



PRODUCT APPLICATION NOTE

Recyclability of Co-extruded films





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Utility of Multi-Layer Plastics Films

In its dual role as an attractive container for products, as well as preserve the contents until use, packaging films are supposed to have adequate mechanical and barrier properties to retain product integrity as well as shelf life during transit and storage. From performance and cost considerations, use of different materials in multilayer structures provide cost effective performance in terms of mechanical strength, seal integrity & strength; barrier to moisture, oxygen, odor etc.; as well as printability and runnability on FFS machine, and so on.

Importance of Co-extruded films

Multilayer film structures made by Co-extrusion provide excellent opportunities in packaging applications in the most efficient and cost-effective manner. Co-extrusion process allows use of minimum quantities of plastics materials in a film structure to give optimum combination of performance properties. Besides commercial benefits, this approach helps curtail overall consumption of plastics and goes a long way in protecting our environment.

Issues with recycling of Multilayer Coextruded films

The presence of plastics with different chemistry and processability in the same structure however poses its challenges in reprocessing. Coextruded multilayer barrier films comprising of nylon and polymers of olefin family are not as easy to reprocess as those of a single polymer type like polyethylene or polypropylenes. Not only do the diverse materials have different melting temperatures, but they are also inherently incompatible in melt and solid states.

Designed-in recyclability of co-extruded barrier films

The need for conserving scarce petroleum products and to prevent environmental pollution is not lost on anybody in today's world. The recyclability of anything that stands discarded after use cannot be overlooked and left to be taken care of by unorganized setups. As matter of fact, time has come to think of building-in recyclability in design of any packaging material.

Guidelines for use

reCoupp® E-832 is recommended to be used in-tie layer composition after 60% dilution with film grade polyethylene; however, actual concentration depends on the end use application of the reprocessed material. Tie layer thickness in each case will depend on the nylon content in the multilayer film. Around 16 µm of total tie layer thickness is recommended for 9 – 10 µm Nylon layer in a 100 µm barrier film.



How is recyclability assured?

Rejections of the coextruded multilayer films can be shredded, agglomerated, and converted into composite granules via extrusion process without adding any compatibilizer. At reprocessing temperatures in the extruder, the functional groups in reCoupp® specialty tie layer resins act by compatibilising nylon with polyolefin content of multilayer structure, yielding an alloy of uniform properties. The material so produced exceeds (meets) the guidelines of IS 14534: 2016 for recovery and recycling of plastics waste.

Disclaimer:

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