

WHITEPAPER



Protecting the product

How reusable plastic containers
solve an ongoing meat problem



Supply chain challenges facing the meat industry

Corrugated boxes and meat don't mix.

That's the message coming from suppliers and retailers trying to protect their already thin margins.

Leaders at different nodes along the supply chain are paying increased attention to waste caused by collapsed corrugated boxes. Retailers want solutions that decrease damages and increase the overall quality of meat that ultimately is sold to consumers. Suppliers want fewer rejections caused by the same culprit.

Yet when it comes to transporting meat along the supply chain from farm to retailer, corrugated boxes often are the default choice. This leads to higher food waste rates - **farms and producers lose \$15 billion to it annually, and manufacturers another \$2 billion.** Food must look fresh and appetizing to attract increasingly fickle consumers. No clearer is this seen than in the beef industry. Corrugated boxes lack the strength to adequately transport meat, leading to crushing that causes discoloration. That discoloration costs money. Lots of money.

There is an increased need for tracking data and visibility across the supply chain to pinpoint where damage occurs, particularly throughout the transportation journey. **Without the ability to trace products as they move, companies are not able to face a problem until it is already too late.**



Meat's packaging problem

The toll taken by food waste is felt strongly by meat suppliers. The increased cost of farm to retailer journey is creating pressure for leaders to find greater efficiencies.

Consumers have felt the pinch as retailers have passed along their increased costs. In 2003, the average price for beef was 80 cents per pound. As of 2025, ground beef averages \$6.32 per pound—the highest since data collection began in the 1980s. That's an increase of 690%.

That makes the cost of unsellable meat a bigger threat to a company's profitability than ever before.

The corrugated box was patented in 1871. Other than a few minor modifications, it is much the same as it was when it first took over as the container in which America's fresh food is shipped. This 19th century technology isn't standing up to the 21st century demands of American consumers.



\$3.73 billion

annual loss due to discoloration in the beef industry according to the American Meat Science Association's journal *Meat and Muscle Biology*.

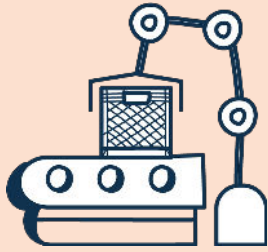
428 million pounds

of food waste annually.

780,000 animals

and the associated natural resources needed for production wasted annually.

5 main problems from reliance on corrugated boxes



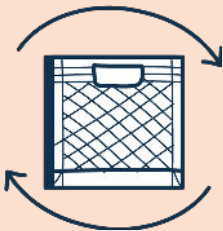
Money-saving automation technology doesn't work well with corrugated boxes. Automation relies on standardized sizing and durability, and corrugated boxes come in too many shapes and sizes to play well with automation without downtime for continuous machine changes.



Meat is heavy and corrugated boxes can't stand up to the weight. When a pallet of meat packed in corrugated boxes is stacked for shipping, the product inside bears the weight of the entire stack as well as moisture from purge. This creates unstable pallets for shipping and greatly impacts product quality. It also results in sticky film on packaging that is a turnoff for consumers. Both lead to rejections for suppliers.



Box failures mean reduced cube. Corrugated boxes often fail under the weight, leading to unstable stacks. This in turn requires additional labor for clean up and disposal. To reduce the extra work, currently the corrugated boxes aren't stacked to their full capacity. They are partially loaded and sent to retailers which means increase in truck trips and high emissions.



Corrugated cardboard boxes are a single-use container. They can't be reused, which means they are the source of tremendous packaging waste. This waste has to be disposed of at the baler — the water cooler of the warehouse — which results in more wasted labor time at stores.



Corrugated boxes have limited traceability. Corrugated boxes are typically plain cardboard with no built-in RFID tags, sensors, or tracking barcodes that can withstand the rigors of transport, particularly in cold or humid environments. This makes it challenging to monitor each box's location, temperature, or condition throughout the supply chain, resulting in less visibility.

The RPC solution

The benefits of Reusable Plastic Containers (RPCs) can be touted across all product lines in the fresh-food supply chain, including meat. The comparably high price of meat and the fickle senses of the consumer for what meat should look like makes getting more meat from farm to table of paramount importance.

That is why more suppliers and retailers are turning to RPCs. At every step along the supply chain, RPCs solve the problems corrugated boxes create.

Supplier

- ✗ **PROBLEM: Jams box-former**
Corrugated boxes frequently jam the box-former.
- ✗ **PROBLEM: Shrink**
Corrugated boxes can leak, and their products can get damaged or squished when stacked.
- ✗ **PROBLEM: Rejection**
Corrugated boxes lead to higher rejection rates at the next step, the distribution center, because of damaged products.
- ✗ **PROBLEM: Less cube**
Corrugated boxes can not be safely stacked to its highest capacity. Box failures leads to reduced cube.
- ✗ **PROBLEM: Traceability**
Corrugated boxes have limited traceability options.



- ✓ **SOLVED: No box-former**
With RPCs, there is no box to form.
- ✓ **SOLVED: More fresh product**
RPCs are stronger and sturdier, allowing for higher stacks, meaning more product can be delivered to the customer.
- ✓ **SOLVED: Sturdier**
RPCs are sturdier and protect the product better, leading to a more attractive presentation and better sales.
- ✓ **SOLVED: More cube**
RPCs are designed to be safely stacked and in fact, switching to RPCs leads to 25% more cube
- ✓ **SOLVED: Built-in traceability**
RPCs have built-in RFID tags, sensors, or tracking barcodes that can withstand the rigors of transport, particularly in cold or humid environments.



Distribution Center

✗ PROBLEM: Can't handle weight

Corrugated boxes can't stand up to the weight of meat, leading the product itself to bear the weight of the pallet.

✗ PROBLEM: Not automation friendly

Corrugated boxes don't work well with automation systems because of the huge disparity in size and shape.

✗ PROBLEM: Leak

Flimsy corrugated boxes lead to failed pallets, which cause messes and injuries.

✗ PROBLEM: Labor time

Workers waste time unstacking and re-stacking unstable pallets.

✓ SOLVED: 400% stronger

RPCs are sturdier and easily able to handle the product's weight.

✓ SOLVED: Designed for automation

RPCs come in standard sizes that are designed for automation technology.

✓ SOLVED: No spillage

RPCs, again, are sturdier and stackable, reducing pallet issues and decreasing spillage and lost-time incidents.

✓ SOLVED: Less labor time spent

RPCs are designed to be stacked and stable on pallets.



Retailer

✗ PROBLEM: Labor time

Corrugated boxes create low-value activities like time at the baler, which is the water cooler of the retailer.

✗ PROBLEM: Messy backroom

Corrugated boxes lead to messier, less organized backrooms.

✗ PROBLEM: Product cleanup

Leaks from corrugated boxes lead to more time wasted on product cleanup.

✗ PROBLEM: Low quality product

Corrugated boxes lead to fewer sales because of lower-quality product on the shelves.

✓ SOLVED: Less labor time spent

With RPCs, there is no need for a baler, resulting in more time spent by employees on valuable activities.

✓ SOLVED: Organized backroom

RPCs are standardized and stackable, leading to a more organized backroom.

✓ SOLVED: No clean-ups

RPCs sturdy construction requires less time spent on low-value activities like cleanup.

✓ SOLVED: Fresher Product

RPCs better protect the product, leading to more attractive displays and better sales.



RPCs offer a sturdier, safer alternative that better protects meat. Companies that switch to RPCs for case-ready meat are likely to see a dramatic decrease in shrink and labor costs. They also will be contributing to global sustainability efforts that leave the planet a better place for future generations.

Corrugated boxes are often transported on wood pallets. Wear and tear on the wood can limit the pallet's usage to just a few trips. **RPCs can be used hundreds of times and are 100% recyclable, helping businesses reach their sustainability goals.**

The desire to protect the product and to increase sustainability efforts is what led Wegmans to turn to Tosca, a global leader in RPC pooling.

Wegmans and Tosca partnered on an initiative to ship the grocer's case-ready meat products in RPCs, enabling the company to prevent more than a million pounds of corrugated packaging from entering the supply stream.

“

We need to ensure packaging is functional and performs as expected, but we also want it to be environmentally responsible.

Switching to RPCs helps us reach our sustainability goals by eliminating a significant amount of packaging waste.”

- **Jason Wadsworth**

Category Merchant, Packaging and Sustainability, Wegmans





In addition, the switch to RPCs allowed Wegmans to trim its transportation costs. With higher stacks and lighter pallets, Tosca's RPCs allow up to 6% more merchandise on each truck. Tosca's CEO, Eric Frank said that **stackability enables some of its customers to save as much as 25% in transportation costs.**

“

Tosca is dedicated to helping retailers optimize their supply chain, but decreasing costs is only one piece of the puzzle for retailers that have aggressive sustainability goals. That's why, we were excited to partner with Wegmans. **Not only will we help them reach their sustainable packaging goals, but we'll also help them lower transportation costs, reduce shrink, and improve product quality at the same time.**

- Eric Frank, CEO of Tosca

Transforming with Tosca

Tosca developed RPCs specifically for the meat industry. The Tosca meat RPC features:

400%

stronger than corrugated boxes, preventing product damage during transportation and significantly reducing shrink.

DURABILITY

specifically engineered

Scalloped walls allow meat to lay flat and uniform, protecting it from damage while

maximizing
internal
volume.

5 to 8%

less expensive than upgraded corrugated boxes. In fact, a corrugated box as strong as an RPC would cost 25% more than the Tosca product.

1-to-1

conversion from corrugated boxes because of the optimized container dimensions

OPTIMIZED STORAGE

Tosca RPCs can be stacked higher and tighter than corrugated boxes without sacrificing quality or safety.



In addition, Tosca's RPCs work with Tosca's AssetIQ solution that provides real time insights, can spot inefficiencies, and provides full control of your supply chain tracking.

Wegmans isn't the only retailer to benefit from Tosca's RPCs. One prominent East Coast regional retailer participated in a pilot program that puts Tosca's RPCs against an upgraded reinforced corrugated box. The test ran in more than 100 stores for 90 days.

At the end of the test period, the retailer reduced the number of trucks on the road with Tosca's RPCs. The upgraded corrugated boxes still faced crush problems, and the retailer could only stack them 10 layers high. Tosca's case-ready meat RPCs were able to be stacked 18 layers high, using the full space available on each truck. That contributed to a 25% savings in transportation costs.

“When we created our meat RPCs, we knew we were setting out to do something different in a supply chain that hasn't been changed in decades. The fast turning, high volume nature of the meat supply chain, added to the corrugated box failures and messes that come with them, have been a problem for years. **We've created a better alternative.**”

- Eric Frank, CEO of Tosca

That alternative is, indeed, proving to be better for those who make the switch to RPCs. Companies that have made the switch, such as Wegmans, Kroger and Walmart, are able to answer a variation of the age-old question: Where's the beef? It's on the shelf, ready to be sold, thanks to the structural integrity of RPCs.

For more information on Tosca's meat RPC options and its full line of RPC products, visit toscaltd.com

