

WHITEPAPER



Protecting the Product

How Reusable Plastic Containers
Solve an Ongoing Egg Problem



Supply Chain Challenges Facing the Egg Industry

It's not just the basket that you shouldn't put all your eggs in; it's the corrugated box, too.

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 help decrease shrink and increase the overall quality of eggs that ultimately turns into sales to consumers. Suppliers want fewer rejections caused by the same culprit.

Yet when it comes to transporting eggs 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 billion¹ to it annually, and manufacturers another \$2 billion². A study by the Department of Food Science at Clemson University determined that from laying to final destination, more eggs are broken during transportation than at any other step in processing and distribution.³ That means profit and loss are most greatly affected for egg producers and retailers during transportation.

There is an increased need for tracking data and visibility across the supply chain, and 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.



Eggs' Packaging Problem



The toll taken by food waste is felt strongly by egg 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 July 2019, the average price for a dozen Grade A large eggs was \$1.20. According to the latest 2024 data, the current average price is \$3.00.⁴ Today's average price is 150% higher than the average price just four years ago.

That makes the cost of unsellable eggs a bigger threat to a company's profitability than ever before. This truth is made even stronger as consumer tastes have changed over the past three decades. In 1990, the average U.S. citizen ate 236 eggs.⁵ In 2023, that number rose to 281.3 and is expected to reach 284.4 by the end of this year, an increase of more than 20%.⁶

The container in which the majority of eggs is shipped — 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.

There are numerous problems created by this reliance on corrugated boxes for egg shipping.

01 Corrugated boxes aren't sturdy enough to protect fragile eggs.

When corrugated boxes are stacked, they frequently crush under the weight of the boxes on top of them or spill because they aren't designed to be safely stacked. That leads to a majority of the loss seen during transportation.

02 Money-saving automation technology doesn't work well with corrugated cardboard.

Automation relies on standardized sizing. The multitude of corrugated box sizes causes downtime with machinery changes and box debris causes machine jams.

03 Corrugated cardboard boxes are not sustainability-friendly as 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. If boxes aren't recycled - as often the case due to the high cost - they go to landfills. If they are recycled, a tremendous amount of water is used to turn them back into pulp.

04 Re-stocking eggs is time consuming.

Just one broken egg means the entire carton must be replaced and clean-up of broken eggs adds to re-stocking time.

The RPC Solution

The increased consumer demand for eggs coupled with the increased cost of the product makes getting more eggs from farm to table of paramount importance.

That's why more and more retailers and suppliers are turning to Reusable Plastic Containers (RPCs). At every step along the supply chain, RPCs solve the problems corrugated boxes create.

Supplier:

PROBLEM	SOLVED
<ul style="list-style-type: none">→ Corrugated boxes don't work with automation systems because of the huge disparity in size and shape.→ Corrugated boxes lead to higher rejection rates because of damaged products.→ Unstable stacks create damage from box failure in transport and limit cube.→ Corrugated dust needs constant attention and can jam machinery.→ Corrugated boxes don't have ventilation, leading to slow cooling.	 <ul style="list-style-type: none">→ RPCs come in standardized sizes that are designed for automation technology.→ RPCs are sturdier and protect the product better, leading to higher sales and reputation for quality.→ RPCs are rigid and stackable for maximum cube without damage. Fewer trucks, fewer trips, more transportation savings.→ RPCs create no dust.→ RPCs are ventilated, speeding up the cooling process for fresher eggs and less time and money spent on cooling.

Distribution Center:

PROBLEM



- Flimsy corrugated boxes lead to failed pallets, which cause messes and injuries.
- Wasted time spent unstacking and re-stack unstable pallets.

SOLVED



- RPCs are sturdier and stackable, reducing pallet issues and decreasing spillage and lost-time incidents.
- RPCs are designed to be stacked and stable on pallets.

Retailer:

PROBLEM



- Re-stocking is time-consuming and needed frequently since a single broken egg requires purging the entire carton.
- Corrugated boxes require low-value activities like time at the baler, the water cooler of the retailer.
- Messier, less organized backrooms.
- Time wasted on product cleanup.
- Fewer sales because of broken products on the shelves.

SOLVED



- Egg RPCs are retail-ready, with the crate going straight to the shelf.
- With RPCs, there is no need for a baler, resulting in more time spent by employees on high-value activities.
- RPCs are standardized and stackable, leading to a more organized backroom for faster re-stocking.
- RPCs sturdy construction prevents damage, leading to a time savings on low-value activities like cleanup.
- RPCs better protect the product, leading to more sales.

The sustainability impact is significant as well. 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.

Transforming with Tosca

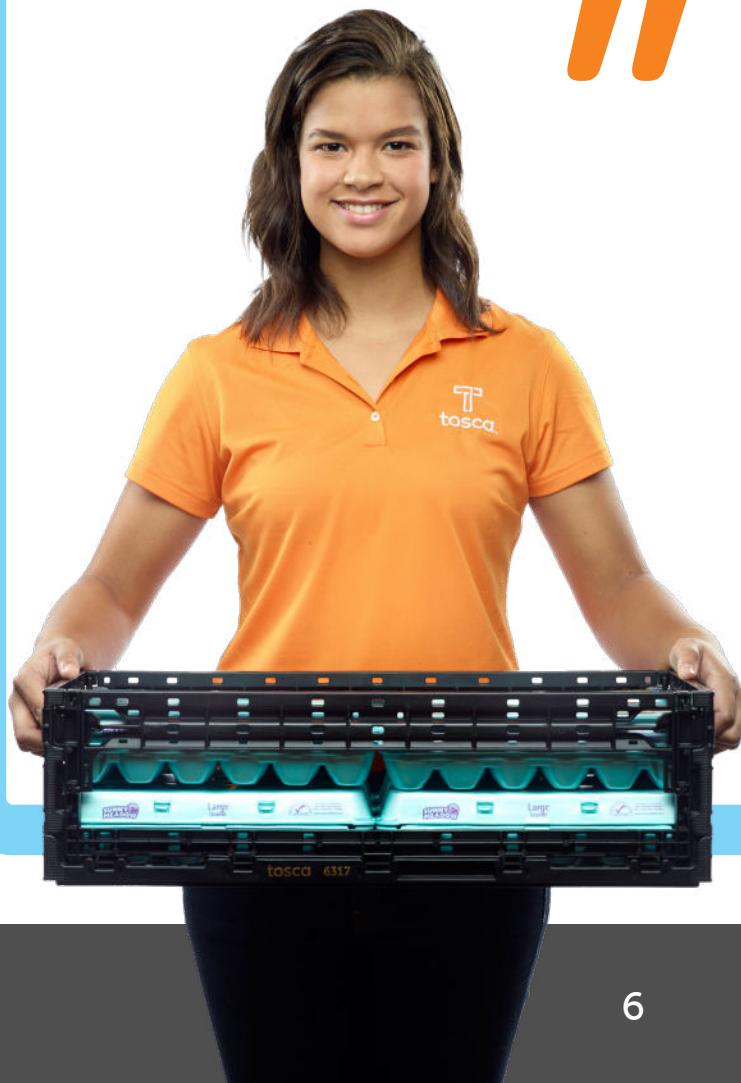
Tosca is the global leader in producing and maintaining RPCs that are proven to reduce shrink by 50%.⁷ Made with food-grade polymers, Tosca's RPCs offer far greater structural integrity and impact resistance compared to corrugated boxes.

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

- Engineering specifically for durability, with food grade polypropylene to withstand weight and water.
- Optimized container dimensions that allow for a 1-to-1 conversion from corrugated boxes.
- The SmartWall solution that allows for easier transfer from transportation to the sales floor.
- Ventilated for rapid cooling
- Egg protection - the RPCs are 4x stronger than corrugated boxes.
- Can use our IoT services for more traceability, visibility, and control - know more about temp control or variance, can optimize routes,etc



“When we created our egg RPCs, we knew we were setting out to do something different in a supply chain that hasn’t been changed in decades,” Tosca CEO Eric Frank said. “The fast turning, high volume nature of the egg 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.



That alternative is, indeed, proving to be better for those who make the switch to RPCs.

In just five years, six of the nation's most prominent food retailers selected Tosca RPCs to replace outdated corrugated boxes. Tosca RPCs are now the packing solution for more than 5,300 retail locations and are responsible for moving nearly 7.5 billion eggs each year.⁸

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

Tosca's egg RPCs have unique features such as SmartWall, which provides one-touch, direct-to-case merchandising, making stocking easier and faster. In studies, this has **proven to lower labor costs by 53%.**⁹ Associates simply have to place the container directly in the case and drop the front wall to give shoppers easy access. That reduces labor time stocking shelves and reduces shrink by limiting the number of times each egg carton must be handled.

Because Tosca's RPCs are designed to be interlocking and are uniform in size, **3 to 6% more merchandise can be loaded on each truck, reducing transportation costs.**

Learn More

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

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



Endnotes

¹ <https://www.fao.org/in-action/seeking-end-to-loss-and-waste-of-food-along-production-chain/en/>

² <https://blogs.material-handling.com/7-ways-to-reduce-food-loss-in-supply-chain-transportation/#:~:text=All%20the%20energy%20costs%20for,a%20toll%20on%20the%20environment.>

³ https://www.researchgate.net/publication/13265275_Packaging_effects_on_shell_egg_breakage_rates_during_simulated_transportation

⁴ <https://fred.stlouisfed.org/series/APU0000708111>

⁵ <https://www.wattagnet.com/broilers-turkeys/article/15510658/us-egg-consumption-rising-because-of-health-benefits>

⁶ <https://www.statista.com/statistics/183678/per-capita-consumption-of-eggs-in-the-us-since-2000/#:~:text=Food%20&%20Nutrition,has%20increased%20in%20recent%20years.>

⁷ <https://www.toscaltd.com/egg-industry/>

⁸ chrome-extension://efaidnbmnnibpcajpcglclefindmkaj/https://www.toscaltd.com/wp-content/uploads/2020/12/tosca-egg-case-study.pdf

⁹ <https://www.toscaltd.com/egg-industry/>



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