Corrugated & Paperboard Boxes

Industry Study with Forecasts for 2016 & 2021

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US demand to exceed $36 billion in 2016

Demand for corrugated and paperboard boxes in the US is projected to rise 2.3 percent annually to $36.4 billion in 2016, boosted by an overall strengthening of the US economy following the 2007-2009 recession. In particular, growth will benefit from expanded food, beverage and durable goods output, as well as from a rebound in construction spending, which will stimulate demand for goods and materials (and their related boxes) used in construction applications. Gains will also be aided by a trend toward more expensive boxes, such as corrugated boxes and folding cartons that offer high-quality graphics and printing.

Corrugated, solid fiber boxes to lead demand

Corrugated and solid fiber box demand is forecast to climb 2.5 percent per year through 2016, supported by a rebound in manufacturing activity and accelerated growth in consumer spending. In addition, corrugated and solid fiber box demand will be supported by their well-entrenched position as the shipping container of choice in a number of markets due to their cost-effectiveness, excellent protective performance and limited competition from other packaging alternatives. Production volume will rebound but will be moderated by sustainability efforts and heightened use of high-performance, lighter basis weight grades of linerboard and medium that can provide sufficient compression strength for shipping boxes.

Frozen food and beverages market to remain dominant

Food and beverages, which accounted for half of US box demand in 2011, is the largest box market. Through 2016, frozen food and beverage applications are expected to exhibit the fastest gains among food and beverage markets. Among other nondurable goods box markets, pharmaceuticals, and rubber and plastic products are expected to see above average growth. Durable goods markets will rebound favorably from their 2006-2011 performance, fueled by gains in production of machinery and equipment. A recovery in construction activity will drive demand for durables such as appliances, furniture and plumbing products, as well as related boxes.
Demand for semichemical board, a major component of corrugated board, will increase 1.6 percent per year through 2016, reflecting a rebound from the sharp losses registered during the 2007-2009 recession, when the manufacturing output, hurting demand for corrugated packaging. Declines during this period were also caused by some shifting to recycled corrugating medium. As manufacturers’ shipments rebound through 2016, demand for related corrugated shipping boxes will likewise recover, stimulating both sales and production of semichemical board. Additionally, demand will be helped by some movement back to semichemical, which possesses higher strength than recycled medium.

Semichemical board is utilized almost exclusively as corrugating medium, the fluting material in corrugated boxes. Although semichemical board has traditionally been the material of choice for corrugating medium, recycled board has stepped up its use in this application, rising from about two million tons in 1990 to 4.4 million tons in 2011. By contrast, annual semichemical corrugating medium production has generally hovered between 5.5 and 6.5 million tons during most of this period. Despite market maturity and competition from recycled paperboard, semichemical board demand is projected to rise at a faster pace than recycled board, aided by the generally higher quality and strength properties of semichemical board compared to recycled board. Moreover, the trend toward lighter-weight linerboard will stimulate gains for semichemical, as a strong core enhances the strength of such linerboard. Production of semichemical board will be supported by additional entrants into the market, such as Sonoco Products, which began making semichemical medium commercially available from its Hartsville, South Carolina plant in January 2010.

Semichemical board is defined as containing no more than 25 percent recycled fiber, although in practice up to 50 percent recycled fiber is used.
Sample Profile, Table & Forecast

**COMPANY PROFILES**

*PaperWorks Industries Incorporated*
5000 Flat Rock Road
Philadelphia, PA 19127
215-984-7000
http://www.paperwrks.com

- **Annual Sales:** over $600 million (as reported by company, 2/12)
- **Employment:** over 1,600 (as reported by company, 2/12)
- **Key Products:** recycled paperboard and folding cartons

PaperWorks Industries is a leading North American manufacturer of coated recycled paperboard and paperboard packaging. The Company is an affiliate of Sun Capital Partners Incorporated (Boca Raton, Florida), a private equity firm. PaperWorks Industries operates through two divisions: Paperboard Group and Packaging Group.

The Company is active in the US corrugated and paperboard box industry through both divisions. Via these divisions, PaperWorks Industries manufactures recycled paperboard and folding cartons.

**Paperboard Group** -- Paperboard is made by PaperWorks Industries via the Paperboard Group division, and comprises coated recycled board (CRB) and uncoated recycled board (URB) types. CRB is produced under the MASTERWORKS brand name and includes the PLUS, LITE, NEWS, FREEZE and BEV grades. Prior to August 2009, the Company sold its paperboard products under the MASTERPRINT tradename.

MASTERWORKS PLUS CRB features high kraft fiber content and is suitable for packaging applications requiring high strength.

---

**TABLE V-3**

**FOOD & BEVERAGE BOX MARKET**

(million dollars)

<table>
<thead>
<tr>
<th>Item</th>
<th>2001</th>
<th>2006</th>
<th>2011</th>
<th>2016</th>
<th>2021</th>
</tr>
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<tbody>
<tr>
<td>Food &amp; Beverage Product Shpts (bil $)</td>
<td>691</td>
<td>742</td>
<td>750</td>
<td>765</td>
<td>780</td>
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<tr>
<td>$ boxes/000$ food &amp; beverage</td>
<td>533</td>
<td>518</td>
<td>497</td>
<td>487</td>
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<td>Food &amp; Beverage Box Demand</td>
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<td>Beverages</td>
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<td>Grain Mill Products</td>
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<td>Canned Foods</td>
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<td>Bakery Products</td>
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<td>Sugar &amp; Confectionery</td>
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<td>Other Foods</td>
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<tr>
<td>% food &amp; beverages</td>
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<tr>
<td>Corrugated/Paperboard Box Demand 2968</td>
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</table>

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"Demand for boxes used in beverage packaging is forecast to climb 2.8 percent annually through 2016 to $3.3 billion, outpacing the food and beverage box market average but decelerating from the 2006-2011 pace as beverage shipment growth moderates. Gains for corrugated boxes will be supported by favorable prospects for such beverages as sports drinks, iced tea, wine and various ready-to-drink products such as energy drinks, protein drinks and flavored waters. Demand for folding cartons will be based on ..."  
--Section V, pg. 136
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<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$5100</td>
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<th>Expiration Date</th>
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</tr>
</tbody>
</table>

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