

Office paper recycling: a look at the ledger grades

by Jane L. Erkenwick

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The key to grading ledger papers is in understanding mill specifications.

With rising interest in office paper recovery, an understanding of how the ledger grades are reclaimed is needed by many involved in recycling. This article explains how to get through all the confusion.

Highly complex and political

The ledger grades are by far the most complex types of recovered paper with which the recycling industry deals. They're used throughout the paper industry to make many different products, and thus the variety of potential contaminants within each ledger category will vary depending on its ultimate use.

If the multitude of end uses and contaminants were not enough, the ledger grades fall smack in the middle of the current political and economic controversy over preferred levels of pre- and post-consumer recovered fibers in recycled paper. As the various interest groups battle over what is considered most desirable for recycled fiber content, the status of the ledger grades will change depending on their source (e.g., a post-consumer office recycling program or pre-consumer scrap paper from a converter, which takes rolls of paper and makes them into reams of paper, envelopes, etc.).

A brief example focuses on white ledger from cut books. The book's paper — manifold white ledger — has generally been considered a pre-consumer grade. The books we read, which are white paper with black ink, fall under the white ledger category. If you have books you want to recycle, and you cut the cover and binding off, would the paper be considered a pre- or post-consumer ledger?

Under today's system, the answer depends on where the books are obtained. If the books come from a library that has decided to discard them, it would be considered a post-consumer ledger or sorted white ledger. If the books came from a distributor, and were simply over-

stock, the material would be considered pre-consumer ledger.

If we examine this interesting dynamic strictly from the paper mill's point of view, we find a preference for fiber reclamation regardless of source. The paper industry is in the business of reclaiming fiber through maximum utilization at the cheapest possible cost. Recovered paper offers the possibility of fibers that have already been processed and now must be cleaned, deinked or bleached, but ultimately can be reused.

The key to recovered paper is understanding the nature of the contaminants within the various grades, and how those contaminants interact with the multitude of deinking and cleaning systems operating within the paper world. Recycling is not cheap — energy demands and expensive chemicals make the processing of recovered paper costly. In the event of some unknown contaminant, the costs jump considerably. Thus paper mills seek good, clean, consistent baled packs of recovered paper fibers.

A description

So what exactly are the ledger grades? In the beginning, there was bond paper and there was ledger paper. The principal difference between the two was their basis weight and hence their end uses.

Bond paper was a lighter paper than ledger paper, with high strength, durability and permanence and was used in the high-end paper markets for government bonds, legal documents and insurance policies. Ledgers, in general, were used for printing and writing purposes.

In terms of present-day recycling, this distinction has gone by the wayside. Ledger paper now falls into the category of fine papers, which generally refers to white, uncoated printing and writing grades that are generally sulphite- or sulphate-bleached chemical fibers. It also comes under the rubric of cover and book stock, other printing and writing papers,

Technology and economics determine who recycles ledger grades

The lesson in the recycling of ledger grades is clear: What is acceptable to one mill may not be tolerated by another.

As one goes down the paper industry hierarchy -- from manufacturing at the mill, to the converter to the ultimate end user, then to the post-consumer collection system, such as the office recycling program -- the frequency of contamination increases.

As an example, let us follow the paper trail for bank statements. At the mill, if the unprinted paper is defective, it is considered mill broke and becomes again a part of the pulp slurry. At the converter, where rolls of paper are converted into forms, printing and writing paper, envelopes, etc., the bank statements could end up as recoverable paper as an overrun or a trim. At this point, the paper may have been printed for use, but has yet to

reach the end consumer, which in this case is the bank.

Now let us assume that these bank statements had been printed by the converter with mostly black ink, and had a slight bit of red color on a couple of lines. From a recycling standard, this material would be considered pre-consumer manifold white ledger. Any paper mill buying white ledger willing to pay the price for this grade could use it. This might be a mill making fine papers or a boxboard mill that uses the fiber to increase the brightness of its top liner. There are no contaminants to speak of except for water soluble inks.

However, let us assume the paper then goes to a bank that prints customer statements with laser printers. The bank makes a mistake and discovers a huge printing error. The bank statements are then collected for recycling. With the statements having been

delivered to the bank, whether printed or not, the situation has been altered.

Since the bank is considered the end user or consumer, the material is now known as post-consumer or sorted white ledger. Additionally, laser printing introduces a serious contaminant. The fine paper mill would now reject this material, since most current printing and writing paper mills have yet to develop a cost-efficient technology for handling laser-printed fibers. A boxboard mill would first ask for the percentage of paper that is laser-printed, and if that percentage were high, the mill would be concerned with spots appearing in its white top liner. If the percentage of laser-printed material were considered too high, the mill probably would not purchase the paper as furnish for its boxboard.

In addition to technological considerations, the question of economics is

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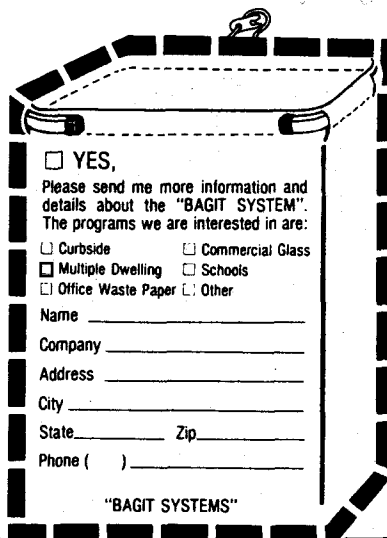
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posed. Who can handle the laser printing contamination, and if they can, how much are they willing to spend for the material? Perhaps the tissue industry, which would not have wanted to spend the dollars needed to buy the cleaner manifold white ledger from the converter, will buy the post-consumer white ledger from the bank. Tissue mill specifications may allow some black specks, and with brightness levels probably being of less concern than their counterparts that produce printing and writing paper, tissue mills would be attracted to these strong, chemically pulped fibers. Or perhaps the lower price of the post-consumer ledger grade will now attract the liner-board industry, which does not seek fibers but will tolerate some black specks in the mottled white tops for corrugated boxes.

bond paper and continuous form ledgers.

Since a high percentage of ledger paper will eventually be printed on, it must have good printing qualities. To achieve this versatility, a number of different kinds of pulp is used to create ledgers and bond papers, including cotton fibers, bleached chemical wood pulp, and now some recovered paper grades that include the ledger grades, computer printouts, the hard and soft white grades, envelope cuttings and non-coated cup and plate stock.

The primary grades

In the Institute of Scrap Recycling Industries' Paper Stock Standards 1990 definitions, there are four grades of ledgers listed:

- A manifold or pre-consumer white ledger, which must be uncoated and free of laser and office paper waste.
- A sorted white or post-consumer white ledger, which can contain office papers, but must be free of treated, coated, padded or heavily printed stock.
- A manifold or pre-consumer colored ledger, which must be uncoated and free of laser and office paper waste.

- A sorted or post-consumer colored ledger, which again, like the corresponding white grade, can be office waste, but must be free of treated coated, padded or heavily printed stock.

Mill requirements dominate

The art of grading ledger lies in creating mill-specific paper bales or packs. What is considered a contaminant in a colored or white ledger bale or pack will depend on how a mill plans to reclaim the fiber. Will it be used for a tissue product? Or will it become a printing paper, made into a box, or become paper for computer forms?

Different paper products require different cleaning and/or deinking systems, and consequently what might be a contaminant for one mill may be tolerated by another (see the sidebar for an example). The type of mill that purchases the fiber will vary, but all mills want to remove the inks and reclaim the cleaned fiber. Differences in purchasing depend also on the quality of the ledger pack, and how much a particular mill is willing to spend for a particular fiber content.

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■ **Table 1 — Institute of Scrap Recycling Industries' Paper Stock Standards 1990 definitions**

	White	Colored
Pre-consumer or manifold	Uncoated and free of laser and office paper waste, with no colored paper	Uncoated and free of any office paper waste
Post-consumer or sorted	Office papers free of treated, coated, padded or heavily printed stock, with no colored paper	Office papers free of treated, coated, padded or heavily printed stock

white and colored ledgers, designing a program targeting specific mills is absolutely necessary. To begin this customization process, it is worthwhile posing a few questions.

- How is the ledger to be used? As a printing and writing paper, a tissue, a top liner for boxboard, or a top liner for corrugated containers?
- What sort of process does the mill have? A flotation deinking system, a cold water washing system, a hot water washing system? Will the recovered

paper be bleached? Will the recycled paper be coated?

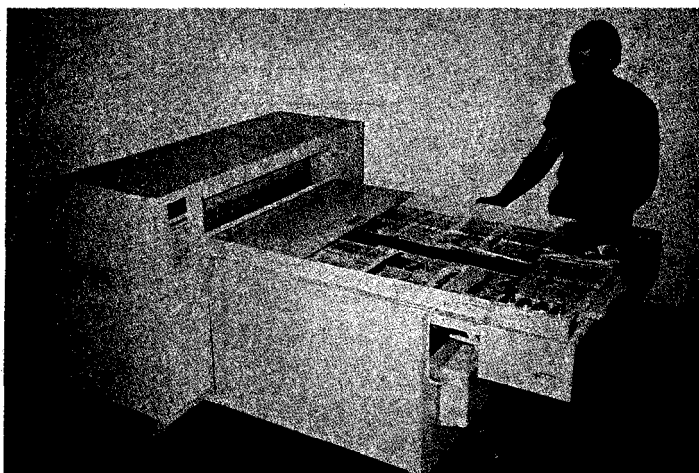
- Probably the most important questions focus on contaminants. What are the mill's allowable levels of contamination, and can a ledger pack be created to meet those requirements? For example, can all the yellow dyed material be sorted? Can the laser, fax and copy paper be kept to under 10 percent for the post-consumer ledger grade? Are glued forms or envelopes being collected, and can they be removed,

again for the post-consumer ledger grade?

- The processor, packer or broker has more questions to ask. Where does the recovered paper come from? How easily can the various contaminants be separated? What are the costs involved in making a specific pack for one mill versus another? If you start to bale for one specific mill, how can you be assured that you can continue to sell that pack to that mill? How much separation of recyclable materials do you want to do? Should you have the generator separate the material paper by grade before you get it? What advantages, if any, are there for you to separate the post-consumer white

The key to recovered paper is understanding the nature of the contaminants.

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ledger from the colored ledger material?

In the world of printing and writing paper, 25 percent of all available paper is probably getting recycled; however, over half of the recovered material is pre-consumer, or material that has not gone to a final end user. Generally speaking, markets for pre-consumer manifold white ledger have been consistently strong. Pre-consumer colored ledger has had movement, although pricing is less secure (the export market for colored ledger is stronger on the coasts).

Markets for the post-consumer white or colored ledger, however, are still very much in the developmental stages. There is experimentation, and with trial and error comes inconsistent purchasing patterns. Therefore, it behooves the processors to work very closely with mills or brokers in creating a post-consumer pack that is mill-specific. Ledger paper that is contaminated with materials like fax, copy paper and laser must be carefully monitored.

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