



PRODUCT APPLICATION NOTE

Tie layer adhesive resin for multilayer lamitubes

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Introduction

Packaging enhances the brand value of any product and a product's success to a great extent depends on its external appearance. Many a time a consumer's decisions are spontaneous, and a product moves from the shelf because of attractive packaging. One of the most common yet important classes of attractive packaging is Lamitubes.

Multilayer Plastic Laminated Tubes are commonly known as "LAMITUBES". This product is no less than an innovation, which on the one hand speaks about the brand through its eye-catching shape & design and on the other hand provides convenience to the consumer.

Lamitubes are made typically from laminates having 5- or 7-layer structure and can be customized in terms of thickness based on specific client requirements and the end packaging application like toothpaste, ointments, cosmetics & ketchups.

One of the most important components in these LAMITUBES is **Tie Layer adhesive resin**. This is used to bond the dissimilar materials together and thus combines the properties of different materials, such as gas barrier resins and moisture barrier resins. The use of this adhesive resin in packaging structures restricts the passage of oxygen, flavor, and odor permeation.



Sensing the demand of tie layer adhesive resin from lamitube industry, PLUS Polymers has developed a speciality additive marketed under the brand name BindEX E-186, which is used as a tie layer adhesive resin for multilayer laminated structures called Lamitubes.

Characteristics of BindEX E-186

About BindEX E-186

It is a maleic anhydride modified linear low density polyethylene adhesive resin. It is used as a tie layer adhesive resin for bonding dissimilar resins together in increasingly popular multilayer barrier packaging structures called Multilayer Lamitubes. With advanced grafting technology, this grade creates super adhesion to metal, EVOH, PE and PA while maintaining excellent processability.

Properties:

- Appearance : White color granules
- MAH : Medium (%)
- MFI* : 2.0 g/10min
- Density : 0.932 g/cm³

*190 °C/2.16Kg

How does it work?

Maleic anhydride groups present in BindEX E-186 chemically react with polar which chemically binds aluminum to the polymer chain. Aluminum particles also get embedded into the softer LLDPE layer matrix after corona treatment which results in the continuous luster of the metalized film.

Suggested Formulation:

BindEX E-186 is used along with other ingredients of Lamitube formulation like PE/PA/Metal, EVOH etc. A typical formulation is as under:

Layer Type	Layer Ratio	Suggested Formulation
Outer Layer	Depending upon the end-application	PE/PA/Metal
Adhesive Resin	4%	BindEX E-186
Core Layer	Depending upon the end-application	EVOH
Adhesive Layer	4%	BindEX E-186
Inner Layer	Depending upon the end-application	PE/PA/Metal

Advantages

BindEX E-186 is developed indigenously for Indian Market. Some of the advantages offered are:

- ✓ Is in synergism with varied flexible film packaging industry requirements.
- ✓ Impart excellent thickness accuracy.
- ✓ Enhanced barrier properties ensure best shelf life.
- ✓ Ensure better surface finish with crystal clear graphics.
- ✓ Being an olefins adhesive acts as puncture resistant in film.

Processing

The Processing method of the multilayer lamitubes is generally called the co-extrusion method. The resins, including the adhesive resin with different properties are pushed into a metal mold by different extruders. Then they are laminated into a tubular shape within the metal mold. As the molding is done in a single step, the stability of the product and production efficiency is quite high.

It is a hygienic process because there is no direct contact with the air outside of the tube.

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