

WHITEPAPER



Protecting prepared food

How reusable plastic containers solve an ongoing industry problem



Supply Chain Challenges Facing the Prepared-Food Industry

Corrugated boxes and prepared foods 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 shrink and increase the overall quality of prepared food sold to consumers. Suppliers want fewer rejections caused by the same culprit. Everyone wants bottom-line savings and to impact their sustainability goal.

Yet when it comes to transporting prepared food along the supply chain from farm to retailer, corrugated boxes often are the default choice. Corrugated boxes frequently collapse when stacked on pallets, making the product inside unsellable. **This leads to higher food waste rates - farms and producers lose \$15 billion to it annually, and manufacturers another \$2 billion.** According to the National Center for Biotechnology Information, **17.5% of prepared foods are never consumed.**

There is an increased need for tracking data and visibility across the supply chain, particularly throughout the transportation journey. Without the ability to trace products as they move, companies cannot face a problem until it is too late.



Prepared Food's Packaging Problem

The toll taken by food waste is felt strongly by fresh, prepared food suppliers. The increased cost of the farm-to-retailer journey is creating pressure on leaders to find greater efficiencies.

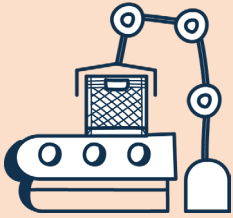
This is a growing problem as the prepared food industry booms. In 2023, the global prepared food market was valued at \$156.5 billion. That number is expected to grow to nearly **\$216 billion by 2032**. A combination of factors is fueling this 38% growth:

- Increasingly busy lifestyles create a market for minimal-prep meals.
- Changing consumer preferences and eating habits have shifted toward convenient, on-the-go options.
- Growing disposable income has increased purchasing power and made more expensive convenience foods easier to purchase.
- Innovation that allows healthier, organic, and nutritionally balanced options to enter the space.
- A series of mergers and acquisitions have positioned companies with massive distribution operations in the prepared-food market.

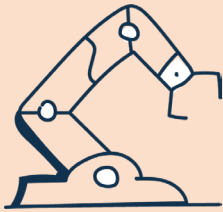
The corrugated box—the container in which the most prepared food is shipped—was patented in 1871. Other than a few minor modifications, it is much the same as it was when it first took over as the container in which America's fresh food was shipped. This 19th century technology isn't standing up to the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



There are six main problems created by this reliance on corrugated boxes for shipping prepared foods.



Corrugated boxes can be a breeding ground for food borne illnesses. A Michigan State University Extension study showed that cardboard boxes that have contained raw food absorb moisture, allowing bacteria to grow and possibly contaminate other food. No amount of cleaning can make a corrugated box safe for another use.



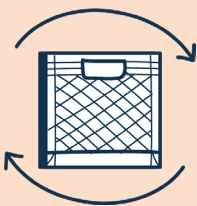
Money-saving automation technology doesn't work with corrugated cardboard. Automation relies on standardized sizing and durability, and corrugated boxes come in too many shapes and sizes to play well with automation without downtime for continuous machine changes.



Prepared foods can be heavy and corrugated boxes can't stand up to the weight. When a pallet of prepared foods 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 a sticky film on the packaging that is a turn-off for consumers. Both lead to rejections for suppliers.



Box failures mean reduced cube. Corrugated boxes often fail under their weight, leading to unstable stacks. This, in turn, requires additional labor for clean-up and disposal. To reduce the extra work, corrugated boxes aren't stacked to their full capacity. They are partially loaded and sent to retailers, which means increased truck trips and higher 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 bar codes that can withstand the rigors of transport, particularly in cold or humid environments. This makes monitoring each box's location, temperature, or condition throughout the supply chain challenging, 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, but perhaps nowhere are they as strong as they are for prepared food. The increased consumer demand for prepared food and the higher product cost make getting more prepared food from farm to table paramount.

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

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 they contain damaged products.
- ✗ **PROBLEM: Less Cube**
Corrugated boxes can not be safely stacked to their highest capacity, and box failures leads to reduced cube.
- ✗ **PROBLEM: Traceability**
Corrugated boxes have limited traceability options.

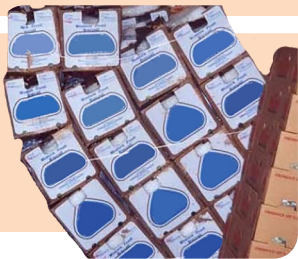


- ✓ **SOLVED: No box-former**
With RPCs, there is no box to form.
- ✓ **SOLVED: More fresh product**
Stronger and sturdier RPCs, allow for higher stacks, meaning more product can be delivered to the customer.
- ✓ **SOLVED: Sturdier**
Sturdier RPCs better protect the product, leading to a more attractive 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 bar codes 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 prepared food, 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 standardized sizes that are designed for automation technology.
- ✓ **SOLVED: No spillage**
RPCs 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, the retailer's water cooler.
- ✗ **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 prepared foods. Companies that switch to RPCs will likely see a dramatic decrease in shrink and labor costs. They will also contribute 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 increase sustainability efforts led Taylor Farms, Fresh, Express, Dole, ReadyPac, Blue Apron, Latitude 36 Foods, and OSI to turn to Tosca, a global leader in RPC pooling.

In 2020, Tosca unveiled its RPC specifically designed for shipping packaged perishables in the rapidly growing fresh kitchens, grab-and-go prepared foods segment. The Fresh Kitchens RPC was designed to be versatile for shipping foods and clamshell cases of all sizes, strong enough to protect from damage and spills, and purposefully built for fast handling and uniform stacking.

The Fresh Kitchens RPC is used like a shopping cart, where everything from sandwiches and salads to fruit cups and veggie trays can be conveniently and safely packaged and transported.

The Fresh Kitchen RPC is 400% stronger than the corrugated box, reducing product damage and shrink.

“Prepared food shipments happen every single day, and no two shipments are the same,” said Tosca CEO Eric Frank. **“It’s a fast-paced, high speed grocery segment, and retailers and food preparers are both looking for the same thing. They need durable containers that arrive on time and are extremely clean.”**



Tosca's RPCs undergo the most rigorous cleaning process and meet the toughest hygiene standards. Each RPC is cleaned by 100% Tosca-owned and operated wash sites, all under the industry's most robust food safety program, ISO 22000.

In addition, Tosca maintains 18 service centers in North America alone, which means it can efficiently stay ahead of the fast pace of the prepared-food business. Tosca is the largest pooler of RPCs on the continent, which means it can offer speed, inventory and proximity to commercial kitchens to keep up with the quick-moving prepared-food business.

The sustainability impact is also significant. Every use of a RPC eliminates more than 1.5 pounds of corrugated boxes, translating to millions of tons of corrugated diverted from entering the supply chain every year. Tosca's RPCs feature optimized container dimensions, allowing for a 1-to-1 conversion from corrugated boxes.

In addition, Tosca's RPCs work with Tosca's Asset IQ solution, which **provides real-time insights, can spot inefficiencies, and provides full control of your supply chain tracking.**



“ When we created our Fresh Kitchen 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 prepared-food 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

For more information on Tosca's prepared food RPC options and its full line of RPC products, visit tosca.com

