



# Protection of Perishables in Air Transport



## Mini-Documentary: [World Without Food Waste](#)

The value of goods transported by air cargo exceeds \$5 trillion annually, representing approximately 35% of world trade. The air cargo transport sector itself generates nearly \$70 billion every year, according to the International Air Transport Association.



A large and growing segment of the air cargo market is temperature-sensitive cargo, such as pharmaceuticals and fresh fruits, vegetables and flowers. Special packaging and logistics services are required during the transport process to protect these temperature-sensitive goods. Maintaining proper temperature during air transport is most difficult during temporary breaks in the cold chain—where cargo is subject to extreme conditions such as prolonged exposure to solar radiation and/or ambient temperature extremes on the tarmac. To protect fragile temperature-sensitive cargo, Cargolux Airlines International S.A., one of the world’s leading cargo airlines, collaborated with DuPont to investigate the most efficient protection of perishables and other temperature-sensitive cargo while in transport, as featured in the mini-documentary, “World Without Food Waste.”



## Delivering Fresh Flowers Around the World

Historically, the distribution model for the floral industry used "traditional" channels: floral products moved from grower to floral wholesaler to retailer to the consumer.

The traditional floral channels model is changing. The once-predominant practice of buying local fresh flowers from local farms has given way to fresh flowers imported from overseas, mostly from South America.

Imported flowers typically are transported from overseas farms by truck to local airports and then flown to the U.S., arriving at importers located near major airports. After inspection by the USDA, the importers load the flowers onto temperature-controlled trucks or planes for shipment to wholesalers who package the flowers for delivery to local retailers. The process of preserving flowers at temperatures just above freezing to maintain their quality is often referred to as "the cold chain."

Most fresh flowers are imported from South America, mostly from Colombia (64%) and Ecuador (17%). More than 85% and as high as 98% of the most common fresh flowers are imported.

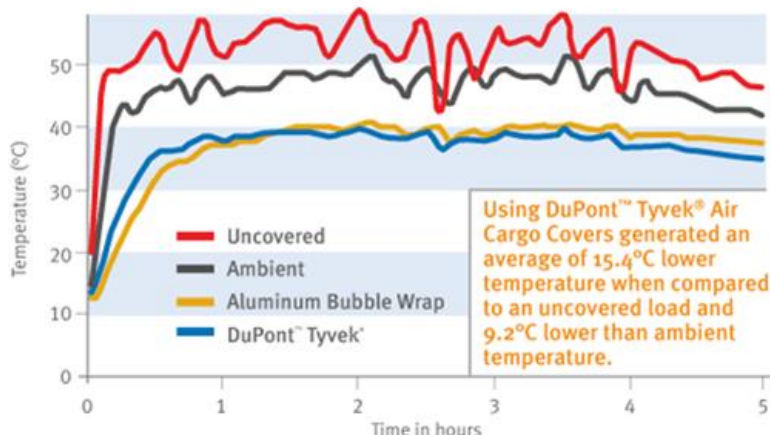
The value of cut flower imports is significant: \$847 million in 2010; \$881 in 2011.



Source: Society of American Florists, 2012

The collaboration resulted in the introduction of Tyvek® Air Cargo covers. Made from high-density polyethylene (HDPE), this product helps protect produce, pharmaceuticals and other temperature-sensitive cargo from the damaging effects of solar radiation heat. The unique physical and mechanical properties of Tyvek are ideal for protecting sensitive cargo from extreme temperature variations. The permeability of Tyvek® enables gases and water vapor to escape, helping to reduce spoilage and condensation, while the reflective property of Tyvek® helps keep the shipment naturally cooler.

The load temperature of common shipment covers compared to DuPont™ Tyvek® Air Cargo Covers when exposed to the sun on tarmac.



Lightweight, tear-resistant Tyvek® Air Cargo Covers are easy to use—installing in as little as 30 seconds. They provide protection from heavy rains and a variety of airborne contaminants, such as dust, pollens and bird droppings. The covers are white and opaque, providing visible cover to help reduce the potential of theft or tampering.

DuPont introduced a new line of Tyvek® Air Cargo Covers for Pharmaceuticals in 2013. These provide a solution for healthcare companies and third-party logistics (3PL) providers considering how to address the Revised European Good Distribution Practices (GDP) specifically for products in the Controlled Room Temperature (CRT) category (15°C - 25°C). Tyvek® Air Cargo Covers for Pharmaceuticals offer shippers an advanced and affordable passive protection solution designed to address the specific needs of the pharmaceutical industry.

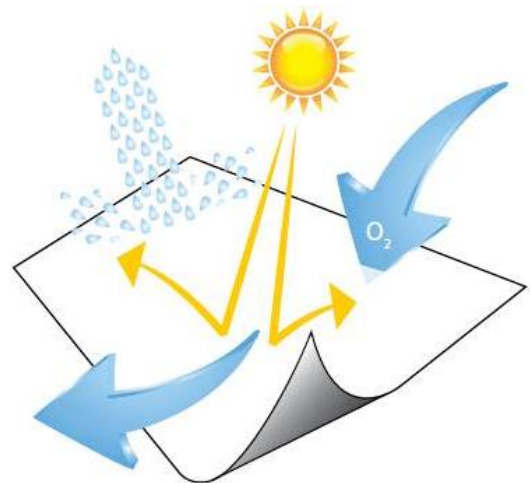
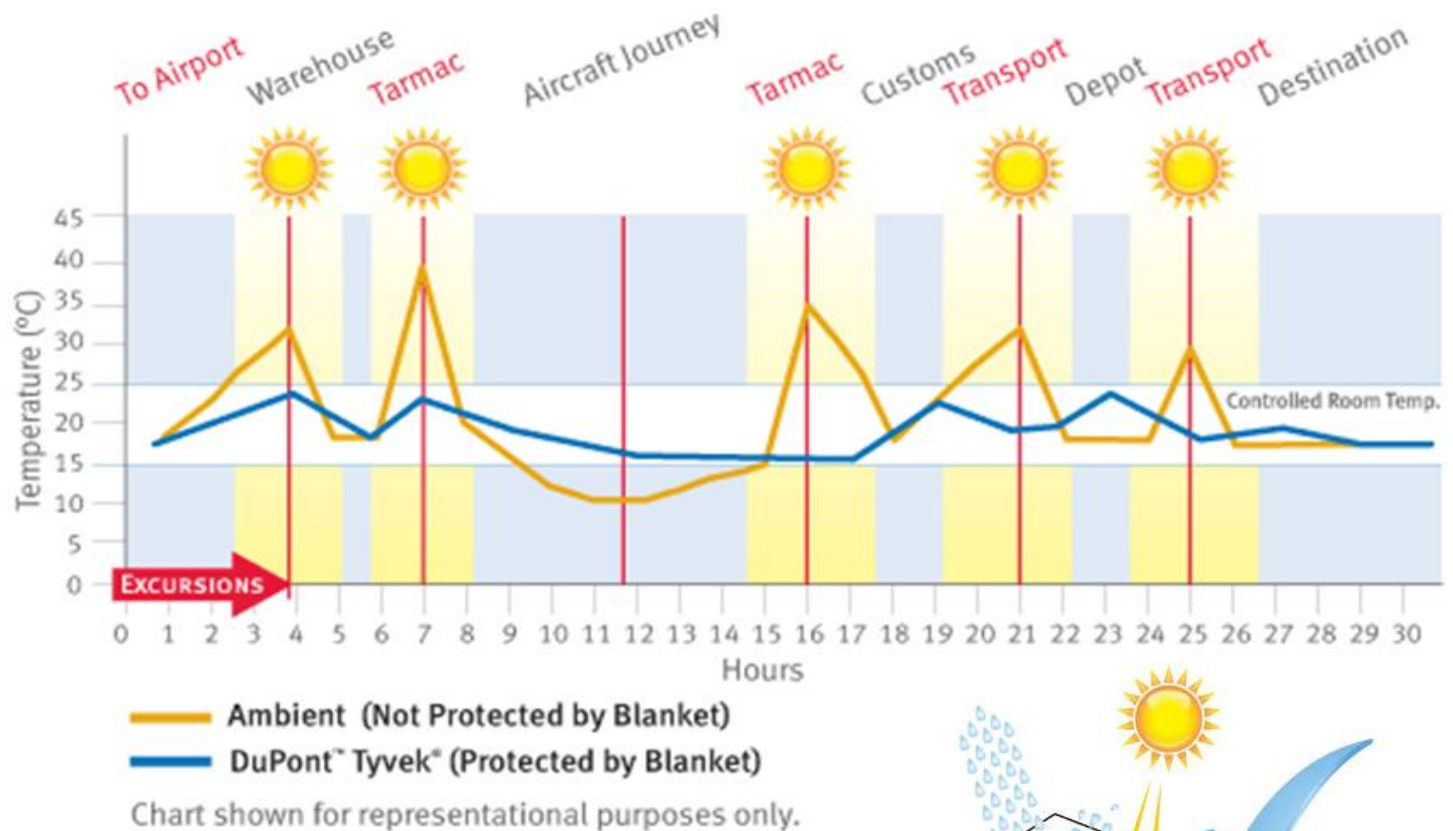


### Cold & Cool Supply Chains

A Cold or Cool Chain is a supply chain where specialized packaging and services are utilized to maintain temperature-sensitive products within a specified temperature range as they move through the supply chain. The diagram below details a cold chain air transport scenario, indicating temperature fluctuations with and without a Tyvek® cover.

Roughly one-third of food produced for human consumption is lost or wasted globally, amounting to approximately 1.3 billion tons per year.  
*Global Food Losses and Food Waste, UN and Agriculture Organization (FAO), 2011*

There are risks associated with breaks in the cold chain.



Tyvek® is an exceptional nonwoven material that shields shipments from heat, cold and solar radiation during transport.

### The Many Uses of Tyvek®

Since the initial discovery in 1955 that led to Tyvek®, DuPont has been a recognized global leader in selective barrier technology. Lightweight and durable, DuPont™ Tyvek® has introduced new dimensions of protection, security and safety in a wide variety of industries including building and construction, graphics, envelopes, medical and industrial packaging, and protective apparel.