

AdeptGroup Package Engineering Technical Sheet- Pouches





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DOCUMENT PURPOSE

The purpose of these Package Engineering Technical Sheets (PETS) are to provide specialized information to Package Engineers regarding aspects of packaging unique to the client. They contain details necessary to duplicate most aspects of a package. These don't replace detailed specification or drawings but are intended to provide details using generally accepted industry standard terminology.



What is a Pouch?

Flexible Packaging for All Types of Product

A pouch is a type of flexible packaging made of thin, plastic, metal, and/or paper material. A pouch (or sachet) package can hold all types of product, including liquids, creams, tablets, gel-caps, and granular powders.

The majority of the pouches used in the over-the-counter industry are square or rectangular shape and contain one or two tablets. They are distributed as product samples to doctor's offices and customers during a new product launch. Recently due to the TSA's (Transportation Safety Administration) stricter regulations on carry-on package sizes, small packages such as pouches are becoming increasingly popular with customers.





How Are Pouches Made?

Vertical and Horizontal Form-Fill-Seal Machines

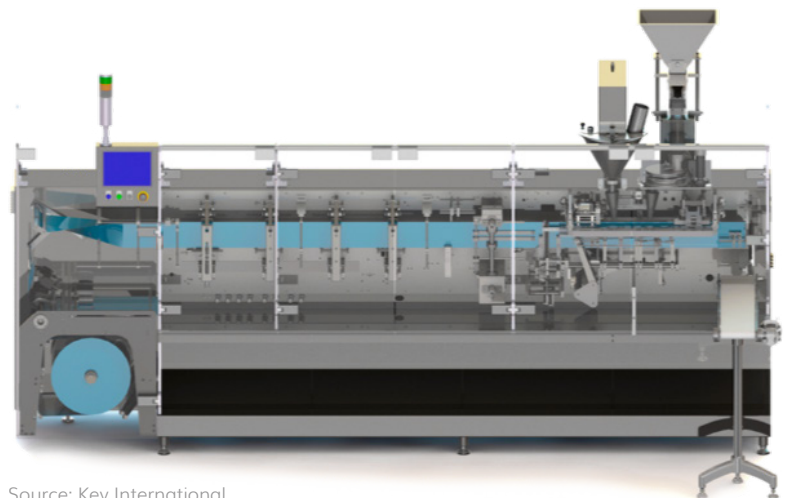
Pouches are produced and filled on vertical form-fill-seal (VFFS) or horizontal form-fill-seal (HFFS) machines.

In a typical VFFS machine, the package material is unwound at the back of the machine and follows a vertical path over a forming collar where the flat material is shaped onto a tube. A longitudinal seal is put into the tube, and product is introduced from the top. After product filling, horizontal sealing bars place a heat seal across the pouch width, at the same time cutting across the center of the horizontal seal to separate one package, while leaving the tube sealed at the bottom ready to receive the next product dump.

Most HFFS machines operate with the package material roll stock being fed horizontally over forming plows. Heat-seal bars seal off the appropriately sized pouch, and after filling, seal the completed package.



Source: Key International



Source: Key International

VERTICAL

Form-Fill-Seal Machine

HORIZONTAL

Form-Fill-Seal Machine



Special Points of Interest

Pouch Types

There are two different types of pouches used for the client.

A child-resistant (CR) and a non-child resistant (NCR) pouch. While the CR pouches are made of puncture and tear resistant material which can be opened with scissors, the NCR pouches are made of materials that are very easy to tear. The majority of the client pouches are child resistant. The client pouches are packaged in dispensers, cartons and bulk ship-pers.

SPECIAL POINTS OF INTEREST

- CR and NCR pouches produced for the client
- Speed, temperature, and pressure are three critical parameters in making a good pouch
- Iodine, light probe, and burst tests are performed during pouch packaging line trials





Pouch Types Cont.



CR Pouch

The client CR pouch material is a laminate constructed of 6 different layers:

1. Polyester
2. Inks
3. Extrusion Primer
4. LDPE
5. Aluminum Foil
6. Surlyn

Laminates are assembled from various combinations of plastic films, adhesives, surface coatings, and aluminum films. The purpose of laminates is to combine the best of all properties protection, aesthetics, machinability and cost into a single packaging structure. For example: polyester layer provides puncture, and tear resistance, the aluminum foil layer provides a moisture barrier, and surlyn is used as adhesive.

Based on the moisture sensitivity of the product, there are three different aluminum foil thicknesses used for CR pouches:

1. 0.0007" foil for high moisture sensitive products
2. 0.0005" foil for medium moisture sensitive products
3. 0.00035" foil for low moisture sensitive products

CONSTRUCTION

Material	Basis Weight
92 Gauge Polyester	19.900 lbs/ream
Inks	N/A
Extrusion Primer A-131-X Mica	N/A
White LDPE	7.500 lbs/ream
0.00070" C.C. Aluminum Foil	29.540 lbs/ream
Dupont Surlyn 1652	10.000 lbs/ream

Did You Know?

Heavier foil gauges (0.0007 in) are 100% barrier to all gases. As thickness is reduced, pinholing becomes more common.



Pouch Types Cont.

NCR Pouch

The client NCR pouch material is a laminate constructed of 4 different layers:

1. Lacquer
2. Inks
3. Paper
4. LDPE

The NCR pouches are easy to open and are primarily made for uses at hospitals and households without small children.



CONSTRUCTION (Outside to Inside)

Material	Basis Weight
Lacquer	0.700 lbs/ream
Ink	N/A
26# CIS Paper	26.000 lbs/ream
Dow 5041 + Amp. 11171 Wht. LDPE	15.000 lbs/ream

NCR Material Structure

In the above example, paper provides printing surface and LDPE is used as adhesive.



Critical Parameters in Pouching Operations

To make a good pouch it is critical to develop optimal operational parameters. **Speed, temperature, and pressure** are critical parameters in pouching operations.

These three parameters are important to create a good seal, which is an essential factor for pouch integrity. A good seal in combination with a material that provides a good barrier will protect a product from moisture and oxygen permeation. Oxygen and water vapor are the most common barrier concerns, being the gases most responsible for product degradation.

Prior to launching a product in a pouch, extensive packaging line trials are run to develop operational parameters and collect samples for stability tests. During the line trial the production range is developed for each of the three critical parameters. Upper, lower, and target parameters are established and verified through burst, iodine and light probe testing.





Integrity Tests

Light, Iodine, and Burst Testing

There are three types of tests used to test pouch integrity.



LIGHT PROBE TEST

Pouches are inspected using a point light source to detect foil fractures and pinholes. Any visible light through the pouch may represent a compromise in package integrity.

Reference: PTM-006



IODINE TEST

Pouches are injected with iodine solution to detect any channeling across the seal areas. Any leakage, other than at the point of injection, represents a compromise in package integrity.

Reference: PTM-006



BURST TEST

Measures the package seal and material strength by measuring the peak pressure at which the package seals separate or the package material shears.

Reference: PTM-006



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