

PVC Films

The PVC (Poly Vinyl Chloride) is a thermoplastic polymer of great versatility and it is one of the most important plastic materials available today. Its main characteristics include mechanical resistance, resistance to the environment (weathering), to the water and many reagents. It also has acceptable electric resistance properties. Depending on the used formulation is possible to manufacture multiple and varied products how it could be: pipes, bottles, profiles, coatings, foams, footwear, coated wires, hoses, disks, floors, toys and of course rigid and flexible films in a great variety of thickness and presentations, using for this, very varied production techniques how it could be extrusion, calendaring, injection, rotational molding, thermoforming, compression, blown molding, etc.

The production processes used in manufacturing of PVC films usually are: tubing extrusion and subsequent blowing of plasticized PVC; the extrusion by means of a flat film die; the calendaring and occasionally the casting by means of the use and the evaporation of solvents (very rare). The range of these films could vary from the very hard and rigid to the very soft and flexible.



The main use of PVC films is the product packaging. Some packed goods sometimes receive an additional cover carried out with film. The missions of this cover are:

1. Additional protection of the merchandise for external influences.

2. Improvement of the control and guarantee of the closure.
3. Possibility of gathering several isolated packs.
4. Better sale promotion.

The protecting function of an evolving film could be very varied:

- Avoids the mechanical deteriorating of valuable containers due to the close contact suffering during the transport and storage.
- The sensitive merchandises have a better protection against the losses of aroma for external influences.
- Many products demand protection for absorption, the loss of moisture or both inconveniences (for example bread or cigarettes).

In general, an evolving film, of the appropriate material, could complete these functions. The films used like overwrap usually are transparent, in this way is recognized the content and is facilitated the classification. Also, a well-sealed wrap also offers the guarantee that the container has not been open.

Depending on the type of film, these is used in the food packaging, how it could be fresh meats, poultry, fruits and vegetables; or as structural part of the packaging, for example the package of cans or multi-package; or in order to give an exceptional presentation to the products, for example, gifts, boxes of chocolates, disk packaging, etc.

The increase in the importance of the use of PVC films like material of packaging is attributed to its excellent barrier properties for moisture, gases and odors; to its chemical resistance to the water and chemical products; its clarity and similar crystal transparency; to its mechanical consistency. Additional advantage are its shine, its tear resistance, its oxygen transmission barrier, good heat sealing and the possibility of production of a packaging free of wrinkles.

The biaxially oriented films possess some of these characteristics improved, how it is: exceptional clarity, superior tensile properties, flexibility and improved barrier properties, better impact resistance and an improved thermal stability. However, there is a detriment in the amount of elongation that resists, the easy propagation of tears, and a narrowing of the range of sealing.

They are two the types of films of PVC that we managed: the shrink and stretch. Actually we haven't manufacturing the last, only sell imported product.



SHRINK FILMS.

The materials with thermoplastic memory that tends to heat contracting are the bases of the method of shrink packaging. From all the possible materials, the polyolefin and PVC shrink films are those that there is acquired practical importance. The properties of contraction of the several thermoplastics is different and depends on the range of melting temperature or hardening of the plastic and is possible adjust to a predispose capacity of contraction with accuracy.

When the shrink films contract could achieve a packaging without wrinkles that adjust to the form and to the size of the product that it cover. The percentage of shrink increases with the shrinking temperature and could be theoretically controlled for this method, but is very difficult in the practice with the majority of the shrink techniques because the percentage of ending shrink is determined for the object that is packed. However the measure of this property gives an idea of the amount of retraction that could achieve the film. Is possible manufacture different percentage of shrinking in longitudinal direction (machine direction M/D) or in the transverse direction (T/D), but the most usual is a balanced shrinking in both directions.



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The shrink tension is the force that the film exerts when it is restrained from the shrink at high temperature and it could be influenced for the properties of the polymer and the manufacturing method. Tensions between 50 and 150 psi is desirable in order to provide a tight packaging after the shrink and higher when are required that the film becomes structural part of the package, although it is necessary to be careful with the temperature control and time for prevent ruptures or distorting.

The films of PVC are appropriate for most of the packaging.

The employment of shrink packaging is always opportune when it is wrapping goods of irregular form. The process is also appropriate in the cases in which are tried to bale goods with diverse dimensions or for formats in irregular succession. Finally it is also used in order to unite loose packages in collective packages. Although must be to tolerate the welding cords and some wrinkles produced in the corners. Existing equipment are manuals and automatic. Most of the shrink equipment work with hot air (80 to 200 C) and almost always-preferable low temperatures of shrinking for simpler equipment, an energy saving and because permit the packaging of heat sensitive products.

STRETCH FILMS.



It is a very flexible films with a formulation that permits an easy adherence to flat surfaces like the glass, some plastics and the

same film. Also to applying a force that stretches it elongate largely the film allowing to achieve adjusted and tight packaging similar to the obtained with shrink films, but without using heat. The same as in the shrink films, are the polyolefins and PVC those that it have achieved a great entrance in the packaging market.

The stretch packaging consists of the simply process of stretching the film on the product to wrap permitting that the elastic forces inside the film adapts to the surface of the product, with the advantage that for its high adherence requires little or null seal. It is adapted for the manual packaging of foods so much for its ease to use, like its odor barrier properties, as well as a better presentation and better food properties conservation. The formulation of these films is totally non-toxic and is approved for the direct contact of the foods. Another very widespread use is the packaging of big platforms with the purpose of containing multiple packages in one alone of big dimension and easier handling, but only if the package is rectangular or of regular form, it is not applicable to irregular forms. Between the advantages concerning to shrink packaging is the lower cost of the process of packaging due to the low energy requirement and to the equipment of minor cost; nevertheless, the removal of the film is more difficult and it not provided a totally close package how it could be the case of the shrink.

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