1 has been Revised to read "Trichloroethylene is also used in the acid acceptance test."

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS. MIL-C-81309, Revision E, Specification Was Revised to Delete the ODS Reference in the Propellant and Formula. Specification is now a performance Specification.

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**Document Number:** MIL-STD-1330 C Cleaning and Testing of Shipboard Oxygen, Nitrogen and Hydrogen Gas Piping Systems

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MIL-STD-1330, Revision D, dated 20 September 1996, removes all ODS references.

\*\* Please note that R-113 is still approved for use in the following applications (see Table XVIII in Appendix E):

(1) Gauge Cleaning: R-113 is the preferred solvent for cleaning gauges and instruments. Other approved solvents include HCFC-141b, HCFC-225 and HFE-7100.

(2) O<sub>2</sub>/N<sub>2</sub> Producers: HCFC-141b is the preferred solvent for cleaning oxygen-nitrogen producers. Only R-113 and HCFC-141b have been approved for this application.

(3) Field Wipe: For critical applications, a NAVSEA approved halogenated solvent may only be used for field wipe with local engineering approval. Only R-113 and HCFC-141b have been approved for this application.

Note 2 to Table XVIII adds the following restrictions:

"For naval activities, the use of CFC-113 is restricted to those authorized by NAVSEA to access the mission critical reserve maintained by the Defense Logistics Agency or reserves maintained by Naval Shipyards. Refer to Navy ODS Advisories 95-01 and 96-01 for additional information. CFC-113 procured for gauge cleaning shall be equivalent to MIL-C-81302, type I. CFC-113 procured for oxygen-nitrogen producer cleaning and field wipe shall be equivalent to MIL-C-81302, type I or II. Recycled CFC-113 shall be equivalent to MIL-C-81302, type I, with the following exceptions: moisture content shall be 35 ppm maximum; organic cleanliness shall be less than 5 ppm determined as specified in 5.13.2; and particulate cleanliness shall be as specified in 5.13.3.2."

**ODS Use:** Cleaning Solvents are Trichlorotrifluoroethane (R-113) In Accordance with MIL-C-81302, Type I and Trichloromonofluoromethane (R-11) Used in Cleaning Only Oxygen-Nitrogen Plants as Specified in 5.10 (See 3.2.2 on Page 3). Section 4.2.1(Pages 4-5) Details Requirements For Cleaning with R-113. Section 4.2.2 (Pages 5-6) Details Requirements For Cleaning with Tribasic Sodium Phosphate (TSP) Solution. Sections 4.2.2.2 and 4.2.2.3 (Pages 5-6) Requires the Use of R-113 in the Testing of the TSP Solution Prior to its Use. R-113 or Water shall be Used as the Hydrostatic Testing Medium For Oxygen and Nitrogen Gas Piping Systems (See 4.2.5 on Page 6). Sections 4.7.4 (Pages 8-10) and 4.7.5 (Page 10) Outline Safety and Use Requirements For R-113 and R-11/R-12, Respectively. R-113 and R-11 Cleaning Solvent is an Environmental Pollutant. The Disposal Procedure Specified in 5.11 shall be followed for R-113, R-11 and TSP (See 4.8 on Page 11). Refrigerant Type 12 is Used in the Alternate Oxygen and Nitrogen Piping (7-Day Pressure Drop) Test (See 5.6.5 on Pages 25-27). R-113 and R-11 are Listed as the Approved Solvents For Cleaning Oxygen-Nitrogen Plants (See 5.10.1 and 5.10.3 on Page 31). Section 5.11 (Page 31) Details Disposal Requirements For R-113 and R-11.

**ODS CHEM 1:** CFC 11 **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)  
Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-C-52211

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Test program underway (contact Neil Antin, SEA03Y2A, for specifics).

---

**Document Number:** MIL-STD-1334 B Process For Barrier Coating of Anti-Friction Bearings

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

DLA-DISC has indicated that it has issued a change notice to MIL-STD-1334, dated 1 April 1994, that eliminates the ODS references (MIL-T-81533 and MIL-C-81302). This change notice is not yet available on DODISS.

**ODS Use:**

Cleaning Equipment shall include a bench type vapor degreaser designed to use MIL-C-81302 solvent (40.3 page 10). Precision cleaning solvent conforming to Type I, MIL-C-81302 clean room grade double filtered (special materials) (50.2 page 10). Degreasing solvent conforming to MIL-T-81533 clean room grade particle count controlled and pre-filtered through a 0.45 micron filter (50.3 page 10). Spray rinse the bearings with MIL-T-81533 (60.4.1.3.1 page 12) Immerse the bearings in MIL-C-81302 vapor (60.4.1.3.2 page 12). Place the bearings on the cobehn cleaner spindles, MIL-T-81533 solvent spray and dry bearings (60.4.1.5.1 page 12). Hand spray with MIL-T-81533 solvent and warm air dry each bearing (60.4.1.5.2 page 12). Place the bearings in a shallow basket that is suspended in a MIL-C-81302 vapor degreaser (60.4.1.5.3 page 12). Ultrasonically clean in doubly filtered MIL-C-81302 for five minutes (60.4.2.1 page 13). Hand spray with MIL-T-81533 solvent and warm air dry each bearing going through atleast two cycles (60.4.2.2 page 13). Place bearings in a shallow basket that is suspended in a MIL-C-81302 vapor degreaser (60.4.2.3 page 13). Hold bearings with appropriate tweezers and spray all bearings with MIL-C-81302 solvent (60-4.3.2 page 13).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-STD-1344 A Test Methods For Electrical Connectors

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-STD-1344, Revision A, Notice 5, dated 15 September 1993, removes all ODS references. Test Method 1016 has been Revised to delete the requirement to use Freon TMC and an azeotrope of Trichlorotrifluoroethane and Methylene Chloride for the fluid immersion test.

**ODS Use:** 1,1,1-Trichloroethane and an Azeotrope of Trichlorotrifluoroethane (Freon TMC or Equal) and Methylene Chloride are Listed as Applicable Test Fluids For the Fluid Immersion Test (See Table I, Method 1016, Page 2).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-1359 B Cleaning Methods and Procedures For Breathing Oxygen Equipment

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** MIL-C-81302 Cleaning Compound, Solvent, Trichlorotrifluoroethane and MIL-T-81533 Trichloroethane, 1,1,1-(Methyl Chloroform), Inhibited, Vapor Degreasing are Listed as Applicable Solvents (See 4.1.2.11.1 on Page 8). Chlorinated Solvents, such as Trichloroethylene, Trichloroethane, Dichloromethane (Methylene Chloride), Perchloroethylene and Others, Including Those Sold Under Trade Names, Should Not be Used (See 4.3.1 on Page 12). Trichlorotrifluoroethane shall be Used with Adequate Ventillation and Prolonged Breathing of Vapors shall be Avoided (See 4.3.2 on Page 12). Fill the Oxygen System Using Solvent, MIL-C-81302, Type I, Let the System Soak and then Flow the Solvent through the System (See 5.1.3.3.2 on Page 15). Rinse the Equipment Surfaces with Solvent, MIL-C-81302, Type I; Volume of Fluid Used shall be 200 ml per Square Foot of Surface Area and in no Case Less than 150 ml (See 5.2.1.2 on Page 16).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-O-27210

MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution.  
Contact Neil Antin, SEA03Y2A, for specifics.

---

**Document Number:** MIL-STD-1411                      Inspection and Maintenance of Compressed Gas Cylinders

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P

**ODS Use:** Trichloroethylene, Trichlorotrifluoroethane, Perchloroethylene and 1,1,1-Trichloroethane are Listed as Applicable Solvents For Use in Organic Solvent Washing (See 5.3.2.3.2 on Page 39). 1,1,1-Trichloroethane is Listed as a Suggested Solvent For Vapor Degreasing of Cylinders (See 5.3.2.3.3.1(5) on Page 41).

**ODS CHEM 1:** CFC 113                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting references to 1,1,1-trichloroethane and trichlorotrifluoroethane.

---

**Document Number:** MIL-STD-1518                      Storage, Handling And Servicing Of Aviation Fuels, Lubricating Oils And Hydraulic Fluids At Contractor Facilities

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:**      Petroleum Ether

**ODS Use:**                      Equipment Required: Petroleum Ether Or Freon - Procure locally (6.14 page 17). Sampling Procedure: Before Using, Rinse The Interior Of The Sampler's Metallic Components With Filtered Petroleum Ether Or Freon (6.14c Page 18). The Operating Instructions Contained In The Aviation Turbine Fuels Contaminated Standards Call For Freon (MIL-C-81302 Type II) As The Rinsing Agent (6.14 Page 20). Freon Or Petroleum Ether Are Applicable Solvents For Matched - Weight Monitor Method (Page 23-25).

**ODS CHEM 1:**                      CFC 113                      **ODS CHEM 2:**                      Freon  
**Comments:**

**PRIMARY REFS:**                      MIL-C-81302  
Freon

**1ST LEVEL REFS:**

**General Comments:**                      The preparing activity, Air Force 68 is aware of the presence of ODS and are in the process of rewriting the next revision of the specification. Recommend using petroleum ether only.

---

**Document Number:** MIL-STD-1548 B Into-Plane Delivery of Fuel and Oil at Commercial Airports

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Filtered Petroleum Ether

**Comments:**

All references to ODSs have been removed from this specification. MIL-STD-1548, Revision C, dated 11 January 1994, removes the ODS reference. The third sentence of paragraph 7.1.4.3 (now numbered 5.4.2.3(c) on Page 11 of Revision C) has been revised to read "Filtered petroleum ether is satisfactory to rinse the membrane in the monitor."

**ODS Use:** Operating instructions for the color and particle assessment method are contained in the Aviation Turbine Fuel Contamination Standards, Part No. XX64037385; however, filtered petroleum ether may be used in lieu of freon to rinse the monitor (See 7.1.4.3 on Page 5).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-1551 C Quality Control Of Gaseous And Liquid Aviator's Breathing Oxygen AT  
Aircraft Contractor Facilities

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Use Limits Of Liquid Aviator's Breathing Oxygen Are As Follows: Refrigerants (Freons, etc) 2ppm (max); Solvents (Carbon Tetrachloride) 0.2ppm(max) (5.1.2 Page 5 And Table IV Page 13).

**ODS CHEM 1:** Freon **ODS CHEM 2:** Carbon Tetrachloride  
**Comments:**

**PRIMARY REFS:** Freon  
Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** MIL-O-27210

**General Comments:** EPA has requested continued production beyond Jan 1996 of ODS for use in laboratory analyses techniques. Breathing air should continue to be sampled for ODS contaminants until these solvents are no longer in use.

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**Document Number:** MIL-STD-1564 A Procedure For Calibration And Analysis Of Trace Contaminants In Aviator's Breathing Oxygen By Infrared Spectroscopy

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** All Valves, Fittings, Hose, Manifold Blocks, Mixing Cylinders, And Guages Must Be Cleaned With Trichloroethane Prior To Assembling The Gas System (See 5.2 on Page 6a).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacing trichloroethane with the Navy Oxygen Cleaner (NOC) Aqueous Cleaning process.

---

**Document Number:** MIL-STD-1580 A Destructive Physical Analysis For Electronic, Electromagnetic, and Electromechanical Parts

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Freon is used as the rinsing fluid for the micro-clean inspection procedure for relays (12.1.1.5 page 96-101 and Figure 12-7 on page 99) and thermal switches (14.2.1.5 pages 144-147 and Figure 14-6 on page 145).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:** MIL-STD-750

All references to ODSs have been removed from this specification. MIL-STD-750, Revision C, Notice 10, dated 15 August 1994, has removed the final ODS reference in the specification (Test Method 1071.5). MIL-STD-750, Revision C, Notice 7, dated 30 June 1993, removes the ODS reference in Test Method 1022.5 by deleting Paragraphs 2.1(b) and 2.1(c) and substituting the following new Paragraph 2.1(b) and Note 1: "b. A semiaqueous based solvent (defluxer (e.g., a terpene)) consisting of a minimum of 60 percent Limonene and a surfactant heated to 32 degrees C +/- 5 degrees C. 1/" and "1/ Or any equivalent EPA approved HCFC or terpene solvent or demonstrated equivalent." MIL-STD-750, Revision C, Notice 5, dated 30 August 1992, removes the ODS reference in Test Method 2026.8 by Revisionising Paragraph 3.4(b) to read "Degrease and clean as necessary to ensure wire surface is free of contaminants."

MIL-R-39016

All references to ODSs have been removed from this specification. MIL-R-39016, Revision E, dated 18 July 1994, has deleted the ODS reference to freon.

**General Comments:** Recommend replacing freon with PFC or HFC solvents.

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**Document Number:** MIL-STD-1622

Cleaning of Shipboard Compressed Air Systems

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-STD-1622, Revision A, dated 8 January 1992, states that "Unless otherwise specified ... trichlorotrifluoroethane (R-113) shall not be used for cleaning." NAVSEA does not allow the use of CFC-113 when referencing this standard. A new revision to this standard deleting all references to CFC-113 is to be submitted in draft to the Specification Review Board by 30 November 1996.

**ODS Use:**

Cleaning Solvent or Compound as Used in this Standard shall refer to Trichlorotrifluoroethane Conforming to MIL-C-81302, Type I or II, Unless Otherwise Specified Herein (See 3.3 on Page 1 and 4.1.3 on Page 2). Samples of the Cleaning Compound shall be Examined to Determine if the System is Clean. The Contamination Content of the Samples as Determined by the Test Procedure of MIL-C-81302 shall be 50 Parts Per Million (PPM) or Less to Consider the System Clean (See 4.1.4 on Page 2; 4.3.2 on Page 3; and 5.2.3 on Page 6). Section 4.2 (See Subsections 4.2.3, 4.2.3.1, 4.2.3.3, 4.2.4, 4.2.4.1 and 4.2.5 on Pages 2-3) Outlines Characteristics and Safety Precautions For the Use of the Trichlorotrifluoroethane. The List of Required Materials in Section 4.4.2 (Page 4) Lists a "Supply of Cleaning Compound (in Accordance with MIL-C-81302)" as a Necessary Material. Cleaning or Degreasing Small Equipment shall be Accomplished by Soaking or Scrubbing, as Necessary, in Cleaning Compound Conforming to MIL-C-81302 or Trichloroethane (Methyl Chloroform) Conforming to O-T-620 (See 4.6.1 on Page 4). Pressure Gages shall be Cleaned with Cleaning Solvent Conforming to MIL-C-81302 by Filling, Soaking and Draining of the Bourdon Tube at Least 10 Times (See 4.7.1 on Page 4). It should be Ascertained that Air Flask Interiors are not Coated with Formula 14N Coating Before Use of Compound MIL-C-81302 For Cleaning Air Flasks (See 5.1.1 on Page 5). If there is Any Evidence of Fluorescence on the Interior or Machined Surfaces, the Flasks shall be Cleaned with Cleaning Solvent MIL-C-81302 (See 5.1.2 on Page 5).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**PRIMARY REFS:** O-T-620

**Comments:** O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact: Neil Antin SEA03Y2A.

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**Document Number:** MIL-STD-1687 A Thermal Spray Processes for Naval Ship Machinery Applications

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Toluene (TT-T-548)

**Comments:**

All references to ODSs have been removed from this specification. MIL-STD-1687, Revision A, Notice 1, dated 23 September 1994, removes the ODS references. The fourth sentence of paragraph 5.4.1.1 ("Trichloroethane in accordance with O-T-620, or toluene in accordance with TT-T-548 are acceptable cleaners") has been deleted. The sentence "Use solvents that comply with local and federal regulations" has been added after the first sentence of paragraph 5.4.1.1. The phrase "(such as, toluene, trichloroethane and alcohol)" has been deleted from paragraph 5.4.8.2.

**ODS Use:** Trichloroethane in accordance with O-T-620 or Toluene in Accordance with TT-T-548 are Acceptable Cleaners for Solvent Cleaning (See 5.4.1.1 on Page 18).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** BB-A-1034

BB-A-1034, Revision B, Notice 1, dated 27 December 1995, has removed the ODS reference. In Table II, the phrase "(trichloroethylene and freon TF)" has been deleted.

**General Comments:** Delete 1,1,1 reference and use alternative listed in specification or use acceptable petroleum hydrocarbon solvent such as Electron, PF Degreaser, PF-145HP or P-D-680 Type III. Use of aqueous cleaners with spray washers may also be acceptable.

---

**Document Number:** MIL-STD-171 E Finishing of Metal and Wood Surfaces

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), T

**ODS Use:** Vapor Degrease using Solvent Conforming to O-T-634 Type II or MIL-T-81533 (See 5.1.4.1).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Delete reference to MIL-T-81533

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**Document Number:** MIL-STD-1751 Safety And Performance Tests For Qualification Of Explosives

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Each Compound Or Mixture Shall Pass The Tests Described In The Detailed Requirements (4.2.1 Page 8). Method 17: Shadowgraphic Backlighting Was Provided By Exploding Bridge Wires In An Atmosphere Of Liquid Freon (2.2.1.1 Page 3).

**ODS CHEM 1:** Freon **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:** C-F-206

**General Comments:** Investigate use of suitable fluorinated liquid for this test.

---

**Document Number:** MIL-STD-1763 A Aircraft/Store Certification Procedures

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Air

**ODS Use:** This is only in the case on Test Method 143. Likewise, the use of Freon instead of air in Transonic Wind Tunnels allows the models to be much heavier for the same stiffness requirements but increased the costs. Tests in High-Speed tunnels consume more time because of the time required to recharge blow-down tunnels or the time needed to reclaim the Freon in Continuous Flow Freon Tunnels (See 143.3.1(c), page 77).

**ODS CHEM 1:** Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting reference to Freon Wind Tunnels. Chloroform may be used in place of freon.

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**Document Number:** MIL-STD-1844 Gas Chromatography Method For Determination of Trace Chlorinated Solvents in Hydraulic Fluid

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** CFC-113 and Methyl Chloroform are Used in the Preparation of Operating Range Standard Stock and Working Solutions (See 4.4.1 on Pages 3-4) and in the Preparation of Calibration Standard Stock and Working Solutions (See 4.4.3 on Pages 6-7). These Solutions will then be Used to Standardize the Gas Chromatograph Prior to Analysis of the Hydraulic Fluid Samples For the Presence of Chlorinated Solvents (See 4.4.4, 4.4.5 and 4.5.3 on Pages 8-10). Table 1 and Figures 1-3 (Pages 13-16) Provide Standard Data on CFC-113 and Methyl Chloroform as well as Illustrating a Sample Calculation.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform  
**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

---

**Document Number:** MIL-STD-186 E Protective Finishes For Army Missile Weapon Systems

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P

**ODS Use:** Vapor Degreasing shall be Done with Trichloroethylene Conforming to O-T-634 or Perchloroethylene Conforming to O-T-236, or 1,1,1-Trichloroethane Conforming to MIL-T-81533 (See 4.7 on Page 15). Soldering, Welding, and Brazing Fluxes shall be Completely Removed. Washing with Hot Water, Alcohol (Ethyl Alcohol in Accordance with O-E-760 or MIL-E-463, or Isopropyl Alcohol in Accordance with TT-I-735), MIL-C-81302 or Solvent, Blend of MIL-C-81302 Plus 35% Isopropyl Alcohol in Accordance with TT-I-735 or a Solvent Conforming to O-T-634 shall be Used (See 5.1.1.2 on Page 21). Table VII (Page 64) Requires that Lubrication Code No. 706 be Preserved by Applying Corrosion Preventive Compound, MIL-C-81309. Table VII (Page 64) also Requires that Lubrication Code No. 713 be Preserved by Applying Corrosion Preventive Compound, MIL-C-85054.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound.  
WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-T-81533

**1ST LEVEL REFS:** TT-C-490 TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-S-22473

All references to ODSs have been removed from this specification. MIL-S-22473, Revision E, Amendment 8, dated 18 November 1993, deletes the use of 1,1,1-Trichloroethane in the solubility test (Paragraph 4.6.1.4 has been deleted entirely).

MIL-S-22473, Revision E, Interim Amendment 7, dated 30 July 1993, deletes the use of 1,1,1-Trichloroethane for degreasing the surface of parts:

"The Solvent 1-1-1 Trichloroethane is no longer mandated for degreasing the surface parts. Solvent selection is left to the discretion of the manufacturer (See Page 1 of Interim Amendment 7).

**General Comments:** Recommend deleting requirement to vapor degrease and substitute aqueous parts washing, semi-aqueous cleaning, or hand wiping with low vapor pressure hydrocarbons. Delete MIL-C-81302 for use with flux removal. MIL-C-81309 and MIL-C-85054 have undergone reformulation to remove ODS.

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**Document Number:** MIL-STD-1877 B Brazing, Nickel, High Temperature Vacuum

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Equivalent Solvent

MIL-STD-1877 has been Cancelled by Revision B, Notice 1, dated 17 February 1993, and is not superseded by another document.

**ODS Use:** When required to maintain cleanliness, parts and fixture to be place in brazing furnace shall be vapor degreased. Stabilized 1,1,1-Trichloroethane MIL-T-81533 or Equivalent Type Solvent shall be Used for Vapor Degreasing (See 4.2.5 on Page 6).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-1881                      Brazing Silver, General Process For

**Level:** 1                      **Class:** ALTAVAIL                      **Comments:**

**Alternatives Listed In Spec:**      Equivalent Solvent                      MIL-STD-1881 has been Cancelled by Notice 2, dated 17 February 1993, and is not superseded by another document.

**ODS Use:**                      When required to maintain cleanliness, parts and fixtures to be placed in brazing furnace shall be vapor degreased. Stabilized 1,1,1-Trichloroethane MIL-T-81533 or Equivalent Type Solvent shall be the Vapor Degreasing Solvent (See 4.2.3 on Page 5a).

**ODS CHEM 1:**                      Methyl Chloroform                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-1891 Bolts and Screws, Inspection of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The finished bolt or screw shall be cleaned by vapor degreasing. The vapor degreasing solvent shall be stabilized 1,1,1 trichloroethane conforming to ASTM D 4126 or equivalent (4.2.2 page 5).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** ASTM D4126

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting requirement to vapor degreasing and substitute aqueous parts washing, semi-aqueous cleaning, or hand wiping with low vapor pressure hydrocarbons.

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**Document Number:** MIL-STD-1893                      Cleaning Electrochemically Machined Nickel Base Alloy Surfaces,  
Process For (Metric)

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The intent of this standard is to define the process used for removing contaminants from electrochemically machined surfaces of nickel base alloy parts. Vapor degrease parts using degreaser Solution: Stabilized 1,1,1 Trichloroethane (4.2.1 Page 4).

**ODS CHEM 1:**                      Methyl Chloroform                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**                      The majority of general metal cleaning applications previously performed by immersion or vapor degreasing Class I ODS solvents can be replaced with aqueous (alkaline, surfactant, etc.) or semi-aqueous (hydrocarbon/surfactant) cleaning processes and proper drying/anti-corrosion treatment techniques. For water sensitive equipment, low vapor pressure hydrocarbon (petroleum, terpene, alcohol, mixtures) offer effective replacements. Recommend requiring use of one or more of the above techniques which are compatible with the materials being cleaned and effective on the soils to be removed. Example aqueous cleaners include: MIL-C-87937 type II, Brulin 815 GD, Daraclean 282, Hurri-safe Degreaser, 3-D Degreaser, etc. Example semi-aqueous cleaners include: MIL-C-87937 Type I, Citrakleen, Re-Entry ES, etc. Example hydrocarbon cleaners include: P-D-680 Type III, Breakthrough, Electron, PF-145 HP, EPA 2000, Citrasafe, Re-Entry KNI 2000, etc

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**Document Number:** MIL-STD-202 F Test Methods For Electronic and Electrical Component Parts

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:** Acetone

**Comments:**

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**ODS Use:** Test Method 208 Requires Degreasing by Immersion in Either Acetone or Trichloroethane (See 3.3.b on Page 2). Test Method 210 Requires Vapor Degreasing with MIL-T-81533 (See 2.4 on Page 1 and 3.3 on Page 2). Test Method 215 Requires MIL-T-81533 and a Methylene Chloride / MIL-C-81302 Azeotrope For the Resistance To Solvents Test (See 2.1.b and 2.1.c on Pages 1 and 2). Section 3.1.b (Page 3) Outlines the Test Procedures for Use with MIL-T-81533. Section 3.1.c (Page 4) Outlines the Test Procedures for Use with MIL-C-81302.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-2081 Assembly Procedures, Gimbal

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acetone, Cobehn Solvent, Ethyl MIL-STD-2081 Has Been Cancelled By Notice 2, Dated 18 August 1995.

**ODS Use:** Trichlorotrifluoroethane in Accordance with MIL-C-81302, Type I, is Listed as an Auxiliary Item For the Manufacture of the Gimbal (See 4.2.2.4 on Page 5). All References to Freon within this Specification are Considered Interchangeable with Trichlorotrifluoroethane (See 4.2.2.4 on Page 5). Cobehn, Freon TF, Acetone, or Ethanol Applied with Swabs as Lint-Free as Possible are Used for Solvent Cleaning (See 4.5.1.1 on Page 8).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-81302

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:** Delete reference to CFC-113 and Freon TF. Verify that cobehn, acetone or ethanol are suitable and safe for use as MXM solvents.

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**Document Number:** MIL-STD-2138 Metal Sprayed Coating Systems For Corrosion Protection Aboard Naval Ships (Metric)

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Super High-Flash Naphtha (AS) All references to ODSs have been removed from this specification. MIL-STD-2138, Revision A, dated 13 May 1992, removed the ODS reference by requiring the use of Super High-Flash Naphtha (ASTM D3734, Type I) or n-Butyl Alcohol (ASTM D304) in place of 1,1,1-Trichloroethane.

**ODS Use:** Prior to any masking, blasting, or spraying, all surfaces that have come in contact with oil or grease shall be solvent cleaned. Trichloroethane is an applicable cleaning solvent (4.3.1 page 10).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** O-T-620

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:**

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**Document Number:** MIL-STD-2148                      Vibration Damping Materials, Procedures For Installation, Maintenance, and Repairs

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 1,1,1-Trichloroethane (Methyl Chloroform) is an Organic Compound, Used as a Solvent to Remove Grease and Oil From Steel Surfaces and Damping Material (See 3.16 on Page 6 and 4.5.2.9 on Page 20). Safety Precautions for the Use of Methyl Chloroform are Outlined in Sections 4.5.2.9.1 and 4.5.2.9.2 (Page 20). 1,1,1-Trichloroethane (Methyl Chloroform) in Accordance with O-T-620 is Listed as an Applicable Cleaning Material For Steel Plating and Damping Materials (See 5.1.1.5 on Page 22; 5.2.1.5 on Page 32; 5.3.1.4(b) on Page 37; 5.4.1.5(a) on Page 44; and 5.5.1.5(a) on Page 50). Paint which is Allowed to Dry For More Than 48 Hours shall be Cleaned by Wiping with a Clean Cloth Wetted with 1,1,1-Trichloroethane Prior to Application of the Next Coat (See 5.1.3.1.3 on Page 23; 5.1.3.2 on Page 24; 5.2.3.3 on Page 33; and 5.4.3.2 on Page 45). If Oil, Grease, or Other Contamination Remains on the Painted Surfaces, it shall be Removed by Using a Cloth Wetted with 1,1,1-Trichloroethane (See 5.1.3.1.3 on Page 23; 5.1.3.2 on Page 24; and 5.2.3.3 on Page 33). Any Oil, Grease, or Waxy Substance Present on the Steel shall be Removed Using a Cloth Wetted with 1,1,1-Trichloroethane (See 5.1.3.2 on Page 23; 5.2.3.3 on Page 33; 5.3.3.1 on Page 38; 5.4.3.2 on Page 45; and 5.5.3.2 on Page 51). Non-Steel Surfaces such as Aluminum Alloys, CRES, and Nickel-Copper Alloys which Require Damping shall be Cleaned of Grease and Oil by Wiping with a Clean Cloth Wetted with 1,1,1-Trichloroethane, and then Grit-Blasted (See 5.1.3.5 on Page 24). Tiles and their Restraining Covers shall be Cleaned of Oil, Grease, Waxy Contamination or Loose Paint. This May be Done by Using Cloth Wetted with 1,1,1-Trichloroethane (See 5.1.8.1 on Page 28 and 5.2.7.2 on Page 35). Following the Sweep-Blasting or Sanding, Oil, Grease, or Waxy Contamination on the Painted Surfaces shall be Removed Using a Cloth Wetted with 1,1,1-Trichloroethane (See 5.4.3.2 on Page 45).

**ODS CHEM 1:** Methyl Chloroform                      **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620                      O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** BB-A-1034                      BB-A-1034, Revision B, Notice 1, dated 27 December 1995, has removed the ODS reference. In Table II, the phrase "(trichloroethylene and freon TF)" has been deleted.

MIL-C-11796

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 type III, Electron, PF-145 HP, DS-104, DS-108, etc.

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**Document Number:** MIL-STD-2184 Procedures For Installation, Inspection, Maintenance, and Repair of Absorber, Reflector, and Decoupler Acoustic Materials

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Solvent, 1,1,1-Trichloroethane (Methyl Chloroform) is Used For Cleaning Tools, Acoustic Tiles, Painted and Unpainted Surfaces, and as a Tackifying Agent For Solvent-Base Adhesives (See 4.3.10 on Page 18). Section 4.3.10.1 (Page 18) Outlines the Health Hazards Associated with the Use of Methyl Chloroform and Section 4.3.10.2 (Page 18) Outlines Protective Measures Required While Using Methyl Chloroform. 1,1,1-Trichloroethane is Also Listed Under Section 4.3.12.1.1 (Hazards -- Page 19) and 4.3.12.2(J) (Precautions -- Page 20). As Part of the Blast-Cleaning Procedures, Remove Heavy Deposits of Oil, Grease, and Dirt with 1,1,1-Trichloroethane (Methyl Chloroform), Cleaning Solvent (See 4.5.4(b) on Page 22). Any Contaminants Found shall be Removed with 1,1,1-Trichloroethane (Methyl Chloroform) in Accordance with O-T-620, Cleaning Solvent Prior to Applying a Primer Coat (See 4.6.3(c) on Page 24). 1,1,1-Trichloroethane is Used to Wipe Down Sanded Areas Prior to and After Fairing of the Primer Coat (See 4.6.12.2(e) and 4.6.12.2(k) on Page 29). If More than 90 Days have Elapsed Since the First Paint Coat was Applied, the Second Coat shall not be Applied Until the First Coat is Sweep-Blasted, Hand Sanded, and Wiped Down with a Clean Lint-Free Cloth Wet with 1,1,1-Trichloroethane (See 4.6.7.3 on Page 27). 1,1,1-Trichloroethane is Listed as a Material For the Adhesive System (5.1.2.3 on Page 31) and as a Cleaning Material (5.1.2.4 on Page 31). Prior to Adhesive Application, Tiles to be Installed shall be Wiped with a Cloth Wet with 1,1,1-Trichloroethane to Remove Oil, Grease, or Other Contaminating Material (See 5.1.9.3.2 on Page 34). The Surfaces to which the Tiles are to be Installed shall be Vigorously Scrubbed with a Clean Lint-Free Cloth Wet with 1,1,1-Trichloroethane (See 5.1.11.6(f) on Page 37) and in the Tile Setting Procedures (See 5.1.11.8.2(b) on Page 39). Trichloroethane, 1,1,1 (Methyl Chloroform), in Accordance with O-T-620 Used For Cleaning Tiles and Substrate, is Listed as a Cleaning Material (See 5.2.2.5(a) on Page 52; 5.3.2.5(a) on Page 72; 5.4.2.5(a) on Page 91; and 5.5.2.5(a) on Page 112). Section 5.2.9.4.2 (Page 55) Lists Safety Precautions For Materials Used in Acid Etching, Including 1,1,1-Trichloroethane. Wipe the Bonding Face of the AD-2 Tile with 1,1,1-Trichloroethane Just Prior To Etching To Remove Surface Contaminants (See 5.2.9.4.3 on Page 55). After Abrading Procedures have been Completed, the Surfaces to which the Tiles are to be Installed shall be Vigorously Scrubbed with a Clean, Lint-Free Cloth Wet with 1,1,1-Trichloroethane (See 5.2.11.3.3 on Page 59; 5.3.11.3.3 on Page 79; 5.4.11.3.3 on Page 100; and 5.5.11.3.3 on Page 117). After All Cutting, Drilling, and Abrasive Operations are Complete, and Prior to Adhesive Application, the Bonding Face Cover Plate shall be Wiped with a Cloth Wet with 1,1,1-Trichloroethane To Remove Oil, Grease, or Other Contaminating Material (See 5.3.9.4.3 on Page 77; 5.4.9.4.3 on Page 98; and 5.5.9.4.2 on Page 115).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-P-23377 All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 type III, Electron, PF-145 HP, DS-104, DS-108, etc.

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**Document Number:** MIL-STD-2199

Glass Reinforced Plastic Coverings For Propeller Shafting (Metric)

**Level:** 1      **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** P-D-680, Type II

All references to ODSs have been removed from this specification. MIL-STD-2199, Notice 1, dated 5 October 1993, removes the ODS reference (O-T-620 in Paragraph 5.4.2(b)). Paragraph 5.4.2(b) has been Revised to read "Remove any oil or grease from the surface of the shaft by washing with suitable solvents (for example, petroleum distillate type solvent in accordance with P-D-680, Type II, or other solvent that provides suitable cleaning and degreasing capability without leaving a residue. Solvents shall not be ozone depleting types and must be acceptable under local, State and Federal regulations, as required."

**ODS Use:** Remove Any Oil or Grease From the Surface of the Shaft by Washing with Suitable Solvents (For Example, Petroleum Distillate Type Solvent in Accordance with P-D-680, Type II), or Trichloroethane in Accordance with O-T-620 (See 5.4.2 on Page 8).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**PRIMARY REFS:** O-T-620

**Comments:**

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-271 F Requirements For Nondestructive Testing Methods

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P All references to ODSs have been removed from this specification. MIL-STD-271, Revision F, Notice 1, dated 21 June 1993, removes the ODS references. ODS references (1,1,1-Trichloroethane, Trichlorotrifluoroethane and Freon TF) have been removed from Paragraph 5.6.1 and replaced with acetone, denatured ethanol (ethyl alcohol), isopropanol (isopropyl alcohol) or cleaner/removers supplied by penetrant manufacturers which meet the requirements of MIL-I-25135.

**ODS Use:** Pre-Test Cleanliness: All surfaces being tested shall be thoroughly cleaned of extraneous material. As a Final Cleaning Operation Each Surface shall be Dipped, Sprayed, Wiped, or Brushed with Trichloroethylene, Trichloroethane, Perchloroethylene, Acetone, Denatured Ethanol, Isopropanol or 1,1,2 Trichloro-1,1,2-Trifluoroethane (Freon TF, PCA Grade, or Equal) and Thoroughly Dried by Removing the Excess with a Clean Dry Cloth or Absorbent Paper, and Allowing the Remainder to Evaporate For a Minimum of 5 Minutes (Se 5.6.1 on Page 35).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-I-25135

**General Comments:**

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**Document Number:** MIL-STD-279 B Compressors, Reciprocating, Power-Driven, Open-Type, For Use

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Compressors shall be for Use with Refrigerant 12, Dichloro-Difluoromethane (See 5.1 on Page 5). Compressors shall Meet the Minimum Requirements of Capacity Groups A, B, C, and D as Indicated on Figures 1 and 2, Under the Conditions Specified When Driven by a Prime Mover having a Nominal Speed of 1,750 rpm -- i.e, Operational Test -- (See 5.2 on Page 5). Figures 1 and 2 Indicate that the Refrigerant For this System shall be Refrigerant 12 (Pages 6-7).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend cancelling this specification and replacing with a specification for HFC-134a compressors.

---

**Document Number:** MIL-STD-610 B Halogenated Hydrocarbon Compounds And Solvents, Technical Grade (Metric)

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** A Technical Description and Summary Of Specification Requirements For 1,1,1-Trichloroethane Is Provided In Section 5.10 (Pages 23-26).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-633 E Mobil Electric Power Engine Generator Standard Family, General Characteristics

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Carbon Dioxide, Dry Chemical

**ODS Use:** Adequate Fire Protection Must Be Provided In The Area In Which The Generator Set Will Be Used. Three Types Of Portable Fire Extinguishers Are Approved For Class B and C Hazards - Carbon Dioxide (CO2), Dry Chemical (Sodium Bicarbonate and Potassium Bicarbonate) and Vaporizing Liquid (Bromotrifluoromethane) (See 4.1.2 On Page 8). Production Sets Are Delivered Without Fire Extinguishers Or Ground Rods; However, As 2-3/4 Pound Bromotrifluoromethane Fire Extinguisher Is Available. It Is Described By MIL-E-52031 And Is Identified As NSN 4210-00-555-8837 (See 4.3.1 On Page 8).

**ODS CHEM 1:** Halon 1301 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Bromotrifluoromethane (Halon-1301)

**1ST LEVEL REFS:** MIL-E-52031

**General Comments:** Recommend deleting "vaporizing liquid (bromotrifluoromethane)." Replace 2 3/4 lb Halon 1301 extinguisher with CO2 extinguisher purchased under CID developed by the U.S. Army.

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**Document Number:** MIL-STD-750 C Test Methods For Semiconductor Devices

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-STD-750, Revision C, Notice 10, dated 15 August 1994, has removed the final ODS reference in the specification (Test Method 1071.5). MIL-STD-750, Revision C, Notice 7, dated 30 June 1993, removes the ODS reference in Test Method 1022.5 by deleting Paragraphs 2.1(b) and 2.1(c) and substituting the following new Paragraph 2.1(b) and Note 1: "b. A semiaqueous based solvent (defluxer (e.g., a terpene)) consisting of a minimum of 60 percent Limonene and a surfactant heated to 32 degrees C +/- 5 degrees C. 1/" and "1/ Or any equivalent EPA approved HCFC or terpene solvent or demonstrated equivalent." MIL-STD-750, Revision C, Notice 5, dated 30 August 1992, removes the ODS reference in Test Method 2026.8 by Revisionising Paragraph 3.4(b) to read "Degrease and clean as necessary to ensure wire surface is free of contaminants."

**ODS Use:** Test Method 1022.2 (Resistance To Solvents) Lists 1,1,1-Trichloroethane and a Trichlorotrifluoroethane/Methylene Chloride Azeotrope as Two of the Solvent Solutions For the Resistance To Solvents Test (See 2.1 on Page 1). Test Method 1071.5 (Hermetic Seal) Requires Test Devices be Cleaned by Placing them in a Container of Clean Freon TF at 25 Degrees C and Allowing them to Soak for 2 Minutes Minimum (See 11.2 on Page 13). Test Method 2026.7 (Solderability) Requires that the Copper Wire be Degreased by Immersion in Either Acetone or Trichloroethane For Two Minutes (See 3.4.b on Page 2).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-759 B Condensers, Air Cooled, Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Condensers shall be Designed For Operation with Dichlorodifluoromethane (CCl<sub>2</sub>F<sub>2</sub>), Refrigerant-12 (See 4.1 on Page 2). Condensers Conforming to this Standard shall meet the Minimum Heat Rejection Capacities Shown in Table II When Operating at the Conditions Indicated -- Operational Test -- (See 5.1.3 on Page 3).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend cancelling this specification and replace with an HFC-134a condenser.

---

**Document Number:** MIL-STD-760 C Condensers, Refrigerating, Water-Cooled, Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Type I, II, and III Water-Cooled Condensers shall be For Use with Dichlorodifluoromethane (R-12) Refrigerant (See 4.1 on Page3).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend cancelling this specification and replacing with a specification for HFC-134a condensers.

---

**Document Number:** MIL-STD-773 C Compressors, Hermetic, For Use With Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Compressors shall be for Use with Refrigerant 12 (Dichlorodifluoromethane) (See 5.1 on Page 2). Compressors shall have the Capacities shown on Table I when Operating in an Ambient Temperature of Plus 110F (43.3C), at a Condensing Temperature of Plus 135F (57.2C), Corrected to 0F (17.7C) Subcooling, and at Applicable Suction Temperatures as Follows (See 5.3 on Pages 2-3). This is an Operational Test Requirement.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend cancelling this specification and replacing with a specification for HFC-134a compressors.

---

**Document Number:** MIL-STD-808 A Finish, Protective and Codes For Finishing Schemes For Ground and Ground Support and Equipment

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Vapor Degreasing shall be Done with 1,1,1-Trichloroethane Conforming to MIL-T-81533 or O-T-620 (See 5.3.1.1 on Page 11). Solvents For Hand Cleaning shall be 1,1,1-Trichloroethane Conforming to MIL-T-81533 or O-T-620, Aliphatic Petroluems Such as Naptha Conforming to TT-N-95, Acetone Conforming to O-A-51, Methyl-Ethyl-Ketone Conforming to TT-M-261, Etc. (See 5.3.1.1 on Page 12).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform  
**Comments:**

**PRIMARY REFS:** MIL-T-81533  
O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:** TT-C-490 TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-P-23377 All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:** Recommed deleting requirement to vapor degreasing and substitute aqueous parts washing, semi-aqueous cleaning or hand wiping with low vapor pressure hydrocarbons. Also recommend deleting 1,1,1-trichloroethane for hand cleaning.

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**Document Number:** MIL-STD-883 D Test Methods and Procedures for Microelectronics

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Boiling Azetrope of Alcohol or  
All references to ODSs have been removed from this specification. MIL-STD-883, Version D, Notice 1, dated 1 June 1993, removed all ODS references from the solvent resistance test method (Test Method 2015). Test Method 2015.8 has been replaced with Test Method 2015.9, which does not contain any ODS references.

**ODS Use:** 2.1 Page 1 of Method 2015.8. 1,1,1 Trichloroethane or a boiling Azetrope (e.g. Genesolve 2004, a product of Allied Signal) or equivalent of an alcohol or hydrochlorofluorocarbon solvents. Note :1/ and 2/: 1,1,1-Trichloroethane Is listed as an applicable solvent for the resistance to fluids test. The Third Group of specimens shall be subjected to one of the solvent solutions as specified in 2.1.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-STD-981 B Design, Manufacturing And Quality Standard For Customer Electromagnetic Devices For Space Applications

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acetone, Isopropyl Alcohol, Sto All references to ODSs have been removed from this specification. MIL-STD-981, Revision B, Notice 2, dated 10 February 1994 has deleted the ODS reference to methyl chloroform. MIL-STD-981, Revision B, Notice 1, dated 27 April 1993, did not remove the ODS references.

**ODS Use:** Clean Plastic Or Metal Cups With Solvents That Will Not Contribute To The Degradation Of The Part; Such As Isopropyl Alcohol, Acetone, Stoddard Solvent, 1,1,1 Trichloroethane Or Equivalent (5.5.13.4 Page 19).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform) **Comments:**

**1ST LEVEL REFS:** MIL-S-22473 All references to ODSs have been removed from this specification. MIL-S-22473, Revision E, Amendment 8, dated 18 November 1993, deletes the use of 1,1,1-Trichloroethane in the solubility test (Paragraph 4.6.1.4 has been deleted entirely).

MIL-S-22473, Revision E, Interim Amendment 7, dated 30 July 1993, deletes the use of 1,1,1-Trichloroethane for degreasing the surface of parts:

"The Solvent 1-1-1 Trichloroethane is no longer mandated for degreasing the surface parts. Solvent selection is left to the discretion of the manufacturer (See Page 1 of Interim Amendment 7).

MIL-F-14256 MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**

---

**Document Number:** MIL-T-14757 Trichlorotrifluoroethane (C Cl<sub>2</sub> FC Cl F<sub>2</sub>) (For Use In Ammunition)

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Covers One Type Of Chlorofluorohydrocarbon For Use In Aerial Mines.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-T-24180 A Tile, Rubber, Underwater Acoustic Decoupler

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Buffed Surface Of Each Strip Shall Be Scrubbed With A Rag Wet With 1,1,1 Trichloroethane (Methyl Chloroform) (4.6.1.2b Page 8). Before Cementing The Specimens To the Steel Plate, The Final Coat Of Paint Shall Be Hand-Sanded And Then Cleaned With A Lint-Free Cloth Wetted With 1,1,1 Trichloroethane (4.6.1.2c Page 8).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, Acetone, etc.

---

**Document Number:** MIL-T-24487 A Tile, Rubber Vibration Damping, Type V

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The rubber strips shall be cleaned on the grooved side with a rag wetted with 1,1,1 Trichloroethane and then allowed to dry for at least 30 minutes (4.6.7.1 page 11).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with alternative non-ODS hydrocarbon wipe solvent. Example wipe solvents include: P-D-680 Type III, Electron, PF-145HP, DS-104, DS- 108, Isopropyl Alcohol, etc.

---

**Document Number:** MIL-T-26025 E Tractor, Aircraft Towing, Diesel Engine Driven (DED), 4x4, 4 Wheel Steer, 10,300 Pounds Drawbar Pull, Pneumatic Rubber Tired

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Two 17 lb Halon 1211 Fire Extinguishers (3-A: 80B:C) in accordance with A-A-1108, Type E, shall be provided with holding brackets (3.7.5 page 19).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-STD-808

MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** Recommend replacing Halon 1211 with dry chemical extinguisher or Halon alternative recommended by US Air Force 1211 testing program.

---

**Document Number:** MIL-T-26069 C Trailer, Oxygen Cylinder, AF/M32R-3, High and Low Pressure, 2 Wheel,  
8 Cylinder Capacity

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-26069 has been Cancelled by Revision C, Notice 1, dated 7 September 1994, and is not superseded by another document.

**ODS Use:**

For Level A Cleaning, Parts, Fittings, et cetera, That Will Come in Contact With High-Purity Oxygen Shall Be Thoroughly Cleaned By One or a Combination of the Following Methods or Equal Effective Methods. Method A: Vapor Degreasing Process Followed By Fingerprint Removal. Use Stabilized Trichloroethylene Conforming To MIL-T-27602 in a Standard Commercial Vapor Degreaser (See 5.1.1.3 on Page 13). Note that MIL-T-27602 has been Cancelled and is Superseded by MIL-C-81302.

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** TT-C-490

TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

MIL-STD-808

**General Comments:**

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**Document Number:** MIL-T-26510 E Truck, Tank A/S32A-2

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** One 20 Pound Halon 1211 Fire Extinguisher, Shall Be Vertically Mounted In A Bracket On The Outside Of The Truck On the Left Side (Driver's Side) (3.22.6 Pasge 29).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:**

**General Comments:** Recommend replacing Halon 1211 with dry chemical extinguisher having equivalent UL ratings.

---

**Document Number:** MIL-T-27213 D Truck, Crash Fire Rescue, 3000 Gallon Capacity, A/S32P-23

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-27213 has been Cancelled by Revision D, Notice 1, dated 31 October 1994, and is not superseded by another document.

**ODS Use:**

The Vehicle Shall Be Equipped with a 500 Pound Capacity Bromochlorodifluoromethane (Halon 1211) Fire Fighting System (See 3.9 on Page 25). Halon 1211 Shall Be in Accordance With MIL-B-38741 (See 3.9 on Page 25). The Agent Tank Shall Be Charged with a Minimum of 50 Pounds of Halon 1211 or Refrigerant 12 (See 4.6.2.2 on Page 35). The Agent Tank and All Components which Come into Contact with Halon 1211 Shall Then Be Pressurized (For the Halon 1211 Leakage Test) and Tested (See 4.6.2.2 on Page 35). The Halon 1211 System Shall Extinguish three 600 Square Foot Liquid Fuel Pan Fires in Accordance with UL 711 (See 4.6.4.4 on Page 38). Neither Halon 1211 Nor Nitrogen Shall Be Added To the System Between Fires (See 4.6.4.4 on Page 38). One Halon 1211 Fire Extinguisher in Accordance with A-A-1108, Type F, is Listed as Optional Equipment. Paragraphs 3.2.3 (Page 11), 3.4.5(p) (Page 16), 3.9.1 (Page 25), 3.9.3 (Page 26), 3.9.3.1 (Page 26) and 4.6.2.1.3 (Page 35) Use the Term Halon 1211.

**ODS CHEM 1:**

Halon 1211

**ODS CHEM 2:**

CFC 12

**Comments:**

**PRIMARY REFS:**

MIL-B-38741

MIL-B-38741

**1ST LEVEL REFS:**

A-A-1108

MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:**

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**Document Number:** MIL-T-27483 F Tank, Storage, Liquid Oxygen/Liquid Nitrogen, TMU-20/E

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Shall Be Resistant To Corrosion Or Cleaning Solvents Such As Trichlorotrifluoroethane (See 3.8.1.3.2 Page 14). All Safety Devices Shall Be Fabricated From Corrosion-Resistant Materials Not Adversely Affected By Cleaning Solvents Such As Trichlorotrifluoroethane (See 3.8.1.9 Page 23). All Surfaces Shall Be Cleaned With A Non-Elammable Solvent Such As Trichlorotrifluoroethane In Accordance With MIL-C-81302 (See 3.12.1 Page 33).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-81302  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:** MIL-C-83286 All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

MIL-STD-1359

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact: Neil Antin, SEA03Y2A.

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**Document Number:** MIL-T-27602 B Trichloroethylene, Oxygen Propellant Compatible

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-T-27602 has been Cancelled by Revision B, Notice 1, dated 20 May 1983, and has not been superceded by another document.

**ODS Use:** Carbon tetrachloride is used to determine the solubility of the residue ( 4.4.9 page 5).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-T-27892 F Tank, Storage, Liquid Oxygen TMU-7A/E

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-27892 has been Cancelled by Revision F, Notice 1, dated 31 March 1993, and is not superseded by another document.

**ODS Use:**

The valves shall be fabricated from corrosion-resistant material not adversely affected by extended contact with liquid or gaseous oxygen or nitrogen, moist air, water or cleaning solvents such as Trichlorotrifluoroethane, per MIL-C-81302 (See 3.8.1.10.1.2 on Page 6 of Amendment 3 and on Page 21 of Revision F). All surfaces, parts, fittings, et cetera, of the tank that will be in contact with high-purity oxygen shall be thoroughly cleaned with a nonflammable solvent, such as Trichlorotrifluoroethane, per MIL-C-81302, to remove all metal shavings, oil, grease, and other foreign material. No other cleaning, priming, or painting with organic materials shall be performed on these surfaces. (See 3.12.1 on Page 7 of Amendment 3 and Page 28 of Revision F).

**ODS CHEM 1:**

CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

MIL-C-81302

**1ST LEVEL REFS:**

MIL-STD-1359

MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

**General Comments:**

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**Document Number:** MIL-T-38170 F Tank, Mobile Storage, Liquid Oxygen TMU-27/M

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Inner Shell shall be Fabricated from Material that is Resistant to Corrosion caused by contact with Liquid Oxygen, Liquid Nitrogen, Moist Air, Water, or Cleanign Solvents such as Trichloroethane (see 3.8.1.3.2 page 12). Method A Degreasing is a Vapor Decreasing Process Using 1,1,1- Trichloroethane Conforming to MIL-T-81533 in a standard commercial Vapor Degreaser or by Blowing Degreasing Vapors into the component in such a manner that the Vapor will Condense on and Properly Clean all Surfaces Requiring Degreasing (see 3.16.1 "Method A" page 29). Method B Degreasing is a Solvent Degreasing Process using 1.1.1- Trichloroethane or Commercial Nitrogen Safe Cleaning Solventat Ambient Temperatures to thoroughly Wash all Surfaces Requiring Degreasing (see 3.16.1 "Method B" page 29). NOTE: MIL-C-81302 is listed as an Applicable Specification but is Not Referenced in the Text and is therefore Not Considered a valid ODS Call Out.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-T-81533

1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-H-83772

MIL-STD-1359

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact Neil Antin SEA03Y2A

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**Document Number:** MIL-T-4748 B Tester Temperature Instruments MJ-1

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) All references to ODSs have been removed from this specification. MIL-T-4748, Revision B, Amendment 1, dated 1 November 1993, removes the direct ODS reference. Paragraph 3.5.5 (Page 3) has been Revised to read "The refrigeration system of the tester shall be designed and constructed for operation on Monochlorodifluoromethane (freon 22) refrigerant."

**ODS Use:** The Refrigeration System Of The Tester Shall Be And Constructed For Operation On Either, Or Both, Dichlorodifluoromethane (Freon 12) And Monochlorodifluoromethane (Freon 22) Refrigerant (3.5.5 Page 3)

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** MIL-STD-808

**General Comments:** Recommend deleting R12 and replace with and EPA SNAP refrigerant with an ODP of 0.05 or less, such as HCFC 22 or HFC 134a.

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**Document Number:** MIL-T-49447                      Temperature Sensor, Resistance

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The waterproofing solution shall consist of one part of Number 200 Fluid, as manufactured by Dow Corning Corp. viscosity 200 centistrokes at 25 degree Celsius, or equal, and two parts of carbon tetrachloride by volume (3.3.3 page 3).

**ODS CHEM 1:**                      Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**                      MIL-F-14256                      MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

**General Comments:**                      Recommend replacing carbon tetrachloride with an acceptable alternative solvent.

---

**Document Number:** MIL-T-52834 A Tank, Master X-Ray Film Processing for 70 mm Film

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-52834 has been Cancelled by Revision A, Notice 1, dated 1 January 1990, and is not superseded by another document.

**ODS Use:** The Refrigerant Shall Conform To BB-F-1421, Type 12 (See 3.15 on Page 8).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-T-52941 B Trucks, Lift, Fork, Diesel-Engine-Driven: Pneumatic-Tired, Rough-Terrain; 400 Pound Capacity At 24-Inch Load Center

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Bracket Shall Secure A 5 Pound Halon 1211 Fire Extinguisher Conforming To A-A-1108 type B (3.5.4. Page 11).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

MIL-C-53039

All references to ODSs have been removed from this specification. MIL-C-53039, Revision A, Amendment 2, dated 19 May 1993, deletes the required use of 1,1,1-Trichloroethane to reduce the volume of the coating (See Paragraphs 3.8 and 4.3.14).

**General Comments:** Replace Halon 1211 extinguisher with a dry chemical extinguisher with similiar UL ratings.

---

**Document Number:** MIL-T-53033 A Tractor, Wheeled, All Wheel Drive With Attachments

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** A Coast Guard Approved Fire Extinguisher Bracket Shall Be Mounted In The Operator's Cab Or Vicinity And Be Compatible With A 5 Pound Halon 1211 Fire Extinguisher Conforming To A-A-1108, Type B (3.3.1.1 Page 10).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-53039

All references to ODSs have been removed from this specification. MIL-C-53039, Revision A, Amendment 2, dated 19 May 1993, deletes the required use of 1,1,1-Trichloroethane to reduce the volume of the coating (See Paragraphs 3.8 and 4.3.14).

MIL-C-450

MIL-C-450, Revision C, has been made Inactive For New Design by Notice 1, dated 9 May 1996.

**General Comments:** Replace Halon 1211 extinguisher with a dry chemical extinguisher with similiar UL ratings.

---

**Document Number:** MIL-T-62340 A Tank, Combat, Full-TrackeD, MI, Series Processing for Shipment and Storage of

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.3.5.3.2. Spray Inside of Electrical Connector with Corrosion Preventative Compound Conforming to MIL-C-81309 type III, Class II. Spray Outside with Corrosion Preventative Compound MIL-C-85054 type I.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-81309 All references to ODSs have been removed from this specification. MIL-C-81309, Revision E, dated 31 March 1993, deletes the ODS reference in the propellant and formula. Note that the specification is now a performance specification. MIL-C-81309, Revision E, Amendment 1, dated 16 December 1993, deletes the reference to HCFC-22 propellant. Propellant gases shall now either be HFC-134a or Carbon Dioxide.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound.  
WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS. MIL-C-81309, Revision E, Specification Was Revised to Delete the ODS Reference in the Propellant and Formula. Specification is now a performance Specification.

---

**Document Number:** MIL-T-81533 A 1,1,1-Trichloroethane (Methyl Chloroform) Inhibited, Vapor Degreasing

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Covers The Requirements Of Inhibited 1,1,1-Trichloroethane For Vapor Degreasing

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-T-81955 Tin Plating, Immersion For Copper and Copper Alloys

**Level:** 1 **Class:** ALTAVAIL

**Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634) MIL-T-81955, Amendment1, dated 6 September 1995, removes all ODS references. This Amendment is not yet available on the DODISS.

**ODS Use:** 4.5.4 The Surface of the Article or Specimen to be Tested Shall Be Cleaned with a Suitable Solvent Such As Trichloroethylene, Conforming to O-T-634 or Stabilized 1,1,1 Trichloroethane Conforming to MIL-T-81533, to Remove Dirt, Grease, Oil, Films etc.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting use of 1,1,1-trichloroethane. If O-T-634 is not acceptable as a replacement, evaluate aqueous, semi-aqueous, and hydrocarbon solvent methods.

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**Document Number:** MIL-T-82080 D Truck, Firefighting: Aircraft Crash and Rescue, 1600 Pound GVW, 4 by 4

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-82080 has been Cancelled by Revision D, Notice 1, dated 12 August 1993, and is not superseded by another document.

**ODS Use:** The Twin Agents shall be an AFFF Fire Fighting Agent and Shall Conform to MIL-F-24385 (See 3.9 on Page 13). The Halon 1211 Agent Shall Conform to MIL-B-38741 (See 3.9 on Page 13)

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-B-38741

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-T-82831 Tackifier, EPDM

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MIL-T-82831 has been Cancelled by Notice 1, dated 25 February 1993, and is not superseded by another document.

**ODS Use:** Table I, Page 3, 1,1,1 Trichloroethane, Technical, Inhibited (Methyl Chloroform) listed as Material Component of the Tackifier.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**PRIMARY REFS:** O-T-620 **Comments:** O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-T-83018 E Truck, Tank A/S32A-24

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** One 20 pound Halon 1211 fire extinguisher, which is UL approved, shall be mounted vertically in a bracket on the driver's side of the truck (3.7.23 page 26).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

MIL-STD-808

**General Comments:** Replace Halon 1211 with dry chemical extinguishers with similiar UL ratings.

---

**Document Number:** MIL-T-83303 Truck, Fire Fighting, Airfield Ramp, 4X4 A/S 32P-20, Twin Agent, Skid Mounted.

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-83303 has been Cancelled by Revision C, Notice 1, dated 14 October 1994, and is not superseded by another document.

**ODS Use:** 3.9,3.91, page 16 Calls for Use of Halon 1211 Agent System and Capatibility to Dispense 1211 Dry chem. 3.10, Vehicle will be equipped with Halon 1211 System, 500 lbs, 3.10.1, Agent Tank Shall Be capable of Holding 1211. 4.6.4.1Leak Test shall use 50 lbs of 1211 or R12.4.6.4.2 Discharge Testing Using 500 lbs of 1211 shall be conducted. Halon system will be used to extinguish 600 square ft. of liquid fuel fires. Fully Charge Halon Shall be Discharged for 60 sec and flow rate calculated.

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** MIL-B-38741

Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-T-83808

Tractor, Commercial, 4x2; Diesel Engine Driven (DED) Support  
Equipment (SE) Towing 40,000 Pounds, Aircraft (AC) Towing 70,000  
Pounds, 4,500 Pounds Drawbar Pull (DBP)

**Level:** 1                    **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Two 5lb. Halon 1211 Fire Extinguishers In Accordance With A-A-1108, Type B, Shall Be Provided With Holding Brackets (3.7.5 Page 21)

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-STD-808

MIL-I-46058

All references to ODSs have been removed from this specification. MIL-I-46058, Revision C, Amendment 7, dated 14 September 1993, has removed all ODS references. Paragraph 4.7.1.1(c) has been Revised to state " the test panel shall be cleaned of all traces of rosin flux and other contaminants by scrubbing in suitable solvents normally used to clean contaminants from printed wiring and terminal- board assemblies." Paragraphs 4.7.1.1(c) (1), 4.7.1.1(c) (2) and 4.7.1.1(c) (3) are deleted in their entirety.

**General Comments:** Recommend replacing Halon 1211 with dry chemical or Halon alternative recommended by US Air Force 1211 testing program.

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**Document Number:** MIL-T-83813 Truck, Cargo, Depot Transporter

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** At Least The Following Instruments, Accessories, And Controls Shall Be Provided: (M) Fire Extinguisher (Halon 1211, Type C) In Accordance With Commercial Item Description A-A-1108 (3.4.5 Pages 12-13).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-83286 All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

MIL-STD-808

**General Comments:** Replace Halon 1211 with dry chemical extinguisher with similiar UL ratings.

---

**Document Number:** MIL-T-83817 Truck, Lift, Fork, 4,000 Pound Capacity At 23.5 Feet Of Reach, Rough Terrain

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** One 2.5lb Halon 1211 Fire Extinguisher (5-B:C) In Accordance With A-A-1108 Type B, Shall Be Provided With Holding Bracket (3.39.2 Page 12).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

MIL-C-46168

All references to ODSs have been removed from this specification. MIL-C-46168, Revision D, Amendment 3, dated 21 May 1993, removes all references to 1,1,1-Trichloroethane (Paragraphs 1.2.2, 4.3.7.1 and 4.3.15 have all been deleted).

**General Comments:** Replace Halon 1211 with dry chemical extinguisher with similiar UL ratings.

---

**Document Number:** MIL-T-83965 B Truck, Fire-Rescue, A/S32P-10 Forcible Entry

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-T-83965 has been Cancelled by Revision B, Notice 1, dated 17 September 1994, and is not superseded by another document.

**ODS Use:** When Specified, The Following Fire Extinguishers Shall Be Provided With Mounting Brackets: (b) Two Each Hand Portable 17 Pound Halon 1211 Fire Extinguisher With A Minimum UL rating Of 3A:80B:C (3.9.1 Page 16).

**ODS CHEM 1:** Halon 1211

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-C-83286

All references to ODSs have been removed from this specification. MIL-C-83286, Revision B, Amendment 3, dated 24 January 1994, removes the ODS references in Paragraph 3.6.6 and Appendix I (both Paragraph 3.6.6 and Appendix I have been deleted in their entirety).

MIL-STD-808

**General Comments:** Replace Halon 1211 with dry chemical extinguisher with similiar UL ratings.

---

**Document Number:** MIL-T-85418 Tank, Storage, Liquid Oxygen, Low Loss Closed Cycle, TMU-70/M

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Prior To Assembling, Tank Surfaces, Parts, Fittings, etc, that will be in contact with high purity oxygen, shall be degreased by flushing with cleaning compound, MIL-C-81302 or using Vapor Phase Degreaser in accordance with O-T-236 or O-T-634 (See 3.15.1 on Page 28). Components Shall be cleaned by Immersing, Scrubbing, or Pressure Spray with MIL-C-81302 or used in conjunction with Vapor Degreasing or MIL-C-81302 (See 3.15.1 on Page 28).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-O-27210  
MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC).

---

**Document Number:** MIL-T-87984 Trailer, Tank, Fuel, Servicing, Type A-1B

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** One Halon 1211 fire extinguisher, Amerex Part Number 361, or equivalent, shall be mounted in a location readily accessible to persons standing on the ground (3.9.1 page 16).

**ODS CHEM 1:** Halon 1211 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:** MIL-STD-808  
MIL-P-23377

All references to ODSs have been removed from this specification. MIL-P-23377, Revision G, Dated 30 September 1994, No longer requires the use of 1,1,1-Trichloroethane in its class 3 Primers. The designation "Class 3" has been deleted from the specification and the use of chlorinated solvents is prohibited.

**General Comments:** Replace Halon 1211 with dry chemical extinguisher with similiar UL ratings or with a Halon 1211 alternative identified by the U.S. Air Force Halon 1211 test program.

---

**Document Number:** MIL-T-87999                      Truck Servicing, 3 Ton, 27 Foot Elevator For Loading C-5 Aircraft Upper Deck

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Two 2 1/2 Pound (Minimum) Halon 1211 Fire Extinguishers With Mounting Brackets Shall Be Furnished, But Not Installed (3.4.22 Page 13).

**ODS CHEM 1:** Halon 1211                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1211

**1ST LEVEL REFS:**

**General Comments:** Replace Halon 1211 with dry chemical extinguisher with similiar UL ratings.

---

**Document Number:** MIL-V-12276 D Varnish, Phenolic, Baking

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test For Olefinic Or Cyclo-olefinic Compounds: Dissolve The First Sample In 1ml Of Carbon Tetrachloride And Add 1 Drop Of 1 Percent Bromine In Carbon Tetrachloride (4.4.5.3 Page 11).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

---

**Document Number:** MIL-V-13750 B Varnish, Phenol-Formaldehyde, Clear Aluminum Pigmented

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test For Olefinic Or Cyclo-olefinic Compounds: Dissolve The First Sample In 1ml Of Carbon Tetrachloride And Add 1 Drop Of 1 Percent Bromine In Carbon Tetrachloride (4.4.3.3. Page 8).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

---

**Document Number:** MIL-V-16468 C Valves, Shutoff, Hydrocarbon Fuel Service 100 P.S.I. and 150 P.S.I.  
Working Pressure

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-16468, Revision C, Notice 1, dated 9 March 1989, makes this specification inactive for new design.

**ODS Use:**

Air freon for seat tightness: One flange shall be blanked off and the plug or disc turned to the closed position. Freon at 5 p.s.i. shall be introduced into the valve and the pressure built up to 75 p.s.i. by further intriduction of air or nitrogen. the tightness of the valve seats shall be checked with a halide torch (4.3.1.1 page 5). Air freon for valve tightness: Both flanges shall be blanked off with the plug or disc turned to the open position. Freon and air or nitrogen shall be introduced into the valve as specified in 4.3.1.1 to a pressure of 75 p.s.i. The tightness of the stem, bonnet, and any other joints and the porosity of the body shall be checked with a halide torch (4.3.1.2 page 5). Note: Freon is a generic term, generally the term "Freon" used for leak detection is considered to be CFC-12. However, HCFC-22 (Freon 22) can also be used.

**ODS CHEM 1:**

Freon

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**

Freon

**1ST LEVEL REFS:**

**General Comments:**

Recommend HCFC-22 for use with existing electronic leak detectors or use of HFC-134a with new fluorine compound leak detectors for internal leak detection. Note: Air should not be used with HCFC-22 or HFC-134a. Use nitrogen only due to possible flammability hazards.

---

**Document Number:** MIL-V-18318 B Valve, Pressure Regulating, Oxygen System

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-18318, Revision B, Amendment 3, dated 10 January 1996, has removed the ODS references. The first sentence of Paragraph 3.13 has been revised to read "All parts of the valve shall be degreased in accordance with MIL-STD-1359."

**ODS Use:** All Parts of the Valve shall be degreased by Flushing, Immersing, Scrubbing, Pressure Spray or Vapor Degreasing with MIL-C-81302 Cleaning Compound (See 3.13 on Page 2 of Amendment 2).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC).

---

**Document Number:** MIL-V-2/22 C Dichlorodifluoromethane, Monochlorodifluoromethane,  
Dichlorotetrafluoroethane, Methyl Chloride, Sulfur Dioxide,  
Bromochloromethane, Bromotrifluoromethane and Dibromodifluorome

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Valves are intended for use with cylinders for R12, Monochlorodifluoromethane, R22, Dichlorotetrafluoroethane (R114) as well as fire extinguishers Bromochloromethane, bromotrifluoromethane and dibromodifluoromethane.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:** CFC 114

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)  
Dichlorotetrafluoroethane (CFC-114)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

---

**Document Number:** MIL-V-22854 Valves, Angle, Shut Off Packed, Receiver, R 12

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-22854 has been Cancelled by Revision B, Notice 2, dated 16 February 1993, and is not superseded by another document.

**ODS Use:** Specification is just a description of a valve for use with an R-12 System. R-12 not required by specification.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-V-23289 B Valves, Solenoid, Refrigerant-12

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-23289 has been Cancelled by Revision B, Notice 2, dated 31 August 1993, and is not superseded by another document.

**ODS Use:** Specification is just a description of a valve used with R-12. R-12 not required.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:**

---

**Document Number:** MIL-V-23300 C Valves, Regulating, Fluid Pressure, Crankcase, Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This specification covers compressor crankcase pressure regulating valves for refrigeration systems using refrigerant 12 and having input powers of 10 horsepower or less. The valves shall be subjected to the minimum leak test pressure of 140 psig and minimum strength test pressure. The leak and failure test shall be performed using refrigerant (4.3.2 page 4).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** For the leak detection test, Recommend replacing CFC-12 with and HCFC, a fluorine based gas, or an inert gas. Recommend cancelling the specification when ODS equipment is no longer required

---

**Document Number:** MIL-V-23450 Valves, Expansion, Thermostatic, Refrigerant 12 and 22.

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Description of R-12/R-22 expansion valve. R-12/R-22 not required.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancelling the specification when ODS equipment is no longer required.

---

**Document Number:** MIL-V-24232 A Valves, Pneumatic, 4-Way, 2-Position Manually Operated

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-24232, Revision A, Amendment 2, dated 2 March 1995, removes the ODS reference. Paragraphs 4.2.12.7 and 4.2.12.7.1-4.2.12.7.3 have been deleted.

**ODS Use:** Properties after immersion in freon PCA: The test specimens shall be immersed in Freon PCA (purified Freon TF) at 80 degrees plus or minus 9 degrees Far. for 168 plus or minus 1 hours. (4.2.12.7 page 9).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Freon TF

**1ST LEVEL REFS:**

**General Comments:** Recommend changing specification to reference elastomeric compatiblity with solvents in accordance with MIL-STD-1622A. MIL-STD-1622 to be changed to reference NON-ODS cleaners.

---

**Document Number:** MIL-V-25469 Valves, Filler, Liquid Oxygen, Aircraft Type

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.6.5 page 9, Clean Valve Parts with O-T-620 or MIL-C-81302.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact: Neil Antin, SEA03Y2A.

---

**Document Number:** MIL-V-25962 Valve, Liquid Oxygen Drain

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.11. Cleaning of Valve Shall Be Vapor Degreased with O-T-620. Ultrasonics, Immersion, Scrubbing Cleaning with MIL-C-81302 is also allowed.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** O-T-620 O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact: Neil Antin, SEA03Y2A.

---

**Document Number:** MIL-V-5027 D Valves, Check, Oxygen, High Pressure

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-5027, Revision D, Amendment 2, dated 10 January 1996, has removed the ODS references. The Federal specifications MIL-C-81302 and MIL-T-81533 have been deleted from the list of Federal specifications (Paragraph 2.1). Paragraph 3.4.1.5 has been revised to read "Prior to assembling the valve, all internal surfaces and components shall be cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:**

Prior to Assembling the Valve Shall Be Degreased by Flushing with Cleaning Compound, MIL-C-81302 or Using Vapor Degreaser in Accordance with MIL-T-81533 (See 3.4.1.5 on Page 2 of Amendment 1). Components Shall be Cleaned by Immersing Scrubbing or Pressure Spray with MIL-C-81302 Cleaning Compound or Used in Conjunction with Vapor Degreaser or MIL-C-81302 (See 3.4.1.5 on Page 2 of Amendment 1).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:**

Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Research and Development project in place. Contact Neil Antin, SEA03Y2A, for specifics.

---

**Document Number:** MIL-V-6125 D Valve, Regulating, Fluid Pressure, Type C-1

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P

**ODS Use:** All Internal Surfaces Shall Be Degreased By Flushing With A Cleaning Compound, MIL-C-81302, Or Using A Vapor Degreaser In Accordance With O-T-236 Or O-T-634. Components Shall Be Cleaned By Immersing, Scrubbing Or Pressure Spray With MIL-C-81302 Cleaning Compound Or Ultrasonics May Be Used In Conjunction With A Vapor Degreaser Or MIL-C-81302 (See 3.5.4 Page 4).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-C-81302

**1ST LEVEL REFS:** MIL-STD-1359

BB-A-1034

BB-A-1034, Revision B, Notice 1, dated 27 December 1995, has removed the ODS reference. In Table II, the phrase "(trichloroethylene and freon TF)" has been deleted.

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Contact Neil Antin, SEA03Y2A, for specifics.

---

**Document Number:** MIL-V-62547 A Valve and Cylinder Assemblies, Halon 1301

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.2.3. The Fire Extinguishing Agent Charged into the Extinguisher Shall be Bromotrifluoromethane, CBr F3 (Halon 1301)

**ODS CHEM 1:** Halon 1301 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-M-12218

**1ST LEVEL REFS:**

**General Comments:** Continue use of Halon 1301 until suitable substitute is identified by U.S. Army testing program.

---

**Document Number:** MIL-V-7908 C Valves, Aircraft, Low Pressure Oxygen Systems

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 3.3.6. page 4, All Parts of the Valve Shall Be Degreased Using A Vapor Phase Degreaser in Accordance with MIL-C-81302 or MIL-T-81533.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-O-27210

MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of contact: Neil Antin, SEA03Y2A.

---

**Document Number:** MIL-V-8612 A Valve, High Pressure Oxygen Line

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-8612, Revision A, Amendment 2, dated 10 January 1996, removes the ODS references. Paragraph 3.3.8 has been revised to read "Prior to assembling the valve, all internal surfaces and components shall be cleaned in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359."

**ODS Use:**

Prior to Assembling the Valve, All Internal Surfaces of the Valve Shall Be Degreased by Flushing with a Cleaning Compound, MIL-C-81302, or Using a Vapor Phase Degreaser in Accordance with MIL-T- 81533 (See 3.3.8 on Page 2 of Amendment 1). Components Shall be Cleaned by Immersing, Scrubbing or Pressure Spraying with MIL-C-81302 Cleaning Compound or Ultrasonics may be used in Conjunction with a Vapor Degreaser or MIL-C-81302 Cleaning Compound (See 3.3.8 on Page 2 of Amendment 1).

**ODS CHEM 1:**

Methyl Chloroform

**ODS CHEM 2:**

CFC 113

**Comments:**

**PRIMARY REFS:**

MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:**

Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Research and Development project in place. Contact SEA03Y2A, for specifics.

---

**Document Number:** MIL-V-8622 B Valve, High-Pressure Oxygen-Cylinder, Automatic Opening

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MIL-V-8622, Revision B, Amendment 1, dated 29 September 1995, removes the ODS references. Paragraph 3.3.7 has been revised to read "All internal parts of the valve shall be degreased in accordance with MIL-STD-1359. After assembly, the absence of cleaning compounds shall be verified in accordance with MIL-STD-1359.

**ODS Use:** All Internal Parts of the Valve Shall Be Degreased by Using a Cleaning Compound, MIL-C-81302 or by Using a Vapor Phase Degreaser in Accordance with MIL-T- 81533 (See 3.3.7 on Page 4).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Research and Development project in place. Contact Neil Antin, SEA03Y2A, for specifics.

---

**Document Number:** MIL-V-8965 A Valve Core, Oxygen, High Pressure

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-V-8965, Revision B, dated 14 December 1990, removes the direct ODS reference. Paragraph 3.5 has been Revised by deleting the requirement to degrease the valve core by flushing with MIL-C-81302 or by using a vapor degreaser in accordance with MIL-T-81533 and substituting the requirement to clean the valve core in accordance with MIL-STD-1359 with the cleanliness test method for category 1.

**ODS Use:**

3.5. Prior to Assembling the Valve Core, All Surfaces of the Valve Core Shall be Degreased by Flushing with a Cleaning Compound, MIL-C-81302 or using a Vapor Phase Degreaser in Accordance with MIL-T-81533. Components shall be cleaned by immersion, Scrubbing, or Pressure Spray with MIL-C-81302 Cleaning Compound or Ultrasonics may be used in conjunction with Vapor Degreasing or MIL-C-81302 Cleaning Compound. Final Rinse with MIL-C-81302 shall be with Fresh uncontaminated solvent.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:**

Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Research and Development project in place. Contact SEA03Y2A, for specifics.

---

**Document Number:** MIL-V-9050 E Valves, Oxygen, Pressure Relief, Aircraft

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** All Internal Surfaces of the Valve shall be Degreased by Flushing with a Cleaning Compound, MIL-C-81302 or Using a Vapor Phase Degreaser in Accordance with MIL-T-81533. Components shall be Cleaned by Immersing, Scrubbing or Pressure Spray with Ultrasonics may be Used in Conjunction with Vapor Degreasing or MIL-C-81302 Cleaning Compound (See 3.5.3.1 on Page 4).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

MIL-O-27210

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact: Neil Antin, SEA03Y2A.

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**Document Number:** MIL-V-9439 D Valves, Oxygen Cylinder, High Pressure

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Valve shall be Degreased Using a Vapor Phase Degreaser in Accordance with MIL-C-81302 or MIL-T-81533 (See 3.5 on Page 7).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:** Modify to provide procedures using Navy Oxygen Cleaner (NOC) aqueous solution. Point of Contact: Neil Antin, SEA03Y2A.

---

**Document Number:** MIL-W-22759/32 C Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE, Light Weight, Tin-Coated Copper, 150C, 600Volt

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/32, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** MIL-T-81533 (1,1,1 Trichloroethane (Methyl Chloroform) inhibited, vapor degreasing) and an azeotrope of trichlorotrifluoroethane and methylene chloride, Dupont Freon TMC of equivalent are listed as immersion test fluids on Table III (see page 3).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
MIL-T-81533

**1ST LEVEL REFS:** MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-W-22759/33 C Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE, Light Weight, Silver-Coated High Strength Copper Alloy, 150C, 600 Volt

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/33, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** MIL-T-81533 (1,1,1 Trichloroethane (Methyl Chloroform) Inhibited, vapor degreasing) and an azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Dupont Freon TMC or equivalent are listed as immersion test fluids on Table III (see page 3)

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
MIL-T-81533

**1ST LEVEL REFS:** MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-W-22759/34 D Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE,  
Normal Weight, Tin-Coated Copper, 200C, 600Volt

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-22759/34, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** MIL-T-81533 (1,1,1Trichloroethane (Methyl Chloroform) Inhibited, vapor degreasing) and an azeotrope of trichlorotrifluoroethane and Methylene Chloride, Dupont Freon TMC of equivalent are listed as immersion test fluids on Table III(see page 4).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
MIL-T-81533

**1ST LEVEL REFS:** MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-W-22759/35 D Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE, Normal Weight, Silver-Coated High Strength Copper Alloy, 150C, 600 Volt

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-22759/35, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** MIL-T-81533 (1,1,1 Trichloroethane (Methyl Chloroform) Inhibited, vapor degreasing) and an azeotrope of trichlorotrifluoroethane and Methylene Chloride, Dupont Freon TMC of equivalent are listed as immersion test fluids on Table III (see page 3).

**ODS CHEM 1:** CFC 113

**ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)

MIL-T-81533

**1ST LEVEL REFS:** MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:**

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**Document Number:** MIL-W-22759/41 C Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE,  
Normal Weight, Nickel-Coated Copper, 200C, 600 Volt.

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/41, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** Page 3. Table III. MIL-T-81533 (1,1,1 Trichloroethane, Methyl Chloroform) Inhibited Vapor Degreasing) and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Du Pont Freon TMC or Equivalent are Listed as Immersion Fluids on Table III.

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
MIL-T-81533

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-22759/42 B Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE, Normal Weight, Nickel-Coated High Strength Copper Alloy, 200C, 600 Volt

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-22759/42, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** Page 3. Table III. MIL-T-81533 (1,1,1 Trichloroethane, Methyl Chloroform) Inhibited Vapor Degreasing) and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Du Pont Freon TMC or Equivalent are Listed as Immersion Fluids on Table III.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-22759/43 C Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE,  
Normal Weight, Silver-Coated Copper, 200C, 600-Volt

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/43, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** Page 3. Table III. MIL-T-81533 (1,1,1 Trichloroethane, Methyl Chloroform) Inhibited Vapor Degreasing) and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Du Pont Freon TMC or Equivalent are Listed as Immersion Fluids on Table III.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-22759/44 A Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE,  
Light Weight, Silver-Coated Copper, 200C, 600 Volt

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/44, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** Page 3. Table III. MIL-T-81533 (1,1,1 Trichloroethane, Methyl Chloroform) Inhibited Vapor Degreasing) and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Du Pont Freon TMC or Equivalent are Listed as Immersion Fluids on Table III.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-22759/45 A Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE,  
Light Weight, Nickel-Coated Copper, 200C, 600 Volt

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/45, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** Page 3. Table III. MIL-T-81533 (1,1,1 Trichloroethane, Methyl Chloroform) Inhibited Vapor Degreasing) and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Du Pont Freon TMC or Equivalent are Listed as Immersion Fluids on Table III.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-22759/46 A Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE,  
Light Weight, Nickel-Coated High Strength Copper Alloy, 200C, 600 Volt

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** All references to ODSs have been removed from this specification. MIL-W-22759/46, Revision C, Amendment 1, dated 29 September 1993, has deleted the ODS reference. Test fluids r and s are deleted from Table III.

**ODS Use:** Page 3. Table III. MIL-T-81533 (1,1,1 Trichloroethane, Methyl Chloroform) Inhibited Vapor Degreasing) and an Azeotrope of Trichlorotrifluoroethane and Methylene Chloride, Du Pont Freon TMC or Equivalent are Listed as Immersion Fluids on Table III.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533  
Trichlorotrifluoroethane (CFC-113)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-53047 Water Chiller, Small, Mobile

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Refrigerant-System Leakage Test (See 4.5.2.3.2 on Page 10) Requires that the Refrigerant System be Fully Charged with Refrigerant 12 (See 4.5.2.3.1 on Page 10).

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:** MIL-P-116

All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend replacing R12 with a HCFC, a flourine-based gas or an inert gas.

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**Document Number:** MIL-W-81002 B Wire Rope, Steel, 1-3/8 Inch Diameter, 6 By 30, Type G, Lang Lay  
Flattened Stand, Fiber Core, High-Strength (For Aircraft Arresting)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Other Suitable Solvent MIL-W-81002, Revision B, Amendment 1, dated 17 May 1995, removes the ODS reference from Paragraph 30.3 (Page 15). Amendment 1 deletes Paragraph 30.3 and substitutes a new Paragraph 30.3, which reads "Degrease 12 inches of the wire rope end with an aqueous solution or other solvent approved by NAVAIRWARCENACDIVLKE."

**ODS Use:** Degrease 12 inches of wire rope end by soaking for 15-30 minutes in a suitable solvent (1,1,1 Trichloroethane) or other solvent approved by NAVAIRENGCEN (30.3 page 15).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of solvent degreasing with trichloroethane. Investigate the use of naphtha or petroleum/terpene hydrocarbon solvents with low vapor pressure, such as Electron, PF Degreaser, PF-145, Vortex, Natra-Sol, Citri-Solv or P-D-680 Type III.

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**Document Number:** MIL-W-81822 A Wire, Electrical, Solderless Wrap, Insulated and Uninsulated, General Specifications For

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822, Revision A, Amendment 2, dated 15 March 1994, deletes the ODS references (MIL-C-81302 and MIL-T-81533). Paragraph 4.6.25 (page 15) has been Revised to delete the requirement to use Trichlorotrifluoroethane (MIL-C-81302) and 1,1,1-Trichloroethane (MIL-T-81533) as test fluids in the resistance to fluids test (4.6.25(c) and 4.6.25(d) have been deleted).

**ODS Use:** Cleaning compound, solvent, trichlorotrifluoroethane, MIL-C-81302 and 1,1,1 Trichloroethane (Methyl Chloroform), inhibited, vapor degreasing, MIL-T-81533 are listed as two applicable fluids for the resistance to fluids test (see 4.6.25 (c) and (d) on Page 15).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/1 A Wire, Electrical, Solderless Wrap, Polyethylene Terephthalate-Polyester Laminated Tape Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/1, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable fluids for the resistance to fluids test (See page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/13 A Wire, Electrical, Solderless Wrap, Extruded Ethylene-Tetrafluorethylene (ETFE) Insulation, Silver Coated Solid Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/13, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/15 A Wire, Electrical, Solderless Wrap, Extruded Ethylene - Chlorotrifluoroethylene (ECTFE) Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

All references to ODSs have been removed from this specification. MIL-W-81822/15, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/3 A Wire, Electrical, Solderless Wrap, Extruded Polyvinylidene Fluoride (PVDF) Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/3, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/4 A Wire, Electrical, Solderless Wrap, Polyimide Coating Over Extruded  
Polytetrafluoroethylene (PTFE) Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/4, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/5 A Wire, Electrical, Solderless Wrap, Fluorocarbon Polyimide Tape and Polytetrafluoroethylene (PTFE) Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/5, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/6 A Wire, Electrical, Solderless Wrap, Extruded Polytetrafluoroethylene (PTFE) Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/6, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/7 A Wire, Electrical Solderless Wrap, Polyamide Jacket Over Extruded Polyvinyl Chloride (PVC) Insulation, Tin Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/7, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MIL-W-81822/8 A Wire, Electrical, Solderless Wrap, Poly Jacket Over Extruded Fluorinated Ethylene Propylene (FEP) Insulation, Silver Coated Solid Conductor

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MIL-W-81822/8, Revision A, Amendment 1, dated 15 March 1994, deletes the requirement to use MIL-C-81302 (Trichlorotrifluoroethane) and MIL-T-81533 (1,1,1-Trichloroethane) as test fluids in the resistance to fluids.

**ODS Use:** Trichlorotrifluoroethane, MIL-C-81302, and Trichloroethane, MIL-T-81533, are listed as two of the applicable test fluids for the resistance to fluids test (see page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-T-81533

MIL-C-81302

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MMM-A-1058 A Adhesive, Rubber, (In Pressurized Dispensers)

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:**

**Comments:**

MMM-A-1058, Revision A, Interim Amendment 2, dated 30 June 1995, deletes the ODS references. Interim Amendment 2 adds the following new sentence at the end of Paragraph 3.1.3.1: "There shall be no vinyl chloride in the aerosol propellant when tested as specified in 4.4.8." This additional sentence supersedes the new sentence (which requires testing for the presence of CFC-11, CFC-12, CFC-114 and CFC-115) previously added by Interim Amendment 1. Interim Amendment 2 adds Paragraph 4.4.8.1(d), which reads "Standard propellant gas in lecture bottles (available from Matheson Gas Products or another supplier): vinyl chloride." This additional paragraph supersedes the new paragraph (which lists required standard gas propellants, including CFC-11, CFC-12, CFC-114 and CFC-115) previously added by Interim Amendment 1.

**ODS Use:** There Shall Be NO Chlorofluorocarbons 11,12, 114 And 115, Or Vinyl Chloride In The Aerosol Propellant When Tested As Specified In 4.4.8 (See Interim Amendment One Page 1). Standard Propellant Gases In Lecture Bottles: Chlorofluorocarbon 11, 12, 114, 115 And Vinyl Chloride (See 4.4.8.1(D) on Page 2).

**ODS CHEM 1:** CFC 11

**ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)  
Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** 40 CFR Part 82 subpart C makes it illegal for manufacturers to produce aerosol propellants that contain class I or class II ODSs, except for certain medical devices, mold release agents, document preservation sprays and other specialty uses. Recommend deleting requirement to use or test for CFC propellants from this specification.

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**Document Number:** MMM-A-1617 A Adhesive, Rubber Base, General Purpose

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The adhesive shall be applied in accordance with the following instructions (See 4.5.2, Page 9): a. clean metal panels with solvent conforming to MIL-T-81533, or equivalent.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:** MIL-P-116 All references to ODSs have been removed from this specification. MIL-P-116, Revision J, Amendment 2, dated 18 August 1993, removes all ODS references (O-T-620, MIL-T-81533 references). Alternative Methods Listed in MIL-P-116 Are to Be Used.

**General Comments:** Recommend changing specification to require cleaning with an aqueous, semi-aqueous or hydrocarbon cleaner.

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**Document Number:** MS16993 Plugs, Fusible, Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** R-12 fusible plug design. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17241 Heat Interchanger, Refrigerant 12

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MS17241 has been made Inactive by Revision B, Notice 2, dated 21 November 1994.

**ODS Use:** This Specification is For an R-12 Heat Interchanger.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancelling the specification when ODS equipment is no longer required.

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**Document Number:** MS17242 Strainer, Sediment, Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** R-12 sediment strainer design. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17243 Valves, Angel, Shut-Off, Packed, Receiver, Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Valve to be Used For R-12 Refrigerant System. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17248 C Valves, Compressor Service, Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Design for R-12 compressor servicing valve. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17291 Receivers, Liquid Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** R-12 refrigerant receiver design. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17415

Valve, Safety Relief, Refrigerant 12

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

U.S. Army Natick Research, Development and Engineering Center has indicated that MS17415 has been Cancelled by Notice 1, dated 4 February 1985, and is not superseded by another document. This Revision notice is not available on DODISS.

**ODS Use:** For use with dichlorodifluoromethane (R-12) refrigerant. R-12 not required by specification.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MS17810          A          Valves, Check, Refrigerant 12

**Level:** 1          **Class:** ODS          **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**          Valve is suitable for use with R-12. R-12 not required by specification.

**ODS CHEM 1:**          CFC 12          **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**          R-12

**1ST LEVEL REFS:**

**General Comments:**          Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17841 Valves, Solenoid, Refrigerant 12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** R-12 solenoid valve. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17844 Control, Temperature, Refrigerant 12, with High Pressure Cut-Out

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:** MS17844 has been Cancelled by Revision B, Notice 2, dated 7 June 1994, and is not superseded by another document.

**ODS Use:** R-12 temperature control valve. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**PRIMARY REFS:** R-12 **Comments:**

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17846 Vavles, Regulating, Fluid, Pressure, Crank Case, Refrigerant-12

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** R-12 Crankcase pressure valve. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS17982 C Valves, Expansion, Thermostatic, Refrigerant-12 and Refrigerant-22

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Contains capacity requirements for refrigerant 12. R-12 not required by specification.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS27900 Gages, Pressure and Gages Compound Pressure and Vacuum. Dial Indicating, Panel Mounted, 2 1/2 inch Dial Size, Refrigerant R12 and Refrigerant 22.

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC)

**ODS Use:** Gage, Pressure for Use with R-12 or R22 Systems

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS27901

Gages, Pressure, Dial, Indicating Panel Mounted, Refrigerant 12

**Level:** 1      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

MS27901, Revision B, dated 21 March 1975, has been made Inactive and is Superseded by MS27900.

**ODS Use:** Gage, pressure for use with R-12 systems. R-12 not required by specification.

**ODS CHEM 1:** CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** R-12

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend cancellation of this specification when ODS equipment is no longer required.

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**Document Number:** MS35845            E            Dehydrator, Desiccant, Refrigerant 12

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**            Dehydrator equipment for use with R-12. R-12 not required by specification.

**ODS CHEM 1:**            CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**            BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**            Specification is for equipment parts that use an ODS. However, the specification does not require the use of an ODS. No SAO approval is required. Recommend cancellation of specification when ODS equipment is no longer required and/or replaced with NON-ODS equipment.

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**Document Number:** MS36030 Carbon Tetrachloride

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification has been Cancelled and is Superseded by MIL-STD-1218.

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** MS51561 Turnbuckle, Round Body, Eye and Eye (Type I, Form 1, Class 4)

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Acceptable Equivalent

**Comments:**

All references to ODSs have been removed from this specification. MS51561, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive.

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51562 Turnbuckle, Round Body, Jaw and Jaw (Type I, Form 1, Class 7)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acceptable Equivalent All references to ODSs have been removed from this specification. MS51562, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventative

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12 **ODS CHEM 2:** CFC 113

**PRIMARY REFS:** MIL-C-85054 **Comments:**

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51563 Turnbuckle, Round Body, Jaw and Eye, (Type I, Form 1, Class 8)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acceptable Equivalent All references to ODSs have been removed from this specification. MS51563, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventative

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12 **ODS CHEM 2:** CFC 113

**PRIMARY REFS:** MIL-C-85054 **Comments:**

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51564 Turnbuckle, Round Body, Hook and Hook (Type I, Form 1, Class 5)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MS51564, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventative

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51565 Turnbuckle, Round Body, Hook and Eye, (Type I, Form 1, Class 6).

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MS51565, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventative.

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MS51566 Turnbuckle, Spread Body Jaw and Jaw, (Type I, Form 2, Class 7)

**Level:** 1 **Class:** ODS

**Alternatives Listed In Spec:** Acceptable Equivalent

**Comments:**

All references to ODSs have been removed from this specification. MS51566, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance iwth MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51567 Turnbuckle, Spread Body, Eye and Eye (Type I, Form 2, Class 4)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MS51567, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51568 Turnbuckle, Spread Body, Hook and Eye (Type I, Form 2, Class 6)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MS51568, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventative

**ODS Use:** Turnbuckle body and end pulls shall be treated with rust inhibitor in accordance with MIL-C-85054.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventative compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** MS51569 Turnbuckle, Spread Body, Jaw and Eye (Type I, Form 2, Class 8)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MS51569, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** 3.0 Finish rust inhibitor - turnbuckle body and ends shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MS51570 Turnbuckle, Flat Body, Eye and Eye (Type II, Class 4)

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

All references to ODSs have been removed from this specification. MS51570, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** 3.0 Finish rust inhibitor - turnbuckle body and ends shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12

**ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054

All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MS51571 Turnbuckle, Flat Body, Eye and Eye (Type I, Form 3, Class 4)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acceptable Equivalent All references to ODSs have been removed from this specification. MS51571, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** 3.0 Finish rust inhibitor - turnbuckle body and ends shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MS51572 Turnbuckle, Flat Body, Jaw and Eye (Type I, Form 1, Class 8)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acceptable Equivalent All references to ODSs have been removed from this specification. MS51572, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** 3.0 Finish inhibitor - turnbuckle body and ends shall be treated with rust inhibitor in accordance with MIL-C-85054 or equivalent.

**ODS CHEM 1:** CFC-12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MS51573 Turnbuckle, Flat Body, Hook and Eye (Type I, Form I, Class 6)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acceptable Equivalent All references to ODSs have been removed from this specification. MS51573, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** Requirement 3, Page 2. Turnbuckle body and End Pulls Shall Be Treated with Rust Inhibitor in Accordance with MIL-C-85054 or Equivalent.

**ODS CHEM 1:** CFC-12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

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**Document Number:** MS51574 Turnbuckle, Flat Body, Jaw and Jaw (Type I, Form 2, Class 7)

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Acceptable Equivalent All references to ODSs have been removed from this specification. MS51574, Amendment (1), dated 7 February 1994, has changed the requirement of using MIL-C-85054 or equivalent to using "Type I, Class 134a or Class CO2" thereby removing the ODS reference. NOTE: MIL-C-85054, Revision B, dated 5 November 1993, no longer requires ODSs in the formulation of the corrosion preventive

**ODS Use:** Requirement 3 on Page 2. Turnbuckle Body and End Pulls Shall Be Treated with Rust Inhibitor in Accordance with MIL-C-85054 or Equivalent.

**ODS CHEM 1:** CFC-12 **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

MIL-C-85054 All references to ODSs have been removed from this specification. MIL-C-85054, Revision B, dated 5 November 1994, no longer requires ODSs in the formulation of the corrosion preventive compound. WARNING: NEW FORMULATION IS FLAMMABLE; USE WITH CAUTION.

**1ST LEVEL REFS:**

**General Comments:** MIL-C-85054 revision "B" has been reformulated and the corrosion preventative compound no longer requires the use of an ODS.

---

**Document Number:** NFGS-09670 F Fluid Applied Resilient (Resinous) Flooring

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Naptha, Mineral Spirits, or Oth

**ODS Use:** Completely Remove All Grease, Oil, Asphalt, and (\_\_\_) by Solvent Cleaning with Freon 113 (or Trichloroethane), naptha, mineral spirits, or other solvent which has been demonstrated to effectively remove the contaminants. After solvent has softened the residue, pick up contaminated solvent by wiping with rags, burlap, or absorbent (non-oily) sweeping compound. (see 3.1.1.3 pages 13 and 14).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** CFC 113

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Freon 113

**1ST LEVEL REFS:**

**General Comments:** Recommend deletion of Freon 113 and Trichloroethane from the specification.

---

**Document Number:** NFGS-11722 E Sterilizers and Associated Equipment

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Ethylene Oxide Sterilizers in accordance with GG-S-1344 use a Mixture of Ethylene Oxide and Dichlorodiflourethane as the Sterilizing Agent (see 2.3.5 page 11).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:** GG-S-1344

**General Comments:** Many existing 12/88 ethylene oxide sterilizers can be converted to EO/HCFC-124 operation (8.6/91.4). Generally only minor adjustments to sterilizer controls and possibly to equipment may be necessary. Other gases under research for use in existing ethylene oxide sterilizers include HFC-125 and HFC-227ea.

---

**Document Number:** NFGS-15365      G      Halon 1301 Fire Extinguishing System

**Level:** 1      **Class:** ODS      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification is a Design Specification for the Requirement of a Halon 1301 System. The work includes the Design and providing of Approved Halon 1301 underfloor flooding systems (see 1.2.1 page 4). Design and Installation of Halon Fire Extinguishing Systems shall conform to NFPA 12A, NFPA 70 (see 1.5 page 9). The System shall totally Flood the Protected Area(s), providing a Volumetric Concentration of Halon 1301 (see 1.5.1 page 9). The Halon Volume shall be based upon shutting down of Heat/AC and Ventilation Systems at the time of the Discharge. The required Halon Concentration shall be Maintained for a Minimum of 10 Minutes. The maximum Discharge time shall be 10 seconds (see 1.5.2 page 9), (see 1.5.1.1 page 9). Econ System shall be Provided with its own connected reserve supply of Halon 1301. Each reserve supply shall contain an amount of Halon 1301 equal to the Primary Supply of the system to which it is connected (see 1.5.3 page 9). Clean, Pretreat, Prime, and Finish Paint new Halon 1301 Systems (see 3.2 page 18). Halon 1301 shall be used for this test (see 3.3.2.2 page 11).

**ODS CHEM 1:** Halon 1301

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Halon 1301

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement with a halon alternative identified in NFPA standard 2001 (for example FM200, FE13, INERGEN, etc.).

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**Document Number:** NFGS-15489 E High and Medium Pressure Compressed AER Systems

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Perchloroethylene (O-T-236),

**ODS Use:** Clean Surfaces containing crevices by immersion in unused or redistilled Acetone, Ethanol, ISO Propanol, or Trichlorotrifluoroethane (see 3.2.6 page 40). Immersion in solvent or by wiping with a clean lintless wiping cloth, saturated with the solvent Perchloroethylene, Trichloroethane, Unused or Redistilled Acetone, Ethanol, ISO Propanol, or Trichlorotrifluoroethane, requires special Precautions and Procedures. Review MIL-STD-1622 (3.2.10.2 page 43). Cleaning with Trichlorotrifluoroethane in accordance with MIL-STD-1622 (3.2.10.2 (b) page 43).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:** MIL-STD-1622 MIL-STD-1622, Revision A, dated 8 January 1992, states that "Unless otherwise specified ... trichlorotrifluoroethane (R-113) shall not be used for cleaning." NAVSEA does not allow the use of CFC-113 when referencing this standard. A new revision to this standard deleting all references to CFC-113 is to be submitted in draft to the Specification Review Board by 30 November 1996.

**General Comments:** Recommend deletion of Trichlorotrifluoroethane, and Trichloroethane.

---

**Document Number:** O-A-445                      B                      Ammonia, Technical

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride Is An Applicable Reagent To Determine The Amount Of Oil (4.4.2.5 Page 9).

**ODS CHEM 1:** Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible substitute for carbon tetrachloride is methylene chloride.

---

**Document Number:** O-C-141 Carbon-Tetrachloride; Technical-Grade

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

O-C-141 has been Cancelled by Revision A, Notice 1, dated 23 July 1956, and is not superseded by another document.

**ODS Use:** This specification describes the characteristics of Carbon Tetrachloride.

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** O-H-206            B            Herbicide, DCPA (Dimethyl Ester Of Tetrachloroterephthalic Acid)

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**            O-H-206 has been Cancelled by Revision B, Notice 1, dated 6 December 1993, and is not superseded by another document.

**ODS Use:**            Carbon Tetrachloride Is An Applicable Reagent For the Extraction Procedure (4.4.1.2.3 Pages 8 and 9).

**ODS CHEM 1:**            Carbon Tetrachloride            **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**            Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** O-I-507                    D                    Insecticide, Allethrin or Pyrethrim (Aerosol)

**Level:** 1                    **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

O-I-507 has been Cancelled by Revision D, Notice 1, dated 23 January 1990, and is not superseded by another document.

**ODS Use:**                    The dichlorodifluoromethane shall conform to the requirements of type 12 of BB-F-1421 when tested as specified therein (3.1.4 page 5). Determine the percent by weight of dichlorodifluoromethane insolubles in the allethrin (4.2.4.1 page 10).

**ODS CHEM 1:**                    CFC 12

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                    BB-F-1421

BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** O-I-556 C Insecticide, Methyl Bromide

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification Covers Two Types Of Methyl Bromide Insecticide.

**ODS CHEM 1:** Methyl Bromide **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Methyl Bromide

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** O-L-172                      A                      Leather Dressing, Vesicant Gas Resident

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      The method determining sediment shall be a specified in 4.5.1, except that a 5gram sample with carbon tetrachloride for extraction shall be used (4.5.6 pg 6).

**ODS CHEM 1:**                      Carbon Tetrachloride                      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**                      Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:**                      Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. A possible substitute for carbon tetrachloride is methylene chloride.

---

**Document Number:** O-M-261 Methyl Bromide (Liquified)

**Level:** P **Class:** Primary **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** This Specification has been Cancelled and is Superseded by O-I-566

**ODS CHEM 1:** Methyl Bromide **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Methyl Bromide

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** O-T-620 C 1,1,1-Trichloroethane, Technical, Inhibited (Methyl Chloroform)

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126 (Note that this specification also references 1,1,1-Trichloroethane).

**ODS Use:**

This Specification Covers Inhibited Technical 1,1,1-Trichloroethane (Methyl Chloroform). Section 3.4.2 (Page 1 Of Interim Amendment 3) Requires The Testing Of The Propellant Gas For The Presence Of CFC 11, 12, 114 or 115, According To Section 4.5.13. Section 4.5.13 (Page 1 Of Interim Amendment 3) Requires the Use Of Standard Gases (CFC 11,12,114 and 115) For The Analysis Of The Propellant Gas.

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:** CFC 11

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

Trichlorofluoromethane (CFC-11)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** OO-C-566 C Dispenser, Drinking Water, Mechanically Cooled

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Refrigerant for Type VIII Coolers shall be Dichlorodifluoromethane (or CFC-12). The Refrigerant for other types of Coolers shall be either Dichlorodifluoromethane (CFC-12) or Chlorodifluoromethane (or HCFC-22) (see 3.15 page 11 for both).

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend removal of reference to R-12 and use of an EPA SNAP approved refrigerant with an ODP of 0.05 or less. Possible alternatives to investigate include HCFC-22 and HFC-134a.

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**Document Number:** OO-D-450 C Dispensers, Bulk Milk, Mechanically Cooled; and Disposable Milk Containers

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Chlorodifluoromethane (HCFC) All references to ODSs have been removed from this specification. OO-D-450, Revision C, Amendment 1, dated 12 February 1993, removes the ODS references. Paragraph 3.6.3 (which references R12) has been Revised to read "Fluorocarbon refrigerants shall conform to BB-F-1421. Refrigerants which would harm the earth's ozone layer shall not be used."

**ODS Use:** The refrigerant shall be type 12 (Dichlorodifluoromethane) or Type 22 (chlorodifluoromethane) of BB-F-1421 (see 3.6.3 on Page 8). Starting with the dispenser of an ambient temperature of 100 degrees F, operate the equipment, with the cabinet empty, until the cabinet interior temperature is stabilized (See 3.8(2)). See 4.5.1 (a) on Page 18. Note: Operation of unit requires charging unit with refrigerant.

**ODS CHEM 1:** CFC 12 **ODS CHEM 2:**

**PRIMARY REFS:** BB-F-1421 **Comments:** BB-F-1421 has been proposed for Cancellation by Proposed Notice 1, dated 31 March 1995, and is superseded by ARI Standard 700 and ARI Appendix 93. NAVSEA 03V24 and 03V23 have replied to Air Force SA-ALC/SFSP that ARI 700 adequately covers refrigerants but does not adequately cover packaging for delivery. Navy recommends a CID or some other document be developed to be used in conjunction with ARI STD 700 to cover the acceptable packaging options that can be specified by the procuring activity (these were covered in BB-F-1421).

**1ST LEVEL REFS:**

**General Comments:** Recommend replacing reference to BB-F-1421 with reference to ARI 700.

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**Document Number:** P-C-1121            B            Cleaning and Polishing Compound, Stainless Steel

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Type I (Liquid Components) and Type II Products Shall Consist of 1,1,1 Trichloroethane and Silicone Oil (See 3.1 on Page 2). The Percentage of 1,1,1-Trichloroethane Shall Be 92 % Minimum to 98% Maximum (See 3.1 on Page 2). The Product Shall have no Discerning Odor Other Than that of 1,1,1 Trichloroethane (See 3.2 Page 2). Requires that Propellant be Analyzed for Fluorocarbons (See 4.4.1.3.2 on Page 4). Requires the use of Pure Propellant Gases to Standardize the Gas Chromatograph. These Gases are CFCs 11,12,114 and 115 (See 4.4.1.3.1. and 4.4.1.3.2 on Page 4). Outlines Procedures for Determining 1,1,1 Trichloroethane in Liquid Product (See 4.4.1.3.3 Pages 4-5). Figure 1 (See Pages 6-7) Shows the Standard Spectrum of 1,1,1 Trichloroethane with 5 Percent Silicone Oil).

**ODS CHEM 1:** CFC 11            **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)

Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Propellant: 40 CFR Part 82 subpart C makes it illegal for manufacturers to produce aerosol propellants that contain class I or class II ODSs, except for certain medical devices, mold release agents, document preservation sprays and other specialty uses. Recommend deleting requirement to use or test for CFC propellants from this specification. Solvent: Recommend reformulation of product to remove 1,1,1 Trichloroethane and replace with other suitable silicone carrier solvent.

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**Document Number:** P-C-1947            A            Cleaning Compound, Oven

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Standard Propellant Gases in Lecture Bottles form Matheson Gas Products (or another supplier): Vinyl Chloride, Fluorocarbon No. 11, 12, 114, 115 (see 4.3.7.1 page 7).

**ODS CHEM 1:** CFC 11            **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** CFC-11

CFC-12

**1ST LEVEL REFS:**

**General Comments:** 40 CFR Part 82 subpart C makes it illegal for manufacturers to produce aerosol propellants that contain class I or class II ODSs. Except for certain medical devices, mold release agents, document preservation sprays and other specialty uses. Recommend deleting requirement to use or test for CFC propellants from this specification.

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**Document Number:** P-G-406                    D                    Glass Cleaner, Liquid (Concentrated and Ready-To-Use)

**Level:** 1                    **Class:** ODS                    **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Standard Propellant Gases in Lecture Bottles from Matheson Gas Products (or another supplier): Vinyl Chloride, Fluorocarbon No. 11, 12, 114, 115 (see 4.3.9.1 page 8).

**ODS CHEM 1:** CFC 11                    **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** CFC-11

CFC-12

**1ST LEVEL REFS:**

**General Comments:** 40 CFR Part 82 subpart C makes it illegal for manufacturers to produce aerosol propellants that contain class I or class II ODSs. Except for certain medical devices, mold release agents, document preservation sprays and other specialty uses. Recommend deleting requirement to use or test for CFC propellants from this specification.

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**Document Number:** P-H-31 E Hand Cleaner, Waterless (Duplicating Ink And Grease)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** The Soiling Medium Used In The Performance Test Shall Be A Commercial Petroleum Asphalt Having The Following Characteristics: Solubility In Carbon Tetrachloride 98 Percent min. (4.3.5.1 Page 5). Moisten The Asphalt Rod Formed Above By Dipping The Rod Into Inhibited 1,1,1 Trichloroethane (4.3.5.2 Page 6).

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:** Carbon Tetrachloride

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)  
Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity.

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**Document Number:** P-T-936 B Type Cleaner, Liquid, With Dauber (1,1,1 Trichloroethane)

**Level:** P **Class:** Primary

**Comments:**

**Alternatives Listed In Spec:**

P-T-936 has been Cancelled by Revision B, Notice 1, dated 12 September 1968, and is Superseded by O-T-620. O-T-620 has been Cancelled by Revision C, Amendment 3, Notice 1, dated 4 January 1993, and is Superseded by ASTM D4126. Please NOTE: this specification still references 1,1,1-Trichloroethane.

**ODS Use:** The cleaner furnished under this specification shall be commercial grade 1,1,1 trichloroethane, substantially free from other chlorinated hydrocarbons and containing a suitable corrosion inhibitor (3.1 page 2).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**

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**Document Number:** RR-C-910/1                      Cylinders, Compressed Gas : DOT Specifications 4BA, 4BW, and 4E, for Refrigerants, Fire Extinguishing Agents and Sterilization Gases

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Table I (page 2) and notes 1,2, and 8 to Table I (page 2-3) list classification number for Cylinder used for CFC-11, CFC-12, CFC-113, CFC-114, CFC115, Halon 1301, and Methyl Bromide.

**ODS CHEM 1:** CFC 113                      **ODS CHEM 2:** CFC 12

**Comments:**

**PRIMARY REFS:** Trichlorotrifluoroethane (CFC-113)  
Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Specification is for equipment which uses ODS. However, specification does not require the use of an ODS. No SAO is required for procurement. Recommend deleting ODS cylinder classifications when ODSs no longer in use.

---

**Document Number:** T-C-571 F Cords, Cotton; General and Special Purposes, Sash and Ventian Blind

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Class 2 Cord Shall Contain Not Less Than 7.0 Percent of Carbon Tetrachloride-Soluble Material and Not More Than 7.0 Percent Total Nonfibrous Material Not Soluble in Carbon Tetrachloride Based On the Dry Weight of the Cord, When Tested as Specified in 4.2.5 (See 3.9.2 on Page 8). Carbon Tetrachloride Soluble Material (Class 2) Shall be Tested in Accordance With Method 2611 of FED-STD-191 Except That Carbon Tetrachloride Shall be Utilized in Lieu of Chloroform (See Table VIII on Page 15 and Note 4 To Table VIII on Page 16).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:** FED-STD-191

**General Comments:** Montreal Protocol parties have approved a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for small quantity production. Recommend that activities procuring to this specification seek an SAO approval pending modification of this test method by the specification preparing activity.

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**Document Number:** TT-C-490 C Cleaning Methods For Ferrous Surfaces and Pretreatments for Organic Coatings

**Level:** 1 **Class:** ALTAVAIL **Comments:**

**Alternatives Listed In Spec:** Trichloroethylene (O-T-634), P TT-C-490, Revision D, dated 31 March 1993, does not remove the ODS references.

**ODS Use:** MIL-T-81533 is Listed as a Specification for Method II (See Table II Page 15).

**ODS CHEM 1:** Methyl Chloroform

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** MIL-T-81533

**1ST LEVEL REFS:** TT-E-485

TT-E-485, Revision F, Notice 1, dated 25 February 1991, has made TT-E-485 inactive for new design. Any future acquisitions should refer to MIL-E-52891.

**General Comments:** Recommend using alternatives listed in specification. Do not use MIL-T-81533.

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**Document Number:** TT-E-001793 Enamel, Semi-Gloss, For Metal And Wood Furniture

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test For Olefinic Or Cyclo-olefinic Compounds: Dissolve The First Sample In 1ml Of Carbon Tetrachloride And Add 1 Drop Of 1 Percent Bromine In Carbon Tetrachloride (4.2.4.3 Page 11).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

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**Document Number:** TT-E-00488      B      Enamel, Primer Coating, And Clear Lacquer (In Pressurized Dispensers)

**Level:** 1      **Class:** ODS      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test For Olefinic Or Cyclo-olefinic Compounds: Dissolve The First Sample In 1ml Of Carbon Tetrachloride And Add 1 Drop Of 1 Percent Bromine In Carbon Tetrachloride (4.4.4.3 Page 8).

**ODS CHEM 1:** Carbon Tetrachloride      **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

---

**Document Number:** TT-E-485 F Enamel, Semi-Gloss, Rust Inhibiting

**Level:** 1 **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

TT-E-485, Revision F, Notice 1, dated 25 February 1991, has made TT-E-485 inactive for new design. Any future acquisitions should refer to MIL-E-52891.

**ODS Use:** For the Test For Olefinic or Cyclo-Olefinic Compounds, Dissolve the first Sample in 1ml of Carbon Tetrachloride and Add 1 Drop of 1% Bromine in Carbon Tetrachloride (See 4.3.4.3 page 18)

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

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**Document Number:** TT-I-528            C            Ink, Drawing, Waterproof, Black

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**            The Ink, when Thoroughly Dried, shall be Insoluble in Cold Water and in Organic Solvents, Hexane and 1,1,1-Trichloroethane, when Tested as Specified in 4.4.3.1 and 4.4.3.2 (see 3.3 page 2). Repeat the Solubility in Water Operation using Hexane and 1,1,1-Trichloroethane on Seperate Areas (see 4.4.3.2 page 6 and Table I page 4).

**ODS CHEM 1:**            Methyl Chloroform            **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:**            1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**            Recommended deleting 1,1,1-Trichloroethane. If a substitute is required for 1,1,1-trichloroethane, recommend use of trichloroethylene.

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**Document Number:** TT-I-533            B            Ink, Drawing, Waterproof, Black (For Use On Water-Repellant And Plastic Drafting Surfaces)

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**            1,1,1 Trichloroethane Is An Applicable Reagent For The Resistance To Solvents Test (4.4., Table III Page 5).

**ODS CHEM 1:**            Methyl Chloroform            **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**            1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:**            Recommend deleting 1,1,1-Trichloroethane.

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**Document Number:** TT-L-50                      G                      Lacquer, Nitrocellulose, Acrylic and Acrylic - Butyrate, Aerosol (In Pressurized Dispensers)

**Level:** 1                      **Class:** ODS

**Comments:**

**Alternatives Listed In Spec:**

TT-L-50, Revision G, Interim Amendment 3, dated 20 July 1994, does not remove the direct ODS reference.

**ODS Use:**

The propellant shall be a hydrocarbon, a halogenated hydrocarbon, or a blend of hydrocarbons and/or halogenated hydrocarbon(s) as required to assure that the lacquer conforms to the requirements as specified herein. When tested as specified in 4.4.19, neither vinyl chloride nor CFC 11, 12, 114, & 115 shall be present (See 3.1.4 on Page 1 of Amendment 2 and on page 2). Standard propellant gases in lecture bottles (available from Matheson Gas Products or another supplier): CFC 11, 12, 114, 115 and vinyl chloride (see 4.4.19.1 (d) on page 2 of Amendment 2).

**ODS CHEM 1:** CFC-11

**ODS CHEM 2:** CFC-12

**Comments:**

**PRIMARY REFS:** Trichlorofluoromethane (CFC-11)  
Dichlorodifluoromethane (CFC-12)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting requirement to test for the presence of ODS.

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**Document Number:** TT-P-2760                      Primer Coating: Polyurethane, Elastomeric

**Level:** 1                      **Class:** ODS                      **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:**                      Class 3 primer coatings shall be compatible with an inhibited grade of 1,1,1 - Trichloroethane (such as DOW CHLOROTHENE SM, or equivalent) (See 3.5.1 on Page 5).

**ODS CHEM 1:**                      Methyl Chloroform                      **ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:**                      1,1,1-Trichloroethane

**1ST LEVEL REFS:**

**General Comments:**                      Recommend deleting class 3 primers.

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**Document Number:** TT-P-641 G Primer Coating, Zinc Dust-Zinc Oxide (For Galvanized Surfaces)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test For Olefinic Or Cyclo-olefinic Compounds: Dissolve The First Sample In 1ml Of 1 Percent Bromine In Carbon Tetrachloride (4.3.6.3 Page 9).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

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**Document Number:** TT-R-251 J Remover, Paint (Organic Solvent Type)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Carbon Tetrachloride is required for use in gas chromatography samples and table I page 3 lists the maximum allowable percent weight that can be present in the paint remover (See Table I page 3). The Test Procedures listed in 4.4.5 and 4.4.6 set the guidelines for carbon tetrachloride use (See Page 5).

**ODS CHEM 1:** Carbon Tetrachloride

**ODS CHEM 2:**

**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** The Montreal Protocol Technology and Economic Panel (TEAP) has recommended a global exemption for continued production of Class I ODS beyond 1 Jan 1996 for use in laboratory analysis methods. However, it is unlikely that large scale production of these chemicals will continue in the United States, thus drastically increasing chemical cost for quantity production. Recommend that activities procuring to this specification seek an SAO approval pending identification of an alternative test method/solvent by the specification preparing activity. NAVAIR has recommended the use of MIL-R-81294 in place of this specification.

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**Document Number:** TT-V-86 C Varnish, Oil, Rubbing (For Metal And Wood Furniture)

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test For Olefinic Or Cyclo-olefinic Compounds: Dissolve The First Sample In 1ml Of Carbon Tetrachloride And Add 1 Drop Of I Percent Bromine In Carbon Tetrachloride (4.3.12.3 Page 17).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacement of carbon tetrachloride in test for cyclo-olefic compounds with FED-STD-141, Revision C, Change Notice 2, Test Method 7356.1.

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**Document Number:** UU-P-31            B            Paper; General Specifications and Methods of Testing

**Level:** 1            **Class:** ODS            **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Test Method 100: Adhesion of Pressure - Sensitive Tapes. Before Each Test, Wash the Polished Surface of the Steel Plated Thoroughly With Carbon Tetrachloride, Using a Clean Piece of Lintless Wiping Tissue For Each Washing. After All Traces of the Carbon Tetrachloride Have Evaporated, Wipe the Surface of the Plate With a Clean Dry Piece of Tissue (See 4.1 of Test Method 100).

**ODS CHEM 1:** Carbon Tetrachloride            **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend the deletion of carbon tetrachloride. Investigate the use of isoporoyl alcohol, acetone, naphtha, P-D-680 type III, or petroleum/terpene hydrocarbon solvents with low vapor pressure, such as Electron, PF Degreaser.

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**Document Number:** UU-T-120 G Tape, Teletypewriter, Per Forator

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** Oil Content Extraction: Fill The Siphon Cup With Carbon Tetrachloride To Cover The Sample Strips. (...) Then, Add 1.5. Times The Volume Of Carbon Tetrachloride Required To Fill The Siphon Cup (4.6.1 Page 5).

**ODS CHEM 1:** Carbon Tetrachloride **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** Tetrachloromethane (Carbon Tetrachloride)

**1ST LEVEL REFS:**

**General Comments:** Recommend deleting carbon tetrachloride and substitute with a suitable alternative extraction solvent such as methylene chloride.

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**Document Number:** VV-C-846 Cutting Fluids, Emulsifiable Oils

**Level:** 1 **Class:** ODS **Comments:**

**Alternatives Listed In Spec:**

**ODS Use:** 4.5.5.2 listed as a solvent under the corrosion test. 4.6.5.3 place test samples in bottle filled with 1,1,1 trichloroethane.

**ODS CHEM 1:** Methyl Chloroform **ODS CHEM 2:**  
**Comments:**

**PRIMARY REFS:** 1,1,1-Trichloroethane (Methyl Chloroform)

**1ST LEVEL REFS:**

**General Comments:** Recommend replacing 1,1,1 Trichloroethane with Acetone, Naptha or other hydrocarbon solvent.

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**Document Number:** WS6536 D Procedures and Requirements For Preparation and Soldering of Electrical Connections

**Level:** 1 **Class:** ALTAVAIL

**Alternatives Listed In Spec:** Ethyl Alcohol, Isopropyl Alcohol **Comments:** WS6536 has been Cancelled by Revision E, Notice 2, dated 6 November 1995, and is not superseded by another document.

**ODS Use:** 1,1,1 Trichloroethane, O-T-620; Trichlorotrifluoroethane, MIL-C-81302; and 1,1,1 Trichloroethane (Vapor Degreasing), MIL-T-81533, are Listed as Applicable Cleaning Solvents (See 3.3.3 on Page 9).

**ODS CHEM 1:** CFC 113 **ODS CHEM 2:** Methyl Chloroform

**Comments:**

**PRIMARY REFS:** MIL-C-81302

MIL-T-81533

**1ST LEVEL REFS:** MIL-F-14256

MIL-F-14256 has been Cancelled by Revision F, Notice 1, dated 15 June 1995, and is superseded by American National Standards J-STD-004, J-STD-005, and J-STD-006, for flux and solder alloy materials. Please note that this Notice is not yet available on DODISS. All references to ODSs have been removed from this specification. MIL-F-14256, Revision F, Amendment 1, dated 18 May 1994, does not reference any ODSs. MIL-F-14256, Revision F, dated 26 April 1993, removes the ODS reference. Paragraph 4.7.5 (See Page 20) now reads "Remove flux residue with a suitable solvent."

MIL-STD-202

All references to ODSs have been removed from this specification. MIL-STD-202, Revision F, Change Notice 11, dated 1 June 1992, removes ODS requirement from method 208 (Paragraph 3.3(b)). MIL-STD-202, Revision F, Change Notice 12, dated 12 July 1993, removes ODS reference from Test Methods 210 (Paragraphs 2.4 and 3.3 have been deleted) and 215 (Paragraphs 2.1(b), 2.1(c), 3.1(b) and 3.1(c) have been Revised to remove ODS reference).

**General Comments:** Recommend using MIL-STD-2000 (latest revision) instead of this specification. Replace ODS Solvents with Aqueous, Semi-Aqueous or Alternative Technologies for Electronic Cleaning. Consult IPC Phase II Test Results for Alternatives.

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