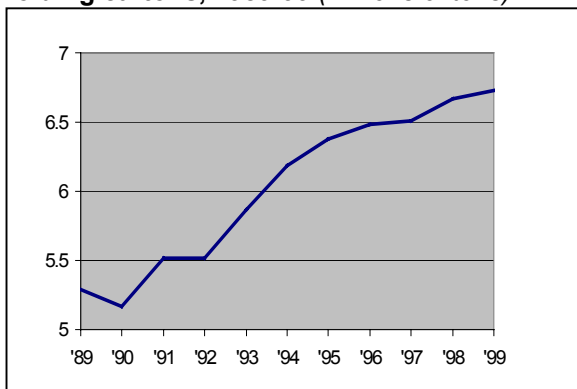


GREENER CARTONS: A BUYER'S GUIDE TO RECYCLED-CONTENT PAPERBOARD

By THE ALLIANCE for ENVIRONMENTAL INNOVATION

Thanks to its versatility, durability, and relatively low cost, paperboard is used to package everything from carryout food to pharmaceuticals, cereal to hardware. U.S. paperboard production for folding cartons increased 30% during the 1990's, to 6.8 million tons annually (Fig. 1).

Fig. 1: Growth in U.S. paperboard production for folding cartons, 1989-99 (millions of tons)



Source: 2000 Pulp & Paper Factbook

But in terms of cost and the environment, all paperboard is not the same. Paperboard with postconsumer recycled content is a high quality, cost-competitive packaging option with significantly lower environmental impacts than virgin board.

Three major types of paperboard are used for consumer goods: coated recycled board (CRB), solid bleached sulfate (SBS), or coated unbleached kraft (CUK). CRB is made from 100% recovered paper and usually contains a minimum of 35% postconsumer materials. In addition, several manufacturers produce board that combines outer layers of SBS with an inner layer of postconsumer recycled materials.

Given recent dramatic improvements in the quality, variety, and availability of recycled content paperboard, as well as its competitive pricing and

significant environmental benefits, major consumer product industries (e.g. dry foods, home and personal care products) have largely switched to recycled. In fact, more than half of the products on supermarket shelves are now packaged in recycled paperboard.¹ But other major sectors, including food service, medicines, cosmetics, and tobacco continue to use mostly 100% virgin bleached paperboard, at significantly higher economic and environmental costs.

BETTER PAPERBOARD OPTIONS: COATED RECYCLED BOARD (CRB)

U.S. annual production capacity for CRB folding cartons increased by 440,000 tons in the 1990's.² At the same time, technological advances have dramatically improved the quality of 100% recycled paperboard. While the specifications of recycled board vary from mill to mill, the best CRB matches SBS on key attributes such as brightness, smoothness, and basis weight.³

A Sample of Consumer Products in Recycled Content Paperboard Packaging

- Warner Bros. videos and DVDs (30%*)
- Excedrin® (35%*)
- Comtrex® (35%*)
- Celebrex® (35%*)
- Clairol Natural Instincts® Haircolor (30%*)
- Colgate® toothpaste (35%*)
- Hewlett-Packard printer cartridges (50%*)
- Kodak film boxes (75%*)
- Most brands of cereals, crackers, cookies (typically 35%*)
- UPS overnight shipping envelopes (80%*)

**minimum postconsumer recycled content*

¹Source: 2000 Pulp & Paper Factbook

²Source: 2000 Pulp & Paper Factbook

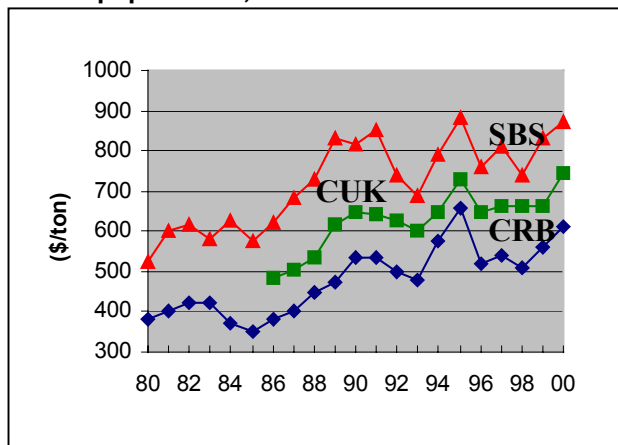
³Based on product specifications provided by paperboard manufacturers and the Recycled Paperboard Technical Association.

Alliance interviews with packaging engineers and converters suggest that, with test runs and equipment optimization, run speeds with CRB typically match those with SBS, and excellent print quality can be achieved.

CRB is now available in calipers from 12-38 pts. and with a variety of topside and backside coatings. The typical topside coating is a combination of clay, latex, and titanium that provides excellent printability and brightness. The major grades include newsback, which is made with recycled newsprint, typically has a gray backside, and packages a variety of consumer products; and kraft back or solid kraft, which are typically made with recycled corrugated boxes, have a brown to beige backside, and greater strength. Recycled boards that use a layer of high-grade recycled materials and clay coating to create a bright white backside are also available. Because their mills are smaller and more adaptable, recycled paperboard suppliers can also custom-manufacture paperboard for particular packaging needs.

Over the past twenty years, CRB has been from 25 to 40% less expensive than virgin board per ton (Fig. 2). This price advantage holds up

Fig. 2: Prices for major types of folding carton paperboard, 1980-2000



CRB and CUK = 20 pt. caliper board; SBS = 16 pt. caliper board. Prices not adjusted for inflation. Source: Pulp and Paper Week as cited in the 2000 Pulp & Paper Factbook

even given the sometimes higher basis weight (density) of CRB and even if the virgin board is compared to a higher caliper (thicker) recycled board. Thus, consumer product companies have an excellent opportunity to cut their paperboard packaging costs even using the best quality CRB, which is competitive with SBS on key performance specifications and capable of replacing SBS in many packaging applications.

BETTER PAPERBOARD OPTIONS: SBS WITH RECYCLED CONTENT

At least four North American manufacturers offer paperboard with outer layers of SBS and an inner layer of recycled material. The postconsumer recycled content for these boards ranges from 10-35%. Technical specifications are very similar or identical to those for SBS. Based on Alliance interviews with converters and packaging engineers, some of these virgin/recycled paperboards perform almost identically to SBS in terms of runnability, print quality, and other factors. These boards are currently being used in high-end packaging for videos, software, haircolor, greeting cards, and other products. The cost of the virgin/recycled boards relative to SBS ranges from 10% less to 9% more per ton.

RECYCLED PAPERBOARD LOOKS GOOD TO CONSUMERS

In addition to the potential cost savings, switching to recycled-content paperboard may also earn you points with customers. In a 1998 national survey of shoppers⁴, 63% of respondents rated the attractiveness and perceived quality of recycled paperboard packages as the same or better than virgin packages. While most consumers could not see a difference between these packaging types, they clearly had a far more favorable view of companies who use recycled packaging.

⁴Source: Survey by Leflein Assoc. for the Recycled Paperboard Alliance

According to the survey:

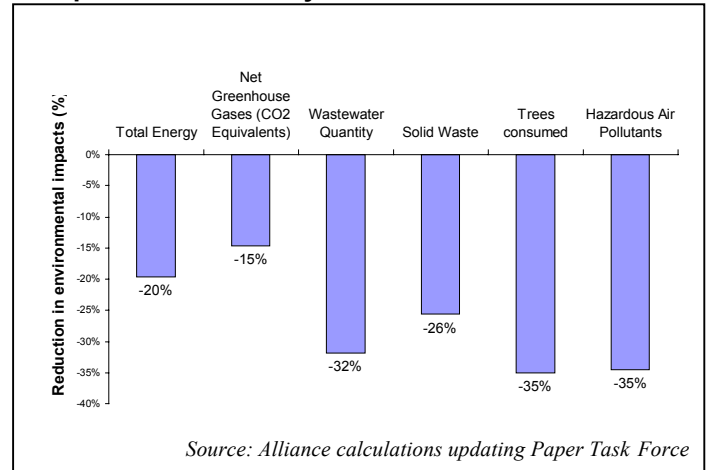
- 61% were more inclined to purchase products from a company that uses recycled paperboard packaging
- 77% felt better about a company that uses recycled paperboard in its product packaging
- 80% felt they were "doing something good for the environment" when they bought products packaged in recycled paperboard packaging
- 85% believed that using recycled paperboard in packaging will "make a better future for your children."

RECYCLED-CONTENT PAPERBOARD: AN ENVIRONMENTAL WINNER

Given the huge amount of paperboard that is produced and discarded in the U.S., incorporating recycled content into paperboard can have important environmental benefits. Compared to 100% virgin board, paperboard with postconsumer recycled content uses less wood, energy and water, reduces emissions of greenhouse gases and air and water pollutants, and cuts the amount of trash sent to incinerators and landfills.

Fig. 3 shows the reductions in environmental impacts from adding 35% postconsumer recycled material to virgin bleached board. Postconsumer materials are products that have served their intended end use and would otherwise be thrown away, whereas preconsumer materials are manufacturing scrap. Environmentally, postconsumer recycled content is what matters most. (Switching from unbleached virgin paperboard (CUK) to recycled content board also provides significant environmental savings; the Alliance can provide more detailed information.)

Fig. 3: Some environmental benefits of adding 35% postconsumer recycled material to SBS



Dramatic reductions in environmental impacts would result if any of the major consumer product sectors still using mostly virgin paperboard were to switch to recycled-content board. As one example, Fig. 4 shows some of the environmental benefits of incorporating 35% postconsumer recycled material into the 375,000 tons of virgin bleached paperboard used annually for U.S. medicines and cosmetics.

Fig. 4: Benefits of Switching to 35% Postconsumer Recycled Content for Medicine and Cosmetics Cartons (based on 375,000 tons annual usage)

Annual Benefit:	Annual Equivalent
156,000 tons of greenhouse gas emissions avoided (CO ₂ equivalents)	CO ₂ emissions from 27,000 cars driven 200 miles a week
Wastewater reduced by 2.6 billion gallons	Wastewater from 27,000 households
510,000 fewer tons of trees used	Trees required to make the copy paper used by 11 million people
106,000 tons of solid waste avoided	Trash generated by 49,000 households

Source: Alliance calculations updating Paper Task Force

Leading Consumer Products Companies on Recycled Paperboard

“By switching to recycled paperboard, we were able to improve the environmental performance of our express packaging while maintaining appearance and preserving performance at equal or better cost.”

--David Guernsey, UPS Environmental Affairs

“As with many packaging changes, when you switch to recycled paperboard you have to get some experience with the new material, do test runs, and make adjustments to the equipment. We run recycled paperboard just as fast as virgin paperboard. Our shipping tests show that recycled board is just as strong. As for appearance, we've been using recycled paperboard in our Excedrin and Comtrex lines for ten years, and consumers seem to think it looks good.”

--Lynn Dixon-Anderson, Team Leader of Package Engineering for New Pharmaceutical & Consumer Products, Bristol-Myers Squibb

“We have used paperboard packaging with 25% postconsumer recycled content for our Natural Instincts® haircolor for over 5 years. Overall, we have found no difference in the printability or runnability of recycled content versus all virgin paperboard. The graphics used in hair color packaging require very high print quality, and we are achieving this using recycled content paperboard. Overall, we are very satisfied with the functional performance and environmental benefits of this packaging choice.”

--Kimberly A. Drosos, Director, Package Technology, Clairol, Inc.

“Kodak has been using recycled paperboard for its film cartons for nearly a decade. Initially, the company’s goals called for recycled paperboard packaging that looks nearly identical to virgin material, is capable of running just as fast, and helps contain or reduce costs. Various options were tested requiring modifications to printing and filling methods and the goals have been met. Today’s film cartons contain a minimum 75% post-consumer content and the company has realized significant cost savings from the changeover.”

*--Gaylynn Durkin, Senior Packaging Engineer
Eastman Kodak Co.*

FOR MORE INFORMATION

For more information and assistance in evaluating recycled-content paperboard options for your company, please contact:

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