

JAN. 2016

# An Avure Packaging Primer - Pouches and Bags for HPP

*How bags and pouches containing meats, soups, and more can be used for HPP*



(Photo courtesy of Aptar)

## Package Type:

Flexible, sealed polymer-based packages that can be used for liquid, paste or solid products. Used for retail and food-service/processor packs. Depending on channel, decoration ranges from sophisticated printed structures to post applied labels.

## Typical HPP Product Uses:

- Fruits & vegetables
- Seafood, including marinated fish & ready to eat (RTE) meals.
- Meat, including cold cuts, whole and sliced ham, raw and marinated portions, ground meats & sausages.  
\*Also including RTE meals.
- Juices & beverages in single serve pouches & bulk bags for dispensing.
- Baby food.
- Pet food.
- Wet salads & dips, especially for food service.
- Dairy products, including cheese & milk.
- Guacamole & salsa for retail and food service.
- RTE multicomponent foods, such as enchiladas & lasagna.
- Intermediates for combining with other components to make final products.



## HPP Defined: Extreme Pressure and Water

Avure's HPP uses ultra-high pressure (up to 87,000 psi or 6,000 bar) and purified, cold water to keep packaged food and beverages pathogen-free, and stay fresh longer without preservatives or chemicals. Learn more at [Avure-HPP-Foods.com](http://Avure-HPP-Foods.com)

## Key Characteristics:

- Fabricated from polymer films ranging from mono-layer to more typical coextruded or laminated structures for increased barrier, toughness and material efficiency.
- Variety of shapes and seal formats, depending on product, type of distribution and use.
- With proper material selection, capable of use in all food preservative approaches, from frozen through shelf stable retort.
- Can be pre-made and filled on a separate machine or made in-line on form-fill-seal packaging machines.
- Well suited for HPP due to flexibility of structure and ability to adjust to headspace volume changes during processing.
- Location of decoration can vary from labels to printed films; in some cases secondary packages such as printed paperboard sleeves or cartons carry the flexible package to the point of sale and home with the consumer.



HPP helps orange juice retain 90 percent of its vitamin C even after 20 weeks of refrigeration.

## Major Styles & Fabrication Methods:

- Three-side sealed - Made from a single web of material, this style has one folded edge (with one or more folds, the latter forming gussets) and three sealed edges, the edge opposite the fold is sealed after product filling. Separation of adjacent pouches can occur before or after filling.
- Four-side sealed - Made from two webs of materials, all edges of the pouch are sealed.
- Back seal pouch - Made from a single web of material, which is first formed into a tube by sealing the edges. After product filling (horizontal for single items, vertical for liquid or multiple-piece products), cross seals separate individual pouches, which are then separated by cross-cutting.
- Fitments - Separate injection molded spouts, closures or other dispensing and resealing elements; can be heat sealed at an open end of a pouch prior to filling, or for bulk bags sealed into an opening die cut into a wall prior to filling.

## Material Functions & Typical Materials Used:

- **Print Surface** - LDPE & variants (LLDPE or copolymers), BOPET, BOPP, HDPE.
- **Heat Resistance** - BOPET, BOPP, HDPE, polyamide.
- **Bulk, Stiffness, Strength** - LDPE & variants, HDPE, polyamide.
- **Barrier** - EVOH, Nylon, metalized films, PVdC & other coated films.
- **Heat Seal** - LDPE & variants, especially copolymers, also ionomers for hard to seal through seal area contamination.

**NOTE** - Structures containing paper layers are not currently suitable for HPP due to extreme moisture penetration during processing.

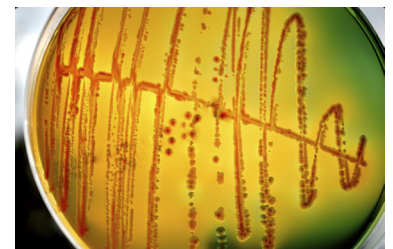
## Special Design Considerations:

- Wide, strong seals essential to prevent leaking, special care to ensure even pressures across seal areas to avoid weak spots, also ensure compatibility of sealant layer with expect amount and type of product contamination in seal area, especially in VFFS applications.
- Special care required for sealing fitments to pouch opening or walls.
- Zipper opening/re-close features should be isolated from direct connection to the external environment by a heat seal, as alone they will not likely be either liquid or gas tight at the processing pressures experienced.
- Fitments must independently be designed for pressure exposure to ensure no ingress of processing water or leakage of product during compression or decompression.
- Pre-HPP process pressure sensitive or glue-applied labels should avoid water-absorbing materials, be well adhered over entire label surface to avoid water incursion between label and pouch sidewall, and undergo any reversible sidewall distortion without visible affect.
- Test post-HPP applied labels or coding to ensure proper adhesion and and/or smooth lay on pouch surface at the application temperature and humidity conditions.



### A Selection of HPP Products

HPP foods and beverages include ready-to-eat and ready-to-cook meats, fruits and vegetables, salsa and guacamole, juices and smoothies, ready meals, soups and sauces, wet salads and dips, dairy products, seafood and shellfish.



HPP inactivates dangerous foodborne pathogens, such as *E. coli* and *Listeria*.