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Catalloy TPO Resins Shine in Photovoltaic Backsheet from RENOLIT

For more than 20 years, LyondellBasell's *Catalloy* thermoplastic polyolefins (TPO) have been specified by customers for durable industrial applications, such as waterproofing membranes.

With a vast range of benefits, it should be no surprise that *Hifax* TPO is now also used as a building block for the production of backsheets in photovoltaic (PV) modules. *Hifax* TPO, manufactured using LyondellBasell's proprietary *Catalloy* process technology, helps to improve the quality and cost of the backsheet for a PV module.

The photovoltaic industry provides power generation products that are competitive with conventional and other renewable sources of energy. The leading technology uses interconnected crystalline silicon (c-Si) cells as active material to produce electricity. Such PV cells need to be encapsulated and packaged in a safe and durable way. This is the role of the backsheet in the PV module.

To provide a cost effective, high quality and safe backsheet, **RENOLIT Belgium N.V.** has engineered a multi-layer film combining several materials and delivering the required properties. "*Hifax* TPO from LyondellBasell offered us a high quality, cost effective solution for our backsheet. The usage of *Hifax* reactor-made TPO together with the excellent technical support from LyondellBasell was critical to our success," said François Rummens, R&D Manager of **RENOLIT**.

"It is the main layer of the backsheet that is based on this *Hifax* TPO. Such versatile material is glass fiber reinforced and flame retardant to meet PV modules specifications, like low warpage, low flame spread, low cut susceptibility and durable dielectric strength. Compared to established backsheet technology, produced by adhesive lamination (i.e. films are first produced and then laminated), the new backsheet is produced by co-extrusion, a cost effective alternative."

The **RENOLIT** backsheet is comprised of six layers providing the following benefits:

- Excellent adhesion to encapsulant films (mainly EVA)
- Module processability
- Lower water vapor permeability
- Higher permeability to acetic acid (a corrosive by-product of EVA encapsulant) than industrial standards
- Lower cost
- Slower corrosion of the PV cells is achieved
- Possible to join the junction box to the backsheet by welding techniques instead of gluing, leading to increasing production speed and reliability

"This project is an excellent example of the effectiveness of *Catalloy* TPO resins in durable applications," said Jaap Rabou, *Catalloy* Marketing Manager for LyondellBasell.

"Unlike conventional TPOs that are merely mechanical blends of elastomers or plastomers in a polypropylene matrix, LyondellBasell TPO is an alloy of rubber and polypropylene produced simultaneously in the polymerization reactors. This creates a much better dispersion of the rubber in the material and has a direct effect on the processing consistency and end-use properties.

These properties include:

- Low specific gravity
- Durability
- Fully intermixable and compatible
- Thermal resistance (low and high temperature)
- Low temperature flexibility
- Optical properties
- Dimensional stability
- Electrical properties
- Hot air welding
- High filler loading

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About LyondellBasell

LyondellBasell (NYSE: LYB) is one of the world's largest plastics, chemical and refining companies and a member of the S&P 500. LyondellBasell (www.lyondellbasell.com) manufactures products at 58 sites in 18 countries. LyondellBasell products and technologies are used to make items that improve the quality of life for people around the world including packaging, electronics, automotive parts, home furnishings, construction materials and biofuels.

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About RENOLIT

The **RENOLIT** Group is an international leader in the manufacture of high-quality plastic films and related products for technical applications. This independent family-owned business, which has been setting benchmarks for quality and innovation for over 65 years, now employs a workforce of approximately 4,500 employees at more than 30 production sites and sales entities. The **RENOLIT** brand enjoys a worldwide reputation for technical expertise, modern product design and customer-oriented service. **RENOLIT** thermoplastic films provide furniture, building components and consumer electronics with a decorative surface finish, they seal roofs, underground structures and line swimming pools. We produce films and tubes for medical applications and recyclable composite panels incorporating natural fibres for the building sector and automotive industry. **RENOLIT** film is also used as a key material for office management supplies, in the interiors of vehicles, in self-adhesive products for the graphic design and labelling industry and in technical products.

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