



Holistic, Innovative Approach Ensures Safe, Efficient, and Sustainable Delivery of Refrigerated Pharmaceuticals

Cardinal Health delivers refrigerated pharmaceuticals to over 24,000 retail chain and independent pharmacies every day. Faced with \$4 Million in temperature-related product spoilage annually and the excessive cost and waste of single-use shipping materials, they needed cost-effective packaging solutions that could maintain product within narrow temperature levels and reduce their overall environmental impact. They collaborated with Sonoco ThermoSafe to create innovative end-to-end solutions that are quickly becoming the industry standard.

The Challenge

Reusable plastic totes with replaceable molded expanded polystyrene (EPS) liners were already the Cardinal Health (CH) standard. However, traditional water-based frozen gel-packs, used to keep product at refrigerated temperatures, added a high risk of initially freezing product and then warming up too quickly, often resulting in spoiled pharmaceuticals that had to be destroyed. Further, the gel-packs were single use and were often delivered in

MEASURABLE IMPROVEMENTS:

- Product spoilage reduced by 90%
- Phase change coolant packs used 87x each
- Bulk shippers used 192x each
- Volume: \$18B of Product; 6.5M reusable totes
- Annual savings: \$5.6 Million
- Annual cost avoidance: \$9.5 Million





From single-use gel packs that frequently freeze pharmaceuticals and then warm up too quickly to phase-change coolant that maintains correct temperature throughout the supply chain.

expanded polystyrene (EPS) coolers inside of corrugated boxes, which were thrown away by CH customers.

Finally, for bulk replenishment to the forward distribution centers and outbound to select customers, CH shipped product in refrigerated trailers set to 43°F, but wanted to be able to co-mingle refrigerated and controlled room temperature product together to reduce transportation and fuel expenses.

The Goal

The Cardinal Health goal was to utilize reusable plastic totes with replaceable molded EPS coolers and a reusable, sustainable, environmentally friendly coolant. This would maximize payload (saving transportation and fuel costs) and reduce waste, the purchase price of packaging materials, and the spoilage

that resulted from a less efficient process ... all without having a negative impact on already razor-thin category margins.

The Solution

The water-based coolant gel-packs within the totes were replaced with plant-based PureTemp® phase change materials to improve temperature control. This allows CH to maintain the narrow temperature range of 36-46°F regardless of season or payload and to utilize durable and reusable molded plastic totes. Phase change panels change physical state, liquefying or solidifying (freezing) at specific temperatures different from water and recharge as ambient temperatures fluctuate, which made them ideal for maintaining a 36-46°F environment. Phase change material used in the CH cold chain tote program is safe and



Ergonomically designed for employees and customers, the new bulk shippers have resulted in positive user feedback with no reported injuries since implementation.



Allows Controlled Room Temperature and Refrigerated product to be shipped together (trailer set-point at 21°C).



Durable, reusable, and stackable. Average use: 192x.



non-toxic, bio-friendly, and biodegradable, made of 100% renewable resources (plant-based oils and fatty acids), and approved by the USDA as a bio-preferred product.

Additionally, a custom-designed, ergonomically friendly, reusable bulk pallet shipper that allows both refrigerated and controlled room temperature product to ship on the same truck was developed. Cardinal now avoids the expense of multiple vehicle shipments or moveable bulkheads to create separate temperature environments. As of June 2016, only 140 out of 96,160 units shipped received minor damage (0.0015%). All damage was repaired in-house, and the shippers were returned to service, without ever impacting the product or deliveries.

The Impact

The holistic approach taken by Cardinal Health delivered significant business and environmental results. Bottom line: product spoilage was reduced by 90%, the phase change coolant packs are used an average of 87 times each, and the bulk shippers are used an average of 192 times and counting. Today, Cardinal Health ships \$18 Billion in refrigerated pharmaceuticals in 6.5

Million reusable totes per year, while saving \$5.6 Million and avoiding \$9.3 Million in additional cost.

For more information, including short informative videos, please see www.cardinalhealth.com/ColdChain

“We have worked very hard across our network to reduce packaging waste by using sustainable, reusable packing components that protect costly refrigerated pharmaceuticals. High quality, qualified, durable, reusable, and sustainable packaging is a must to protect the product while remaining operationally effective. Additionally, reusable packaging reduces the waste that our customers are left to dispose of as well as saves landfill space.”

— Chris Anderson, Cardinal Health
Director of Quality Systems



About Cardinal Health

Cardinal Health, Inc. (NYSE: CAH) is a global integrated healthcare services and products company, providing customized solutions for hospital systems, pharmacies, ambulatory surgery centers, clinical laboratories and physician offices worldwide. The company provides clinically-proven medical products and pharmaceuticals and cost-effective solutions that enhance supply chain efficiency from hospital to home. Cardinal Health connects patients, providers, payers, pharmacists and manufacturers for integrated care coordination and better patient management. Backed by nearly 100 years of experience, with more than 37,000 employees in nearly 60 countries, Cardinal Health ranks among the top 25 on the Fortune 500.



About Sonoco ThermoSafe

Sonoco ThermoSafe is a leading global provider of temperature assurance packaging for the safe and efficient transport of pharmaceuticals, biologics, vaccines, and other temperature sensitive products. It is a subsidiary of Sonoco (NYSE: SON), a \$5 billion global provider of consumer packaging, industrial products, protective packaging and packaging supply chain services.



About the Excellence in Reusable Packaging Award

The *RPA Excellence in Reusable Packaging* award recognizes companies and organizations that have developed and implemented innovative and measurable reusable packaging solutions in a business-to-business supply chain. 2016 marks the 5th year for this annual award program. Submissions are reviewed by an independent panel of judges who are not members of the Association. The Reusable Packaging Association promotes the value and expansion of reusable transport packaging systems. It is a non-profit trade association of leading manufacturers, poolers, distributors, retailers, educators, and others with a commitment to reusable packaging systems and the message of re-use.