



ADVANCED MODIFIED ATMOSPHERE
PACKAGING SOLUTIONS FOR

FRESH PRODUCE

Xtend[®] | Xflow[™] | Xgo[™]

PRODUCT CATALOG





WHO ARE WE

Global Leader In Modified Atmosphere Packaging Solutions For Fresh Produce

StePacPPC is proud to be part of the PPC FLEX family leading the future of functional flexible packaging together. We make the world a better place by reducing global food waste.

StePacPPC's broad and versatile range of sustainable modified atmosphere packaging (MAP) solutions address three major challenges facing the fresh produce industry: supply chain waste reduction, cost reduction, and supporting a circular economy.

Committed to innovation, StePacPPC is attentive to market trends and is continuously striving to develop cutting edge solutions to meet customer requirements. With over 30 years of experience in combining postharvest, polymer and packaging expertise to deliver optimal packaging solutions, we offer a broad range of products that preserve fresh produce quality, reduce supply chain waste and with-it global greenhouse gas emissions. Our portfolio includes products that support a circular economy such as fully recyclable solutions, packaging containing chemically recycled content, and compostable solutions.

StePacPPC has global presence with production and sales facilities in Israel and USA, sales and technical support in United Kingdom and Brazil and distributors/agents in over 23 countries in key locations around the world.



PROLONG

freshness and
extend shelf-life



EXTEND

your market
reach



REDUCE

supply chain
waste



ENHANCE

consumer
experience

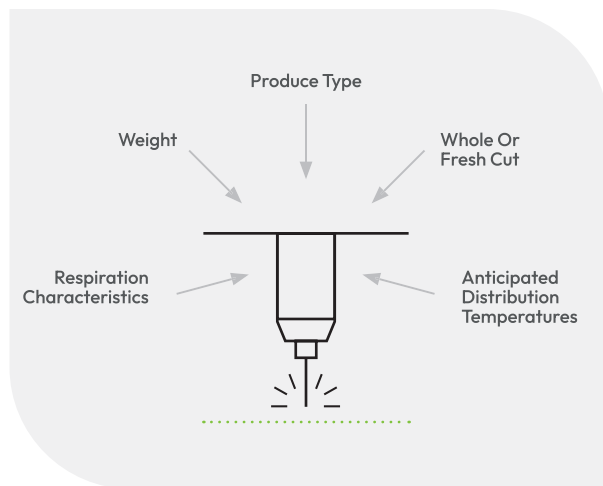
MODIFIED ATMOSPHERE PACKAGING

Actively Slows Aging And Ripening Processes And Suppresses Microbial Decay

Maintain Quality And Freshness

StePacPPC's packaging solutions preserve freshness through the combined effect of Modified Atmosphere (MA), Modified Humidity (MH) and condensation control, which effectively slows down the respiration of fresh produce, inhibits the production and action of ethylene, suppresses microbial decay and minimizes weight loss and shriveling, thereby preserving quality, extending shelf life and reducing waste in the fresh produce supply chain.

Precision Laser Perforation

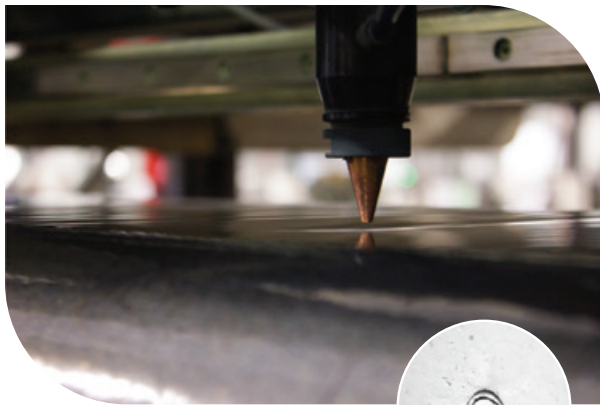


Precision Design

Every Modified Atmosphere Package is meticulously customized taking into consideration the respiration needs and unique characteristics of each fresh produce item. StePacPPC's specialists use proprietary formulae and knowhow with proven results. We select the most suitable film from a broad portfolio of film structures with variable water vapor transmission rates, excellent antifog and other properties. We then regulate the film permeability by laser perforation to achieve the optimal combination of O_2 and CO_2 concentrations for shelf life extension of the specific produce under the prevailing supply chain conditions.

Quality Standards

All our packaging products comply with FDA and European Directives and as such are suitable for direct contact with whole and processed fruits and vegetables. All products are manufactured in compliance with BRC IOP, HACCP, ISO9001, ISO14001 and ISO45001. And REDcert² accreditation to incorporate chemically recycled content.



Precision Laser
Perforation



Broad range of different
film structures

Optimal Balance

- ✓ Elevated CO_2 concentrations
- ✓ Low O_2 concentrations
- ✓ Humidity & condensation control



SUSTAINABLE PACKAGING

MAP With A Positive Environmental Impact

Balancing Plastic Packaging and Reducing Food Waste

Although society is calling for a reduction in its use, we should not forget that functional plastic such as modified atmosphere packaging plays an integral role in preserving quality and reducing food waste. The key is making sure that it is only used when it is really needed, that it is kept as lean as possible and that wherever possible, it can be mechanically or chemically recycled to support a circular economy.

At our postharvest and polymer laboratory the StePacPPC R&D team is continuously working to develop the next generation of packaging solutions for shelf life extension of fresh produce to meet market trends and customer requirements, paying the greatest attention to environmental stewardship.

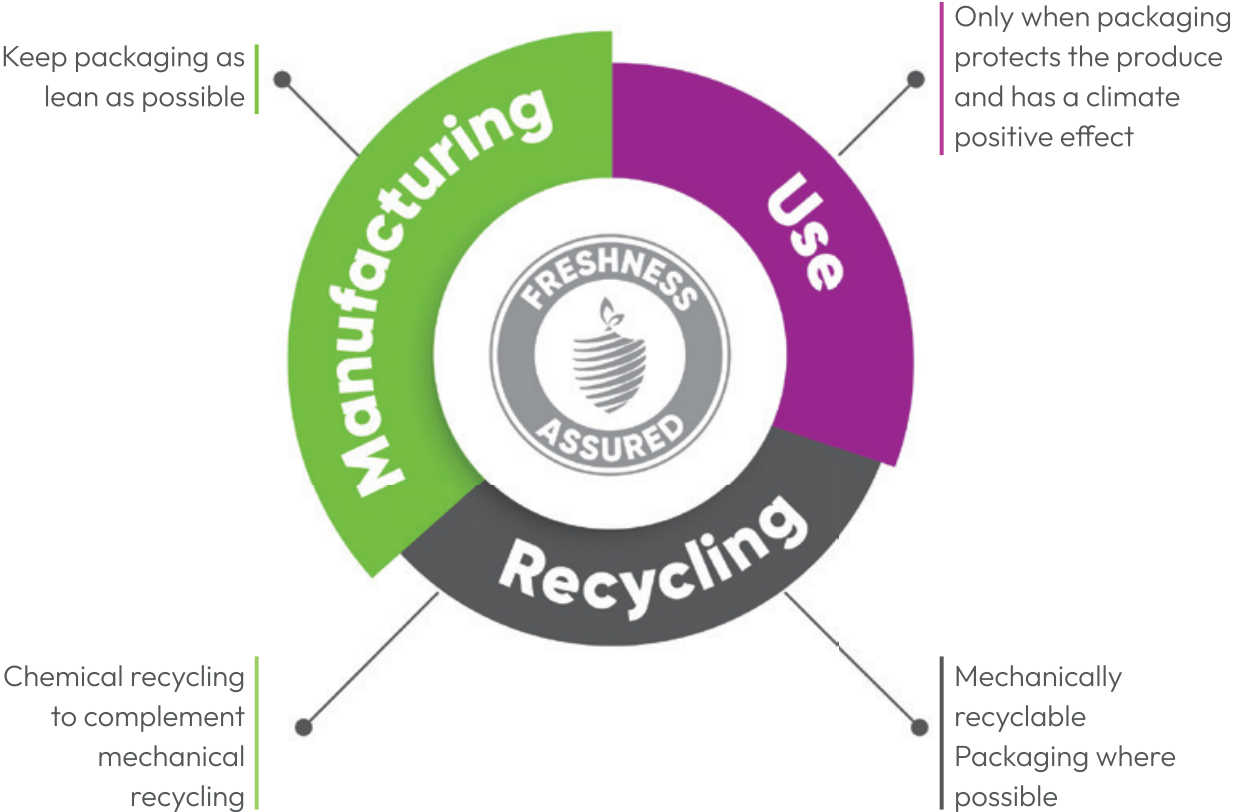
StePacPPC's Circular™ Product Line

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.



StePacPPC's Four Pillared Sustainable Strategy For Fresh Produce Packaging

The company's four-tiered sustainability strategy is designed to reduce excessive plastic use while driving more responsible packaging, supporting the transition from a linear toward a circular economy. The strategy addresses key areas of manufacturing, use, and recycling.



BULK PACKAGING SOLUTIONS

Xtend®

Carton liners, bin liners and pallet shrouds for long term storage & shipment

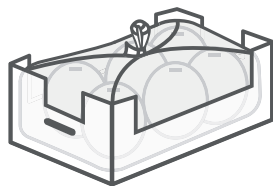
Whether you are looking to store your produce for longer and supply upon demand or ship to distant destinations, Xtend® Modified Atmosphere (MA) / Modified Humidity (MH) packaging could be the solution for you!

Xtend® MA/MH bulk packaging solutions are available for over 60 different fruits, vegetables and herbs in a range of sizes and formats (e.g. carton liner, bin liners and pallet shrouds).

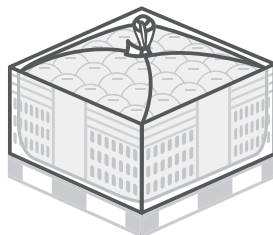


Added value

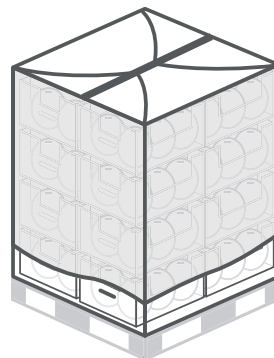
- ✓ Shelf-life extension
- ✓ Long storage and transportation
- ✓ Enhanced quality
- ✓ Reduces waste



Carton liners



Bin liners



Pallet shrouds



Fully recyclable PE based bags, and bags with 30% advanced recycled content are available!



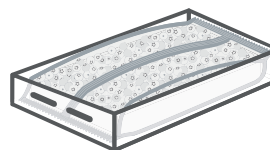
Roll-stock films for automated packing of bulk fresh produce

Series of roll stock film for automated packing of bulk fresh produce in high throughput horizontal form, fill and seal (HFFS; Flow-pack) and vertical form, fill and seal (VFFS) machines.

Xflow™ meets the needs for automation and leaner film specifications by saving up to 40% in use of plastic film in comparison to the preformed bulk bag variant.

Added value

- ✓ Shelf life extension
- ✓ Long storage and transportation
- ✓ Enhanced quality
- ✓ Reduces waste
- ✓ Increases operational efficiency
- ✓ Leaner packaging
- ✓ Improves airflow



Bulk flow-pack films



Films with 30% advanced recycled content are available!

RETAIL PACKAGING SOLUTIONS

All Xgo™ products contain excellent anti-fog properties and can be customized to provide optimal modified atmosphere conditions for prevailing temperature-time profiles.



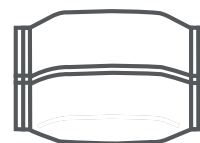
Roll-stock films for automated packing in retail packaging formats

Series of roll stock film for automated packing of fresh produce in retail packaging using high throughput horizontal form, fill and seal (HFFS, flow-pack) and vertical form, fill and seal (VFFS) machines. Suitable for produce items such as whole and minimally processed vegetables.

Hermetically sealed packaging reduces risk of cross-contamination and increases food safety.

Added value

- ✓ Supports high-speed automated packing
- ✓ Increases operational efficiency vs. manual packing
- ✓ Shelf life extension and waste reduction
- ✓ Enhances food safety and quality
- ✓ Enhances consumer experience
- ✓ May facilitate packing at source in the final, branded retail packaging



Flow-pack films



Films with 30% advanced recycled content are available!



Lidding film (top-seal) automated packing in retail packaging formats

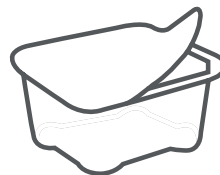
Lean easy peel and resealable film structures designed to be sealed onto trays or containers housing produce items such as summer fruits, freshly cut fruits and vegetables and more for on-the-go convenience.

Reduces labor costs versus manual packing processes and supports high-speed automated packing.

Represents 25-30% reduction in plastic versus clamshells with added value of shelf life extension.

Added value

- ✓ Supports high-speed automated packing
- ✓ Increases operational efficiency vs. manual packing
- ✓ Shelf life extension and waste reduction
- ✓ Enhances food safety and quality
- ✓ Enhances consumer experience
- ✓ May facilitate packing at source in the final, branded retail packaging



Lidding films



Fully recyclable PET film is available!

RETAIL PACKAGING SOLUTIONS



Stand-up pouches for eye-catching retail packaging

Features a bottom gusset for upright presentation and optional zipper for a convenient resealable closure.

Cleverly engineered to provide extended shelf life in a convenient, attractive Grab-N-Go packaging format.

The product line features a groundbreaking, patent-pending solution: the PAZ Stand-up Pouch. This innovative packaging controls and releases excess moisture, making it ideal for moisture-sensitive items such as cucumbers and green beans. The pouch effectively preserves product quality and freshness by combining modified atmosphere technology with moisture control.

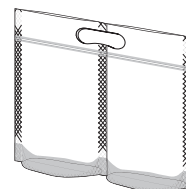
Multi-compartment pouches are available that enable bundling of separate produce items into value-added kits, and are ideal for large retail stores.

Added value

- ✓ Elegant design
- ✓ Advanced moisture control
- ✓ Shelf life extension and waste reduction
- ✓ Enhances food safety and quality
- ✓ Enhances consumer experience



Stand-up pouches



Multi-compartment pouches



Fully recyclable PE based pouches available!

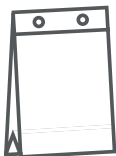


Preformed Bags for manual retail packing

Bags for manually packing at source for shipment to both local and distant markets. Reduces dehydration, weight loss and quality deterioration during storage, transportation and subsequent display on supermarket shelves.

Added value

- ✓ Shelf life extension and waste reduction
- ✓ Enhances food safety and quality
- ✓ Enhances consumer experience
- ✓ May facilitate packing at source in the final, branded retail packaging



Wicketed Bags



Hd Weld Flat Bags



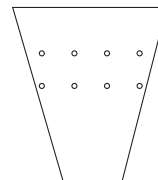
Crimp Seal
Gusseted Bags



Quad Seal Bags



Back Weld Flat Bags



Conical Sleeves



Fully recyclable PE based bags, and bags with 30% advanced recycled content are available!

PROUD PARTNERS OF WINDHAM PACKAGING



StePacPPC is a proud partner of Windham Packaging on the development and implementation of packaging solutions for a wide variety of produce items and packaging formats.

The partnership with Windham brings together over 50 years combined expertise in postharvest science, polymer and packaging design supported by multiple patents that help us deliver cutting edge solutions and together, positions us as the leaders in modified atmosphere packaging for shelf-life extension of fresh produce.

Examples of MAP solutions developed together by Windham Packaging and StePacPPC:



Blue Lake Beans

(left) Competitor hot needle perforation
(right) Windham StePacPPC MAP

7 days @4.5°C (40°F) + 7 days @8°C (46°F)



Broccoli Florets after 18 days











(left) Competitor bag with high O₂ flow rate
(right) Windham StePacPPC MAP














2 lb Cauliflower Florets after 19 days

(left) Competitor bag
(right) Windham StePacPPC MAP

Packaging Solutions For FRESH FRUITS











| Product | | Achievable Cold Storage / Shipment | | Achievable Shelf Life | |
|---|---|---|-------------|-----------------------|-------------|
| | | Days | Temperature | Days | Temperature |
|  | Apple | 60 | 0°C (32°F) | 7 | 20°C (68°F) |
|  | Apricot | 30 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Banana (Green) Pre-ripening + ripening in sealed bags | 35 Pre-ripening | 13°C (55°F) | 7 Post ripening | 20°C (68°F) |
|  | Banana (Yellow) Post-ripened | contact us for ripen in the bag retail solution | | | |
|  | Blackberry | 21 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Blueberry | 45 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Cherry | 60 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Grape | 27 | 1°C (34°F) | 4 | 10°C (50°F) |
|  | Kiwi | 5.5 Months | 0°C (32°F) | 7 | 20°C (68°F) |
|  | Lime | 28 | 10°C (50°F) | 3 | 20°C (68°F) |

| Product | | Achievable Cold Storage / Shipment | | Achievable Shelf Life | |
|---|------------------------|------------------------------------|-------------|-----------------------|-------------|
| | | Days | Temperature | Days | Temperature |
|  | Litchi/ Lychee | 20 | 5°C (41°F) | 3 | 20°C (68°F) |
|  | Longan | 20 | 5°C (41°F) | 3 | 20°C (68°F) |
|  | Mango | 21 | 10°C (50°F) | 5 | 20°C (68°F) |
|  | Melon (Cantaloupe) | 25 | 3°C (37°F) | 5 | 20°C (68°F) |
|  | Melon (Charantais) | 25 | 9°C (48°F) | 3 | 20°C (68°F) |
|  | Melon (Galia) | 25 | 7°C (45°F) | 3 | 20°C (68°F) |
|  | Melon (Honeydew) | 25 | 10°C (50°F) | 3 | 20°C (68°F) |
|  | Nectarine | 30 | 0°C (32°F) | 3 | 20°C (68°F) |
|  | Passion fruit | 28 | 8°C (46°F) | 3 | 20°C (68°F) |
|  | Peach | 30 | 0°C (32°F) | 3 | 20°C (68°F) |
|  | Pear | 91 | 0°C (32°F) | 5 | 20°C (68°F) |
|  | Persimmon (Triumph) | 60 | -1°C (30°F) | 5 | 20°C (68°F) |

| Product | | Achievable Cold Storage / Shipment | | Achievable Shelf Life | |
|---|--------------------------|------------------------------------|-----------------|-----------------------|-------------|
| | | Days | Temperature | Days | Temperature |
|  | Pineapple | 28 | 8°C (46°F) | 7 | 20°C (68°F) |
|  | Pitaya (Dragon fruit) | 21 | 10°C (50°F) | 4 | 10°C (50°F) |
|  | Plum | 60 | 0°C (32°F) | 3 | 20°C (68°F) |
|  | Pomegranate Shipment | 60 | 7°C (45°F) | 5 | 20°C (68°F) |
|  | Pomegranate Storage | 90 | 7°C (45°F) | 5 | 20°C (68°F) |
|  | Pomegranate arils | 14 | 1-4°C (32-39°F) | | |
|  | Raspberry | 14 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Rambutan | 14 | 10°C (50°F) | 3 | 20°C (68°F) |
|  | Red Currant | 18 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Strawberry | 14 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Watermelon (Baby) | 25 | 7°C (45°F) | 7 | 20°C (68°F) |

Packaging Solutions For











FRESH VEGETABLES










| Product | | Achievable Cold Storage / Shipment | | Achievable Shelf Life | |
|---|-------------------|---|-------------|-----------------------|-------------|
| | | Days | Temperature | Days | Temperature |
|  | Asparagus (Green) | 28 | 1°C (34°F) | 4 | 10°C (50°F) |
|  | Asparagus (White) | 40 | 1°C (34°F) | 4 | 10°C (50°F) |
|  | Avocado (Hass) | contact us for ripen in the bag retail solution | | | |
|  | Beans | 14 | 6°C (43°F) | 4 | 10°C (50°F) |
|  | Broccoli | 28 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Brussels sprouts | 40 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Cabbage | 21 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Cauliflower | 25 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Chili pepper | 21 | 8°C (46°F) | 3 | 20°C (68°F) |
|  | Cucumber | 18 | 10°C (50°F) | 3 | 20°C (68°F) |

| Product | | Achievable Cold Storage / Shipment | | Achievable Shelf Life | |
|---|------------------------------|------------------------------------|-------------|-----------------------|-------------|
| | | Days | Temperature | Days | Temperature |
|  | Eggplant (Aubergine) | 22 | 11°C (52°F) | 3 | 20°C (68°F) |
|  | Green onion | 21 | 1°C (34°F) | 4 | 10°C (50°F) |
|  | Leek | 28 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Lettuce | 21 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Mushroom | Contact us for more details | | | |
|  | Okra | 15 | 7°C (45°F) | 3 | 20°C (68°F) |
|  | Pepper | 28 | 8°C (46°F) | 3 | 20°C (68°F) |
|  | Radish | 21 | 1°C (34°F) | 3 | 20°C (68°F) |
|  | Snow pea / Sugar snap pea | 42 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Squash / Zucchini | 21 | 8°C (46°F) | 3 | 20°C (68°F) |
|  | Sweet Corn | 21 | 0°C (32°F) | 4 | 10°C (50°F) |
|  | Tomato / Cherry tomato | 14 | 10°C (50°F) | 3 | 20°C (68°F) |











Packaging Solutions For

FRESH CUT VEGETABLES

| Product | | Achievable Cold Storage | |
|---|------------------------------------|-------------------------|------------|
| | | Days | Temp. |
|  | Beets (shredded) | 9-10 | 7°C (45°F) |
|  | Broccoli (florets) | >14 | 2°C (36°F) |
|  | Cabbage (chopped) | 9-10 | 7°C (45°F) |
|  | Carrot (shredded) | 9-10 | 7°C (45°F) |
|  | Cauliflower (florets) | >14 | 2°C (36°F) |
|  | Celery (sticks) | >10 | 7°C (45°F) |
|  | Chicory (leaves) | >10 | 7°C (45°F) |
|  | Escarole | ~14 | 7°C (45°F) |
|  | Fennel | 9-10 | 7°C (45°F) |
|  | Green Bunched Onions (shredded) | ~14 | 7°C (45°F) |

| Product | | Achievable Cold Storage | |
|---|--------------------------|-------------------------|------------|
| | | Days | Temp. |
|  | Kale | 10 | 7°C (45°F) |
|  | Lettuce (Curly) | 9-10 | 7°C (45°F) |
|  | Lettuce (Iceberg) | 9-10 | 7°C (45°F) |
|  | Lettuce (Lisa Aldace) | 9-10 | 7°C (45°F) |
|  | Lettuce (Red Leafy) | 9-10 | 7°C (45°F) |
|  | Radicchio (leaves) | 9-10 | 7°C (45°F) |
|  | Spinach | ~14 | 7°C (45°F) |
|  | Swiss chard | >10 | 7°C (45°F) |
|  | Watercress | 9-10 | 7°C (45°F) |

Packaging Solutions For CULINARY HERBS

| Product | | Achievable Cold Storage | |
|---|-----------|-------------------------|----------------------|
| | | Days | Temp. |
|  | Basil | 7-10 | 10-12°C (50-54°F) |
|  | Chives | 10-20 | 0°C (32°F) |
|  | Coriander | 10-20 | 0°C (32°F) |
|  | Dill | 10-20 | 0°C (32°F) |
|  | Mint | 10-20 | 0°C (32°F) |
|  | Parsley | 10-20 | 0°C (32°F) |
|  | Roccola | 10-20 | 0°C (32°F) |
|  | Rosemary | 10-20 | 0°C (32°F) |
|  | Sage | 10-20 | 0°C (32°F) |
|  | Thyme | 10-20 | 0°C (32°F) |

Packaging Solutions For ORIENTAL HERBS

| Product / Common Name | | Achievable Cold Storage | |
|---|---|-------------------------|--------------------|
| | | Days | Temp. |
|  | Gai Lan Chinese broccoli | 19 | 0-1°C (32-34°F) |
|  | Song Hua Choi Chinese cauliflower | 31 | 6°C (43°F) |
|  | Celtuce / Wo Ju / Wo Sun Stem lettuce | 21 | 2°C (36°F) |
|  | Yu choy Miew Choy sum / Chinese cabbage | 21 | 4-5°C (39-41°F) |

Disclaimer

Since growing, harvesting, storing and shipping conditions vary widely among growers, regions and cultivars, StePacPPC expressly disclaims any responsibility for the integrity and quality of produce and/or any other contents placed in StePacPPC packages, or for damage thereto.

R&D CAPABILITIES

- ✓ 4 Postharvest scientists, 2 Polymer engineers
- ✓ State of the art postharvest lab (Israel): 9 cold storage chambers
- ✓ Range of equipment for postharvest and packaging analysis
- ✓ Microbiology lab
- ✓ Additional postharvest lab in Brazil
- ✓ Automated packing lab (Israel)
 - ✓ 3-layer laboratory extruder
 - ✓ Flow pack machinery
 - ✓ Lidding film machinery
 - ✓ Analytical equipment



COLD STORAGE CHAMBERS

Customers Can Benefit From These Capabilities For New Product Development, Product Simulation, Testing & Benchmarking.



MICROBIOLOGY LAB



POST-HARVEST EQUIPMENT



3-LAYER EXTRUDER



FLOW PACK MACHINERY

WHY StePacPPC

Materials Performance

- ✓ Unique films with variable water vapor transmission rates (WVTR).
- ✓ Films are designed to provide optimal shelf life extensions properties based on the principles of Modified Atmosphere (MA) coupled with Modified Humidity (MH).
- ✓ StePacPPC's manufacturing IP and know-how allow extrusion and production of complex structures and their subsequent conversion into different packaging formats.

Applications Knowledge

- ✓ Experts in plant physiology and pathology and the interaction with packaging design.
- ✓ Customized solutions: Close to 25 different MA/MH film structures that allow us to provide tailor-made solutions for more than 60 different produce types in different formats.
- ✓ 30 years experience in doing this!

Service

- ✓ Holistic approach supported by a wealth of postharvest knowledge and understanding of the prerequisites for successful use of Modified Atmosphere Packaging.
- ✓ Pragmatic solution providers.

StePacPPC offers the broadest range of packaging formats and solutions for shelf life extension of fresh produce in the market, serving customers worldwide.

Our presence is felt across the globe as we lead the way in revolutionizing the fresh produce industry with innovative and dependable packaging solutions.

Your Number One Choice For Shelf-Life Extension Packaging

CONTACT US

Main Locations

PPC Flexible Packaging
Utah, USA
+1 801 465 1300
Joe Bradford
joe.bradford@ppcflex.com
"Se habla español"

StePacPPC
Tefen, Israel
+972 4 612 3500
info@stepacppc.com

StePacPPC Brasil LTDA .
Sao Paulo Brasil
+55 11 3596 7450
ivot@stepacppc.com
+55 11 9 8932 3172
marcelb@stepacppc.com
+55 11 9 7534 4414

Network of Sales Representatives

Argentina

RYM Servicios Poscosecha
S.R.L.
Eugenia Arboit
+54 9 261 470 9322
eugeniaarboit@gmail.com

Brazil

Aubos Real
Mr. Carlos Shizuo
+55 15 99645 3273
carlos.shizuo@
aubosreal.com.br

Central America – Guatemala

Koffee Seedz Guatemala S.A.
Rafael Asturias
+502 5515 3436
rafael@koffeegt.com

Chile

EMPACK LTDA.
Daniela Ilabaca F.
+56 9 7709 4102
dilabaca@empack.cl

China

Beijing Hywayatian Limited.
Yilu YU
+86 139 0138 8925
yilu_yu@hywayatian.com.cn

Colombia

Segurpack De Colombia
Ing. Diego Alejandro Barrera
+57 601 474 6059
+57 311 333 3069
info@segurpack.co

Ecuador

Temkito
Antonio Serrano
+593 99 469 5437
ventas@temkito.com

Germany

Lorentzen & Sievers
GmbH Co. KG
+49 4193 98 0-990
info@lorentzen-sievers.de

Greece

PrePac S.A.
+30 210 555 0226
elenat@prepac.gr

India

Haitech Solutions Pvt Ltd.
+91 865 742 5497
+91 983 335 8441
haitechagri@haitech-group.com

Italy

Carton Pack
+39 080 477 1440
giannileone@cartonpack.com

Japan

Mitsui & Co. Plastics Ltd.
Takayuki Noguchi
+81 90 1271 8977
tak.noguchi@
mitsui-plastics.com

Japan

Recentia Co.,Ltd.
Mika Yamanishi
+81 80 1527 6840
mika.y@recentia-fresh.com

Mexico

Gurpa
+52 477 770 8044
ventas@gurpa.com.mx

Morocco

Graphiscript
+212 660 177 167
+212 662 825 868
houria.sud@graphiscript.com

New Zealand

Jenkins Freshpac Systems Ltd
Ann Cameron
+64 21 859 920
ann.cameron@jenkinsfps.co.nz

Peru

Fiamma S.a.c.
Diego Ferrero Ghislieri
+51 972 638 349
diego@fiammaperu.com

Poland

Phu Puch
Alicia Pietron – Łuszczynska
+48 506 317 442
a.pietron@puch.com.pl

South Africa

Precool Manufacturing Co.
Dov Unterslak
+27 83 290 6860
dov@precool.co.za

Spain

Agroborges
Xavier Minguet Roca
+34 973 142 801
xminguet@agroborges.com

Turkey

Pia Frucht Gıda
+90 236 654 4420
pia@piafrucht.com

United Kingdom

Kelly Williams
+44 (0) 7483 032 315
kellyw@stepacppc.com



StePac PPC

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