



Corrugated Packaging Keeps Shipping Groceries Green, Clean and Lean

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A Fibre Box Association (FBA) White Paper



FIBRE BOX ASSOCIATION

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Grocery suppliers have a long history of using corrugated containers to send their products to distributors and retailers. Most have built an infrastructure to fit and facilitate packing in corrugated boxes. Successful operations require an efficient system for managing the entire process and supply chain – producing, packing, shipping and maintaining positive relations with retail customers.

That’s a lot of moving parts, and packaging is just one piece of the rather complex path a product takes from producer to store. There’s a lot of buzz about GMOs, organic vs. non-organic products, environmental and health impacts, and food safety – all critical issues that suppliers and retailers face in their business.

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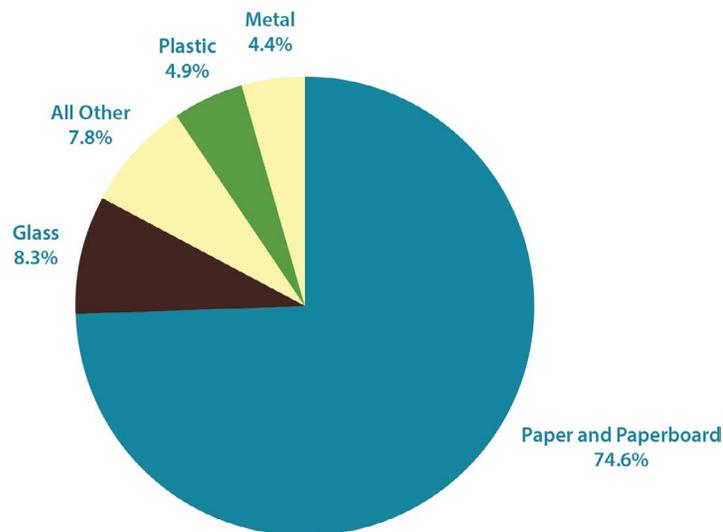
Keeping it Green...

[A new survey](#) shows that for the fourth consecutive year the recovery rate for old corrugated containers (OCC) has hovered right around the 90% mark – that’s 90% of the corrugated produced in the U.S. successfully recovered for recycling. Corrugated recovery has been rising steadily for decades – from 54% in 1993, to 80% in 2009, to 89-91% in 2011-2014.

According to the U.S. EPA, the recovery of corrugated packaging far outstrips that of other packaging materials. For 2012, the EPA published a municipal waste characterization report showing that corrugated accounted for 74.6% of the packaging that was recovered for recycling. Far behind, 8.3% of recovered packaging was glass; 4.9% plastic; 4.4% metal; and 7.8% “all other” packaging materials.



EPA Waste Characterization: Packaging Materials 2012



Wax On, Wax Off.

Some producers face special challenges in transport packaging, such as a need for their products to be kept moist or iced in transit. Traditionally, wax was used as a moisture barrier to preserve box strength for these applications, which met its purpose but made recycling the containers much more difficult. Retailers and producers with sustainability imperatives viewed waxed corrugated as an area for improvement.

This challenge has been overcome in recent years with the advent of recyclable wax alternatives spurring a dramatic decrease in wax use over the past decade. Total wax usage for corrugated containers in 2013 decreased 39% from 2002. The development of recyclable alternatives increases the amount of corrugated packaging that can be recycled – especially by grocery retailers, who handle the majority of products requiring moist conditions in transit. The replacement of wax for this purpose is stimulated by the Fibre Box Association’s (FBA’s) recyclability standard, published in 2005, that allows wax alternatives to be tested, proven and certified recyclable.



Symbolizing Environmental Commitment.

The corrugated box industry has made significant investments to educate the public on the benefits of recycling corrugated materials. In 1994, the “Corrugated Recycles” symbol was introduced in the U.S.; the International Corrugated Case Association (ICCA) adopted it three years later. Today, the symbol is present on a majority of corrugated packaging.

Keeping it Clean...

Food safety is probably the biggest issue facing the produce industry today and packaging has its role. The corrugated industry recently conducted research to validate the cleanliness of its packaging products for food. The research studied the possible presence of bacteria in corrugated containers.



100 percent of tested corrugated containers met acceptable sanitation levels.

Third-party testing and analysis conducted by the University of California-Davis and toxicology experts Haley & Aldrich confirmed 100 percent of tested corrugated containers met acceptable sanitation levels. Experts examined 720 swab samples taken from containers produced by six different corrugated manufacturers at grower/shipper locations in three different U.S. regions, the Pacific Northwest, California and Florida.

One hundred percent of the evaluated samples were below 1,000 CFU per swab, confirming that corrugated containers provided for food packaging meet acceptable sanitation criteria at the point of use. Typical corrugated manufacturing practices are responsible for the low levels of bacteria. Corrugated containers are engineered for single use specifically for the product they contain. After use, there’s nothing to wash. The corrugated box is returned to the paper mill where the recycling process greatly reduces bacterial loading.

This continuous cycle of using boxes, recycling them and then creating new boxes not only translates into package cleanliness, it also contributes to the sustainability of the corrugated industry.

... and Keeping it Lean

Several case studies have been done comparing the supply chain costs of using corrugated containers vs. reusable plastic containers (RPCs) for transporting fresh produce. All of these studies have shown that corrugated remains the most cost-effective solution – especially for the produce suppliers, who bear the brunt of cost increases for reusable crates.



[The latest economic case study](#) showed that shipping onions in corrugated saved 10.4 percent annually versus shipping in RPCs. Using data provided by a large onion grower, the Full Disclosuresm modeling tool was used to analyze total annual costs involved in using each of the two packaging systems. The study showed higher costs incurred throughout the supply chain using RPCs rather than corrugated.

Some of those extra costs are obscure and easily overlooked. In this situation, these included additional labor at the packing shed, more collapsed pallets at the DC, and monthly administrative and “add-on” fees. RPCs arriving wet required extra labor to wipe them down before feeding them to the filling line. When shipping long distances, RPCs consistently resulted in more collapsed pallets at the DC than corrugated. And additional administrative costs and fees were also incurred each month. These three extra costs added up to about 13.5 cents per case. Full Disclosure captures this additional cost as “Operating Impacts.”

Clear total cost picture

Corrugated Containers		Reusable Plastic Containers		Variance
<u>Annual Container Cost:</u>	1,109,000 \$	<u>Annual Replenishment Cost:</u>	63,690 \$	-1,045,310 \$
<u>Annual Label Cost:</u>	10,000 \$	<u>Annual Label Cost:</u>	16,600 \$	6,600 \$
<u>CC Trucking Costs:</u>	6,234,236 \$	<u>RPC Trucking Costs:</u>	7,626,025 \$	1,391,789 \$
<i>Total trucking costs include trucking and any standing costs at unloading and loading.</i>		<i>Total trucking costs include trucking and any standing costs at unloading and loading.</i>		
<u>CC Handling Costs:</u>	43,129 \$	<u>RPC Handling Costs:</u>	149,043 \$	105,914 \$
<i>Total handling costs include unloading, handling, and loading.</i>		<i>Total handling costs include unloading, handling, and loading.</i>		
<u>CC Operating Impacts:</u>	0 \$	<u>RPC Operating Impacts:</u>	159,500 \$	159,500 \$
<i>Operating impacts are detailed at various distribution points.</i>		<i>Operating impacts are detailed at various distribution points.</i>		
<u>Disposal Cost (or Recycling Value):</u>	-99,700 \$	<u>Disposal Cost (or Recycling Value):</u>	-43,036 \$	56,664 \$
CC Inventory Value:	30,806 \$			
<u>CC Inventory Interest Cost:</u>	2,464 \$			-2,464 \$
Annual CC Cost:	7,299,130 \$	RPC Initial Cost:	416,667 \$	
		<u>RPC Annual Amortization:</u>	84,265 \$	84,265 \$
		Annual RPC Cost:	8,056,087 \$	756,957 \$
			Variance without RPC Amortization:	672,693 \$

The Full Disclosure analysis summarized above shows a total annual supply-chain cost of \$7.3 million for corrugated vs. \$8.06 million for RPCs. In other words: total packaging, shipping and handling costs were 10.4 percent (\$756,957) higher using RPCs.

The retailer's costs in this scenario were 9.9 percent higher using RPCs, and the onion grower paid 15.4 or \$0.17/case more.

Full Disclosure case studies show corrugated containers to be the lowest-cost supply-chain solution for fresh produce, especially for the grower. These facts have been demonstrated for strawberries, tomatoes, apples, broccoli, citrus, grapes, and watermelon. All the reports are available at www.corrugated.org.

Teamwork Saves the Day

Supermarkets are vital partners in helping to preserve natural resources and reduce environmental impact – especially when it comes to corrugated, which is a primary transport package bringing most grocery products to their store locations. By recovering those used boxes for recycling, and requesting recyclable wax alternatives, retailers can demonstrate their commitment to sustainability.

The Total Package

Change for the sake of change is not always a good thing. Corrugated has been around for a long time and it still works well as a cost-effective, high performing, recyclable shipping container. Corrugated boxes also offer branding opportunities through full color printed graphics. Single use provides an advantage in package cleanliness. And multiple economic studies show corrugated to be the most cost-effective transport packaging solution. Green, clean and lean.




Corrugated boxes offer branding opportunities through full color printed graphics.

For more information about corrugated packaging, visit www.corrugated.org.