

# Recycled office paper: why it costs more

by Judy Usherson

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## The economics of recycled office paper discourages recycling by commodity mills.

People frequently complain that recycled office paper, particularly copy and computer paper, costs too much. In fact, the cost differential between virgin and recycled brands of office paper can be significant. Recycled office paper is generally priced anywhere from 2 to 50 percent higher than virgin paper. Why?

The answer is multi-faceted, but it hinges on the fact that office papers, also called "business papers," are commodity grades, which are difficult for recycling mills to produce at a competitive price.

### Integrated and nonintegrated mills

Fiber is the single largest cost of paper production. Paper mills are often categorized by the manner in which they obtain their fiber — integrated, semi-integrated or nonintegrated. Integrated mills produce all their own pulp. The term "fully integrated" generally refers to a vertically integrated manufacturing operation where the paper company owns and controls the means of production, including the source of fiber (the trees), pulpmaking operations, and paper manufacturing, converting and finishing operations. In some cases, integrated paper companies also own or control the paper merchant distribution companies that sell the end product.

Some vertically integrated recycled paper companies, such as Sonoco Products (industrial paperboard), Southeast Newsprint (newsprint) and Fort Howard Corporation (sanitary tissue), even own waste paper packing, brokering and processing operations. Vertical integration of this type is a strong, new trend in the paper recycling industry. A recent example is the formation of Paper Recycling International, a joint venture between Waste Management and Stone Container, a major producer of recycled containerboard. No such arrangements exist between printing and writing mills and office waste collectors.

Semi-integrated mills have limited

pulping capacity and, therefore, must procure "market pulp" from outside sources to meet their papermaking needs. Most recycling mills are semi-integrated operations. Such mills can and are switching from virgin market pulp to deinked market pulp made from recovered paper.

Nonintegrated mills have no pulping capacity and must procure market pulp from outside sources. These mills must focus on highly specialized paper products in order to remain competitive.

### Commodity and specialty mills

Mills are also classified according to their papermaking efficiency, which is based on the size and production capacity of their machines. As such, these mills are termed either commodity or specialty mills.

**Commodity mills.** Commodity mills are integrated operations that make only one grade of paper day in and day out. Commodity paper grades are in constant, high-volume demand, such as newsprint, linerboard, copy paper and forms bond. Commodity mills are very large-scale operations. They usually have several world-class paper machines, which are 225 to 300 inches wide and run at speeds up to 3,000 feet per minute. These super machines can produce from 350 to 1,000 tons of paper per day. Making a grade change on a super machine is very difficult and expensive.

Commodity mills that produce recycled grades do so by making short runs on their smaller machines. These mills blend small amounts of purchased deinked market pulp (typically 10 percent) with internally generated scrap to meet recycled content mandates from government and private sector purchasers. There are no commodity mills or super machines dedicated solely to the production of recycled business papers.

**Specialty printing and writing mills.** Specialty printing and writing mills fill

small niches in the market. Specialty papers can command relatively high prices, and demand for these products can be unpredictable. "Premium" products made in specialty printing and writing mills include text, cover and offset grades and papers for specialized end uses.

These mills are able to compete because they have the flexibility to shift production in response to market demand. For example, a mill producing text and

cover grades can make the paper in an array of colors and finishes and can quickly switch to another grade, if necessary.

Specialty printing and writing mills have relatively small, slower paper machines that run at 800 to 2,500 feet per minute, with widths ranging from 65 to 185 inches. These machines can produce from 100 to 150 tons of paper per day.

### Supply and demand

Currently, there is significant overcapacity in business paper grades, due partly to the economic recession and partly to additional pulping and paper-making capacity that came on-line before the economic downturn. To keep products moving, the mills are discounting prices. Virgin copy paper is now selling for as much as 40 percent less than it was two years ago.

Office paper demand is tracked by BIS Strategic Decisions, a market research firm specializing in the electronics and information technology industries. BIS tracks paper demand by end use and divides the business paper market into three major categories: cut sheets, continuous forms and specialty papers. Cut sheets include paper used in impact and nonimpact copiers, typewriters, duplicators and fax machines. The continuous forms category includes stock and custom forms paper. Thermal and electrostatic papers fall under the specialty papers category. Carbonless is included within the appropriate end use subcategory.

According to BIS, in 1991 the total business paper market was almost seven million tons, of which cut sheets accounted for 51 percent (3.4 million tons) and continuous forms papers constituted 48 percent, or 3.2 million tons (see Figure 1).

Recycled papers constituted only 3 percent of the total business paper market in 1991 (see Figure 2). Yet most industry observers agree that recycled paper is the only segment of the paper business experiencing strong demand. This demand, coupled with limited market supply, is another factor nudging recycled paper prices up. BIS conservatively estimates a 5 percent market share for recycled business grades in 1995.

### Post-consumer material


Environmentalists criticize printing and writing producers for their apparent unwillingness to make office grades with significant amounts of post-consumer content. Adding high levels of post-consumer materials to commodity grades, however, is not a simple task. The large machines used to make copy paper and computer forms paper are intolerant of contaminants. Deinking the laser and xerographic toner off post-consumer office paper is just beginning to be commercially feasible on a large-scale basis.

The inconsistent fiber mix inherent in post-consumer materials is also a prob-

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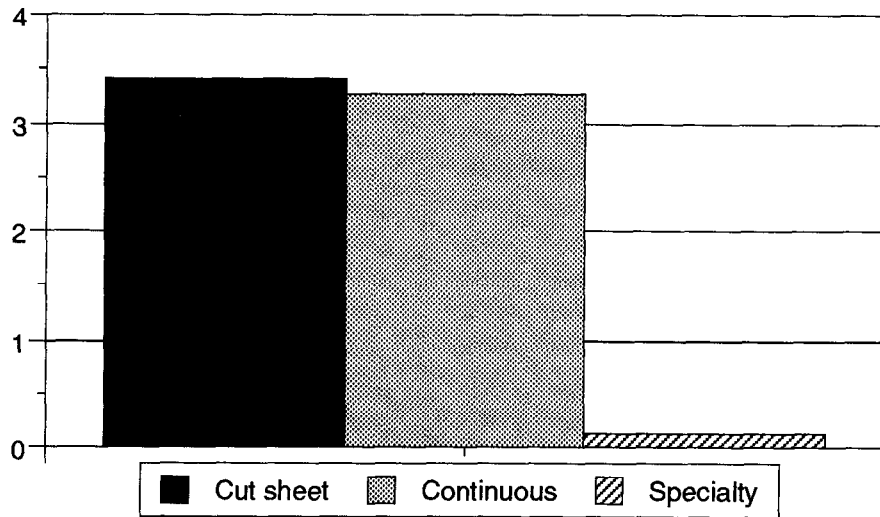
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■ **Figure 1 — Size of the office paper market, in million tons**



Source: BIS Strategic Decisions, 1992.

lem for the large machines. "Although a modern deinking facility can produce a very clean pulp with low ash, the fiber makeup will have varying proportions of sulfate and sulfite, hardwood and soft-

wood, and Northern and Southern wood species," noted Daniel Sachs of RUST International at Pulp and Paper's Waste-paper III conference. "This poses a challenge for the papermaker who requires

that all furnish requirements be tightly controlled to meet both demanding quality requirements and good paper machine efficiency."

Although some industry representatives use these purely technical arguments to explain the minimal production of recycled commodity printing and writing papers, several industry observers believe that the deinking hurdles will be overcome once the economics are favorable. It is certain, however, that commodity mills will have to go through a steep learning curve to use significant levels of post-consumer material.

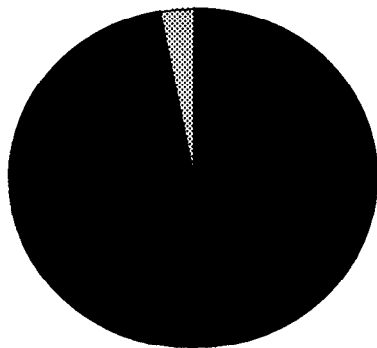
#### **Economic disincentives**

No paper company has plans to site a state-of-the-art commodity mill to produce recycled printing and writing paper. The costs for the deinking plant alone would run into many millions of dollars. Instead, the paper industry is introducing or increasing deinking capacity at existing mills and converting some closed mills to the production of deinked market pulp.

The American Paper Institute esti-

■ Figure 2 — Recycled office paper market share (1)

3%



97%

■ Virgin ■ Recycled

(1) In 1991, recycled paper constituted only 3 percent (208,000 tons) of the office paper market.

Source: BIS Strategic Decisions, 1992.

mates that by 1994 one million tons of deinked market pulp will be available for use by printing and writing mills. Most of this pulp will be made from office waste paper.

For an integrated mill, buying deinked market pulp in order to claim recycled content is expensive. An integrated mill can produce its own pulp for about \$300 per ton. In contrast, a mill can pay \$500 per ton or more, not including shipping costs, for purchased deinked market pulp. (The price for purchased hardwood market pulp can also cost \$500 a ton or

more.) Drying and shipping costs alone can run \$50 per ton. It is hoped that with increased production, the cost of deinked market pulp will come down.

Having made large capital investments in virgin pulping capacity, commodity mills are understandably reluctant to forsake multi-million dollar pulping operations that provide such a cost-effective and high-quality feedstock.

"If commodity [recycled] papers are to be offered a price parity with a virgin product, then large-scale recycled pulping operations must be built on the same site as large-scale paper machines," said Lloyd Chambers, director of business planning for Georgia-Pacific's Communications Paper Division, at Wastepaper III. "The cost estimates for producing a ton of recycled pulp are markedly higher than producing a ton of bleached hardwood kraft. The simple and straightforward conclusion is that recycled commodity papers do not make a lot of economic sense."

Several printing and writing paper companies have made or are making significant investments in expanding recycling capacity at existing semi-integrated mills. Examples are Cross Pointe Paper Corporation's Flambeau mill in Park Falls, Wisconsin; James River's Halsey, Oregon facility; and Patriot Paper Company in Hyde Park, Massachusetts.

International Paper and Union Camp have announced plans to build deinking facilities to produce printing and writing grades in commodity mills. David Halko, special projects manager at International Paper, reported that the Lock Haven,

Pennsylvania deinking plant is on schedule to start up in 1993. He would not divulge how many of the mill's six world-class paper machines would be dedicated to recycled xerographic production using old newspapers and magazines as the feedstock.

Union Camp is considering plans to add a 300-ton-per-day (TPD) deinking plant to serve its 1,900 TPD mill in Franklin, Virginia. The Franklin facility produces a variety of printing, writing and board grades, including xerographic paper. Union Camp has not yet decided how much deinking capacity will go into producing business papers, according to a company spokesman.

### Expect to pay more

Buyers of recycled commodity grades should expect to pay premium prices, at least for the next few years. The strength of future demand and the overall growth of the economy will influence future investments in recycling capacity.

Some people believe that a strong, enforceable government requirement for post-consumer content will persuade industry to increase production. Debate continues over the appropriate methods to provide such incentives. Ultimately, however, economic factors will determine the future production of recycled business papers.

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