



College Of Fishery Science Jabalpur

Session - 2017-2018

Subject-Fish Packaging Technology

Assignment-Recou Pouch Packaging-advantages and
disadvantages



Retort Pouch

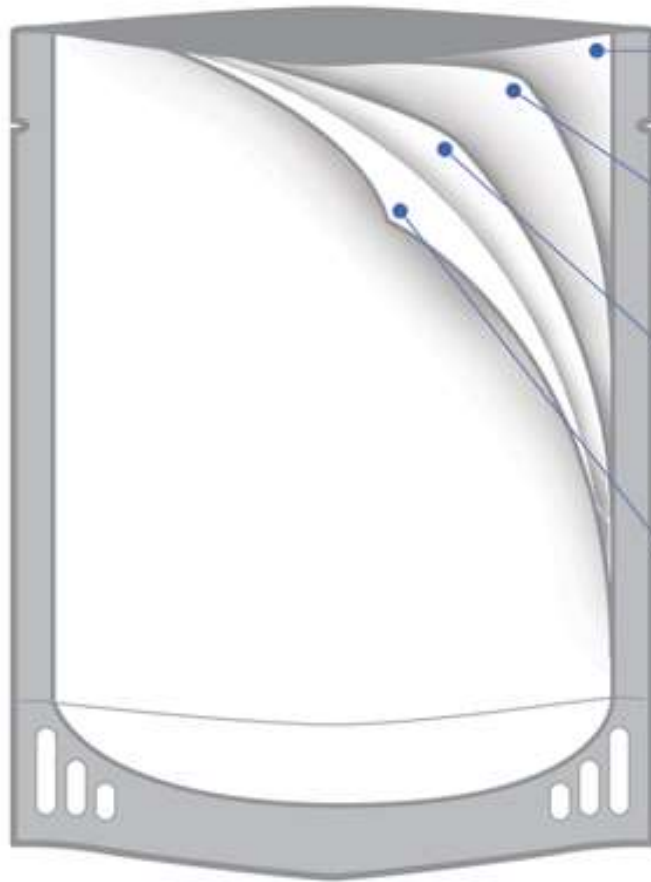
- A relatively in the recent approach in container development for heat processed food is flexible thermoplastic films and aluminium foil laminate.
- Retortable flexible containers are laminate structures that are thermally processed like a can, are shelf stable and have convenience of boil-in bag products.
- A retort pouch can be defined as a container made of **2,3 or 4-ply** material which, when fully sealed, will act as a hermetically sealed container that can be heat processed at similar temperature and pressure as for metal container.
- The material used in retort pouch must also provide superior barrier properties for a long shelf life, seal integrity , toughness and puncture resistance.



- Typical pouches used have the following configurations –
 - **2-ply** 12 micrometer or polyester/70 micrometer polyoefin
 - **3-ply** 12 micrometer polyester/12 micrometer aluminium foil/70 micrometer polyoefin.
 - **4- ply** 12 micrometer polyester/ 12micrometer aluminium foil/ 12 micrometer polyester/ 70 micrometer polyoefin



- ❖ The commonest in use is a **3-ply** pouch which is a sandwich of thin gauge aluminium between two thermoplastic films.
- ❖ Generally it is **polyester/aluminium foil/ polypropylene**.
- ❖ The outer ply generally made of polyester(**12 micron thick**). It serves to protect the foil and to provide the laminate with strength and abrasion Resistance.
- ❖ The aluminium layer(**12 micron thick**) protects the material against gas, light and water and ensures adequate shelf life of the contents.
- ❖ The inner polyolefin layer, which is generally **polypropylene(50-70 micron thick)**, provides strong heat seals and good product resistance required in retort pouch.
- ❖ This is also an inert material and hence does not materially affect the contents.
- ❖ The layers are laminated using a thermosetting adhesive, conventionally a **polyester-isocyanate**.



POLYPROPYLENE
Physical Food Contact Layer
◦ Heat Seal Surface
◦ Provides Flexibility and Strength

NYLON
◦ Abrasion Resistance

ALUMINUM FOIL
Barrier Layer
◦ Protects from Light, Gases, Odors
◦ Extends Shelf Life

POLYESTER
Outside Layer
◦ Excellent Printable Surface
◦ Provides Strength



- ❑ The pouches may be fabricated on- line by the processor or purchased pre-made.
- ❑ The normal design is of a flat rectangular shape with four fin seals about 1 cm wide.
- ❑ The size is determined by the pouch thickness that can be tolerated at the correct filling weight.
- ❑ Generally the corners of the pouches are rounded to avoid damage to adjacent packs.

Processing of retort pouches



- ❑ the first step in the manufacturing of laminated pouches involves printing the polyester film.
- ❑ The printed polyester films can be adhesive laminated to aluminium foil and then laminated to polypropylene.
- ❑ The adhesive is applied to a substrate and then passed through an oven which sets the adhesive, the combining of the 2 webs is done on a heated roller by employing pressure.



Filling

- ❖ Filling systems range from manual to automatic with variations and combination of both.
- ❖ The essential requirement is that the pouch seal be kept free from contamination with product since this could impair sterility, either by spoilage or leakage.



Air removal

- removal of the air from filled pouch is done before they are sealed. It is normally effected on an automatic line and is necessary for normal reasons–
 - ✓ To ensure product stability
 - ✓ To avoid pouch bursting during retorting
 - ✓ To assist uniform heat transfer
 - ✓ To allow detection of spoilage
 - ✓ To facilitate cartooning



- ❑ If air is left in the pouch there is a danger that it will inflate and burst during sterilization.
- ❑ The residual air should be less than 2% of the volume of pouch contents.
- ❑ For liquid product it is possible to exclude much of the air by squeezing the pack, so as to raise the liquid level to just below the line of seal during sealing operation.
- ❑ Packs containing solid products can be vacuum sealed using chamber machines. Effective vacuum packs can be produced by injecting steam into the packs to displace the air prior to sealing.



- A tear notch is usually incorporated for the ease of opening.
- The normal size range available are :-

A1	130*160mm
A2	130*200mm
A3	130*240mm
B1	150*160mm
B2	150*200mm
B3	150*240mm
C1	170*160mm
C2	170*200mm
C3	170*240mm

Advantages



1. Because of the thin cross sectional profile heat transfer is rapid. There will be 30-40 % saving in processing time.
2. No overheating of the product takes place near the package walls.
3. Because of the reduced exposure to heat, loss of colour ,flavour or nutrient is minimum.
4. Shelf life is equal to or better than that of foods in metal cans.
5. The empty pouches require only very little storage space compared to empty cans.
6. Pouches are easy to open.

Disadvantages



1. Pouches and pouch seals are more vulnerable to damage than are cans and hence require individual overlap.
2. With an overwrap the cost of the pouch may become higher than that of metal cans.
3. Slow rate of production. In place of handling 300–400 cans per minute the pouch line can handle only 30 pouches per minute.
4. Needs special retorts for thermal processing.

Conclusion



- The retort food industry with its accelerated growth rate and product diversification has entered in a new phase of growth.
- These packs are now putting tough competition to the canned food .
- Because of their flexibility and easy storage and handling the retort pouches will find niche market in the near future.



thank you!