StePac PPC

FRESHNESS ASSURED

# Packaging for a Sustainable Future

## Modified Atmosphere/Modified Humidity Technology

Fully automated solutions - less plastic


Shelf-life extension

**REDUCES FOOD WASTE & $CO_2$ EMISSIONS**

Long-haul sea shipments

Recycled content

**SUPPORTS A CIRCULAR ECONOMY**


Recyclable solutions

**LEAN & EFFICIENT**

Lean film structures - less plastic

IN PARTNERSHIP WITH WINDHAM PACKAGING

# SUPPORTS A CIRCULAR ECONOMY

StePacPPC's Circular™ product line represents a family of packaging solutions that supports a circular economy and includes fully recyclable solutions, packaging that contains chemically recycled content, and compostable solutions. All the films are printable and are available in a range of packaging formats, as detailed below.

## 100% Mono-Material

We offer a wide range of **mono-material packaging** based on PE, BOPP, and PET that are fully recyclable.

These Mono-material films are recycle-ready and can be processed in established mechanical recycling streams for the respective material.

## 30% Recycled Content

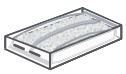
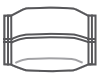
StePacPPC is certified by REDcert² to incorporate BASF Ultramid® Ccycled™, a chemically recycled polyamide at 30% or more into its nylon-based films.

The use of **chemically recycled** polyamide for the packaging of fresh perishables **helps to replace fossil raw** materials and is an important step towards circularity.

## 100% Home & Industrial Compostable

Composting is the biological equivalent of recycling. StePacPPC has **compostable packaging solutions** available that comply with recognized standards for industrial and home composting.

# AVAILABLE PACKAGING SOLUTIONS

| | Xtend® CIRCULAR™ | Xflow™ CIRCULAR™ | Xgo™ CIRCULAR™ | | | |
|---|---|---|---|---|---|---|
| | Bulk packaging for long term storage & shipment | Automated bulk packaging solutions | Retail packaging solutions | | | |
| | Carton Liners | Bulk Flow-pack Films | Preformed bags | Flow-pack films | Top-seal | Stand-up pouches |
| |  |  |  |  |  |  |
| 100% Mono-Material | ✓ | | ✓ | | ✓ | ✓ |
| 30% Recycled Content | ✓ | ✓ | ✓ | ✓ | | |
| 100% Home & Industrial Compostable | | | ✓ | | | ✓ |

# REDUCES FOOD WASTE & $CO_2$ EMISSIONS

StePacPPC's packaging solutions preserve freshness through the combined effect of Modified Atmosphere (MA), Modified Humidity (MH) and Condensation Control.

Leveraging over two decades of postharvest, polymer, and packaging expertise, our packaging is designed to effectively slow down the respiration of fresh produce, inhibit the production and action of ethylene, suppress microbial decay and minimize weight loss and shriveling.

The result is that our Xtend®, Xflow™ and Xgo™ packaging solutions preserve quality, extend shelf life and reduce waste in the fresh produce supply chain.

The packaging helps reduce greenhouse gas (GHG) emissions and environmental footprint by **reducing waste** in the supply chain, **facilitating sea freight instead of air freight and eliminating the combined use of ice with waxed cartons or styrofoam.**

The savings associated with the use of the packaging far exceeds the emissions generated in the life cycle of the packaging, establishing that it has a **positive environmental impact.**

# LEAN & EFFICIENT

Modified atmosphere packaging plays an integral role in preserving quality and reducing waste in the fresh produce supply chain. Nevertheless, the packaging should be used responsibly, and the amount of plastic kept to a minimum. StePacPPC's films are lean with gauges as low as 17µm.

Our Xflow™ and Xgo™ films also help packers transition from manual to fast and efficient automated processes to counter labor shortage and reduce plastic use by **up to 40%** compared to preformed bags.


Xflow™ roll-stock films meets the needs for **automated packing of bulk produce.** These patented films with a unique sealing layer have proven instrumental in helping the packers of beans, cherries, blueberries and mushrooms make the transition from manual to faster and more **efficient automated processes** to counter labor shortage and increase capacity.

Xgo™ lean **automated packaging includes lidding and flow pack films** and fulfills consumer demands for sustainable packaging that preserves quality all the way to the consumer. These automated packaging solutions are designed **for high-speed and efficient packing.**

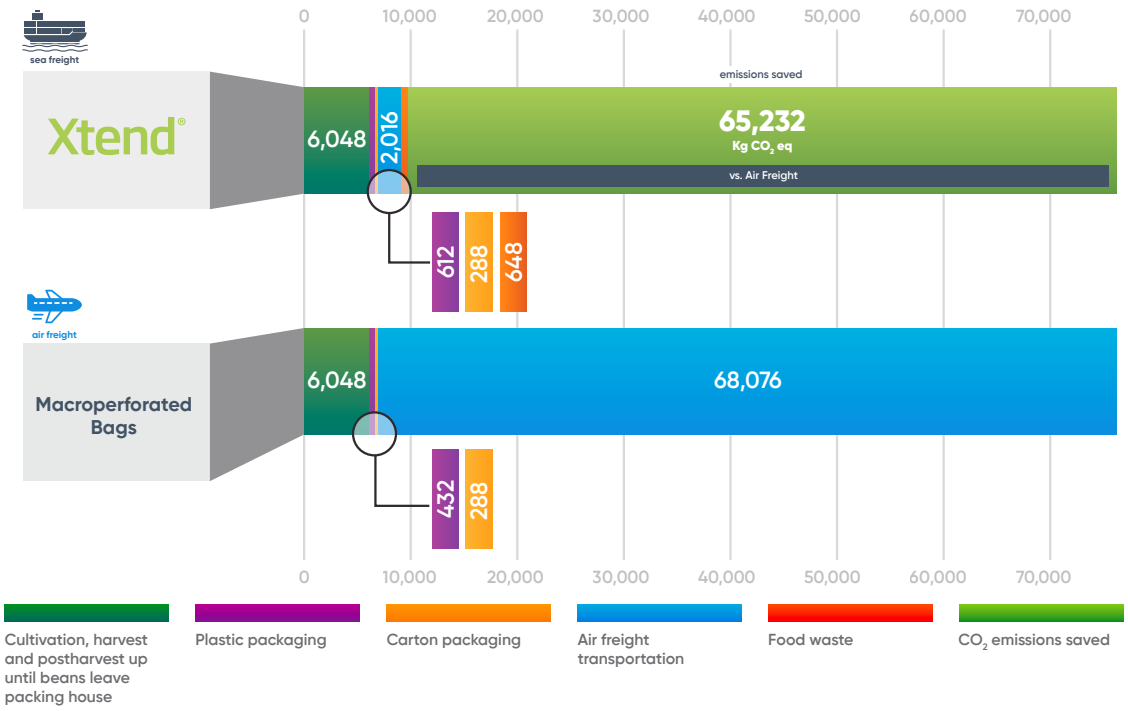
# REDUCING GHG EMISSIONS

In research conducted at **Wageningen Food & Biobased Research facility, Netherlands,** it was demonstrated that Xtend®, Xflow™ and Xgo™ packaging solutions help lower greenhouse gas (GHG) emissions by reducing waste in the fresh produce supply chain and by facilitating sea transport instead of air transport of produce to distant destinations. The reduction in GHG emissions far exceeds those generated in the lifecycle of the packaging itself.

In the example given below, the use of Xtend for green beans shipped from Guatemala to Miami enables transport via container ship instead of by air, reducing the carbon footprint by 65,232 $CO_2$ equivalents per container load, which is equivalent to the annual $CO_2$ emissions of 20 typical passenger vehicles!!!

## 18 Tons of Beans shipped from Guatemala to Miami

**GHG emissions, expressed as Kg $CO_2$ equivalents / 40ft container beans**




**Our packaging saved more than**

**100,000,000**

**Kg $CO_2$-eq emissions in 2023**

**Which is the equivalent annual emissions of**

**31,000 x**

Global food waste is currently estimated to be >30% and is accountable for ~8% of all GHG emissions.

The outcome of this research demonstrates the value of our bulk and retail packaging in reducing GHG emissions by reducing waste in the fresh produce supply chain and facilitating sea as an alternative to air freight.

Based on the research, StePacPPC estimates that across all supply chains in which its packaging is used, it saved more than 100,000,000kg $CO_2$-eq emissions in 2023 — equivalent to the annual amount produced by 31,000 passenger vehicles.

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