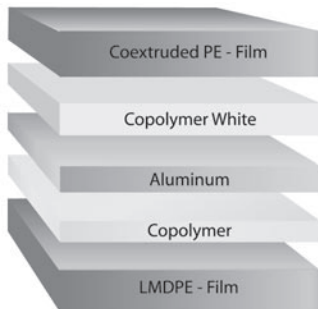


IntraPac Laminate Tubes

Materials

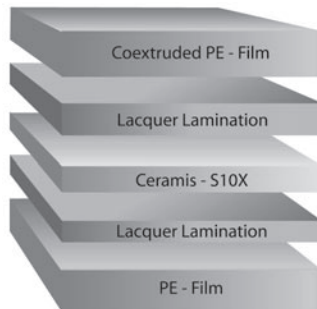
Selection of the appropriate type of material for tube construction is important. There are newly developed laminate structures which include types of all plastics materials in various combinations to create compatibility and properties required for product applications. Available from IntraPac are the following choices:



Aluminum Plastics-Laminate

If the ultimate in barrier properties is required, an aluminum foil laminate tube may be the most desirable. Aluminum is the traditional barrier layer of choice for highly aromatic materials, as well as for those whose flavor or other properties could be degraded by exposure to air or moisture vapor. Aluminum is suitable for most applications, except those requiring spring-back or transparency.

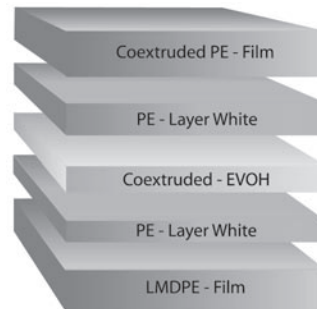
A typical construction for such an application would be white PE-film outer layer, PE-tie layer, aluminum foil barrier layer, PE-tie layer, and PE-film inner layer. The thickness of the aluminum foil barrier layer can be varied to accommodate the special requirements of the contents.



CERAMIS® Laminate

This new structure made from a ceramic/PET base provides oxygen and moisture vapor barrier properties nearly equal to those of aluminum, and significantly better than EVOH, as shown in the following chart.

A typical construction for an opaque tube would be white PE-film outer layer, PE-tie layer, opaque CERAMIS barrier layer, PE-tie layer, and PE-film inner layer. A typical construction for a clear tube would be clear PE-film outer layer, clear copolymer tie layer, clear CERAMIS barrier layer, clear copolymer tie layer, and clear PE inner layer.

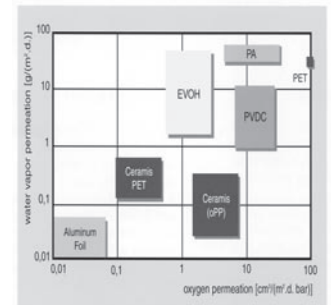


EVOH All-Plastics - Laminate

The all-plastics EVOH laminate tube has become a desirable option for many personal care products.

A typical construction for such an application would be white PE-film outer layer, PE-tie layer, EVOH barrier layer, PE-tie layer, and PE-film inner layer.

Because the outer layer of the laminate is white PE-film, it can be surface printed with brilliant colors and graphics by dry offset or flexographic methods.



Compare the Barrier Properties

For further information regarding barrier properties, this chart reflects the results of analysis of available materials. Tests have shown that CERAMIS tubes not only have good oxygen and moisture vapor barrier properties but also work well as an aroma barrier. They are very elastic and available in both opaque and transparent versions. This chart indicates the water and oxygen permeation.

