June 28, 2010

Toyobo Introduces High-function Polyester Films for Solar Cells

Toyobo Co., Ltd. (“Toyobo”) has initiated sales of various types of polyester (PET) films for use in photovoltaic cell backsheets, which are expected to become widely adopted. Toyobo has set a target of ¥7.0 billion in related products sales in 2012.

1. Background

(1) Photovoltaic Cell Market

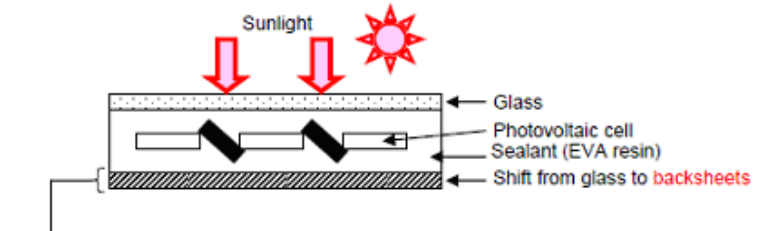
The power generation capacity of photovoltaic cells is expected to roughly triple from 2008 to 2012. The demand for photovoltaic cell materials is expanding as the photovoltaic cell market scale keeps on growing.

(2) Photovoltaic Cell Materials Developments

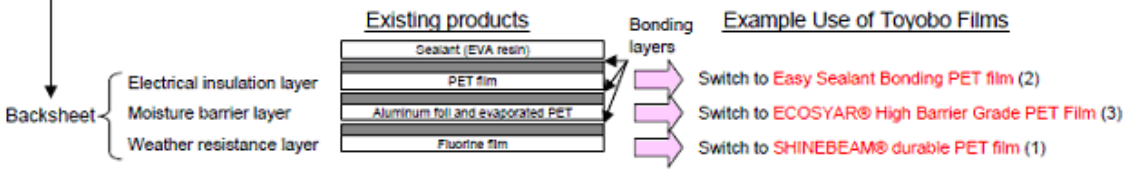
Glass was formerly used for both the top and bottom layers of photovoltaic cell modules, but the bottom-layer glass is being changed to backsheets with resin film laminates to reduce weight. The backsheets comprise layers an electrical insulation layer, a moisture barrier layer, and a weather resistance layer. The weather resistance layers to date have mostly used fluorine films, but a shift is now underway from fluorine films to PET films, and Toyobo expects PET films to account for 70% of all photovoltaic cell weather resistance layers in 2015.

(3) Need for Toyobo Films

Photovoltaic cell backsheets are important components which affect the working lives of photovoltaic cells. Toyobo has developed the highly durable and environmentally friendly PET film SHINEBEAM® and initiated sales from this spring. Toyobo has also developed a high-function PET film for the electrical insulation layer.



Example Photovoltaic Cell Structure Cross Section



Example Backsheet Structure Cross Section

2. Types and Characteristics of Backsheet Films

(1) SHINEBEAM® durable PET film (item (1) in the figure)

1. High Durability

Toyobo increased the hydrolysis resistance* to 1.5 times that of prior photovoltaic cell backsheet PET films using our proprietary polymer resin technologies and sophisticated film coating manufacturing technologies.

*Hydrolysis: Decomposition of a material from reaction with water

2. High Heat Resistance and Fire Resistance

Toyobo has received preliminary fire resistance certification under the UL Standards.* SHINEBEAM® has a high heatproof temperature compared with prior photovoltaic cell backsheet PET films, and has already received UL fire resistance certification. It is a film with recognized high heat resistance and fire resistance, and improves the long-term reliability of photovoltaic cells.

*UL Standards: Safety standards issued by the U.S. private-sector organ UL (Underwriters Laboratories Inc.).

3. Environmentally Friendly

With the use of our proprietary PET polymerization catalyst which contains no heavy metals, SHINEBEAM® is an environmentally friendly PET film which contains no heavy metals.

4. Abundant Variations

Toyobo has developed both transparent and white varieties of the SHINEBEAM® PET films. The white varieties facilitate the use of reflected light as well, which boosts power generation efficiency. The films are available in a variety of thicknesses ranging from 50 to 250 micrometers.

(2) Easy Sealant Bonding PET Films (item (2) in the figure)

The bonding with the sealant (EVA*) that protects the photovoltaic cells is important for improving photovoltaic cells' long-term reliability. Toyobo has developed Easy Sealant Bonding PET films to improve the adhesion with EVA. These films are available in the three colors transparent, white and black for different types of photovoltaic cells.

*EVA: Ethylene-vinyl acetate – a copolymer of ethylene and vinyl acetate.

(3) ECOSYAR® High Barrier Grade PET Films (item (3) in the figure)

It is also important to ensure that moisture does not enter photovoltaic cells to improve the cells' long-term reliability. Toyobo is making use of the ECOSYAR® technologies used for our food packaging film ECOSYAR® to develop ECOSYAR® High Barrier Grade PET films with a moisture penetration of no more than 0.1g/m^2 per day, for use in crystal silicon photovoltaic cells.

3. Future Outlook

Toyobo has set a goal of ¥7.0 billion in sales of photovoltaic cell backsheet PET films in 2012. We are contributing to the spread of photovoltaic cells though the provision of high-performance photovoltaic cell materials.

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