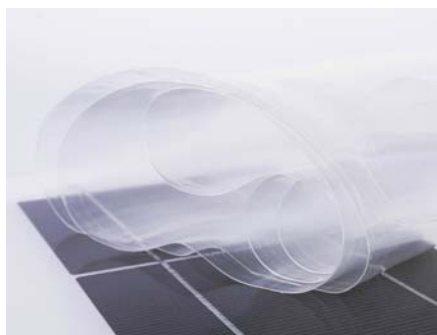


**Arkema at Photovoltaic Solar Energy Exhibition
Hamburg – September 21 to 25, 2009
Hall B2 - Stand U49**

SUMMARY

At the 24th Photovoltaic Solar Energy Conference and Exhibition held in Hamburg, Arkema unveils its latest innovation for the photovoltaics market: **Apolhya™ Solar**, a nanostructured thermoplastic polymer with outstanding properties for the encapsulation of new generation photovoltaic modules.

Arkema also presents its set of brands at the service of photovoltaics: **Evatane®**, **Luperox® Solar**, **Kynar®** and **Altuglas®**. These innovative products are designed to extend the lifetime of solar panels, improve their performance and also reduce costs and time involved in their manufacture.



Apolhya™ Solar LC3 film used to manufacture crystalline silicon modules

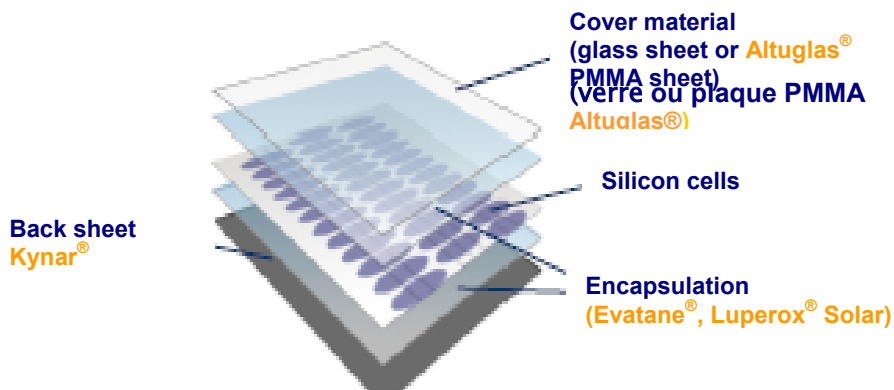


Diagram of a solar panel manufactured from Arkema products

More information on:
www.apolhyasolar.com
www.arkema.com/photovoltaics

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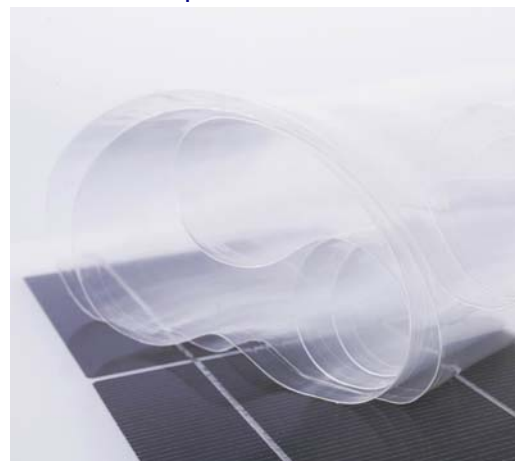
Apolhya™ Solar, a thermoplastic with outstanding properties for photovoltaic panel encapsulation

At the 24th Photovoltaic Solar Energy Conference and Exhibition held in Hamburg, Arkema presents its latest innovation for the photovoltaics market: Apolhya™ Solar, a nanostructured thermoplastic polymer for the encapsulation of new generation photovoltaic modules. Apolhya™ Solar combines thermo-mechanical properties, adhesiveness, creep resistance, and perfect transparency.

Apolhya™ Solar is part of the Apolhya™ range, a new family of nanostructured polymers developed by Arkema. This thermoplastic is compatible with processes used to manufacture solar panels based on crystalline silicon or thin layers. One key advantage is that its processing requires no curing. This therefore saves time in the production process, while making end-of-life panels very easy to recycle.

Apolhya™ Solar offers an unrivalled set of properties compared to the other thermoplastics suitable for solar panel encapsulation. The nanostructuring of Apolhya™ Solar ensures excellent long-term transparency. Furthermore, thanks to its easy processing, its adhesion properties, its prolonged heat resistance (its creep resistance is excellent up to 120°C), its UV stability and its low permeability, Apolhya™ Solar is highly suitable for « thin-layer » photovoltaic panels, including flexible modules, and particularly for continuous lamination processes.

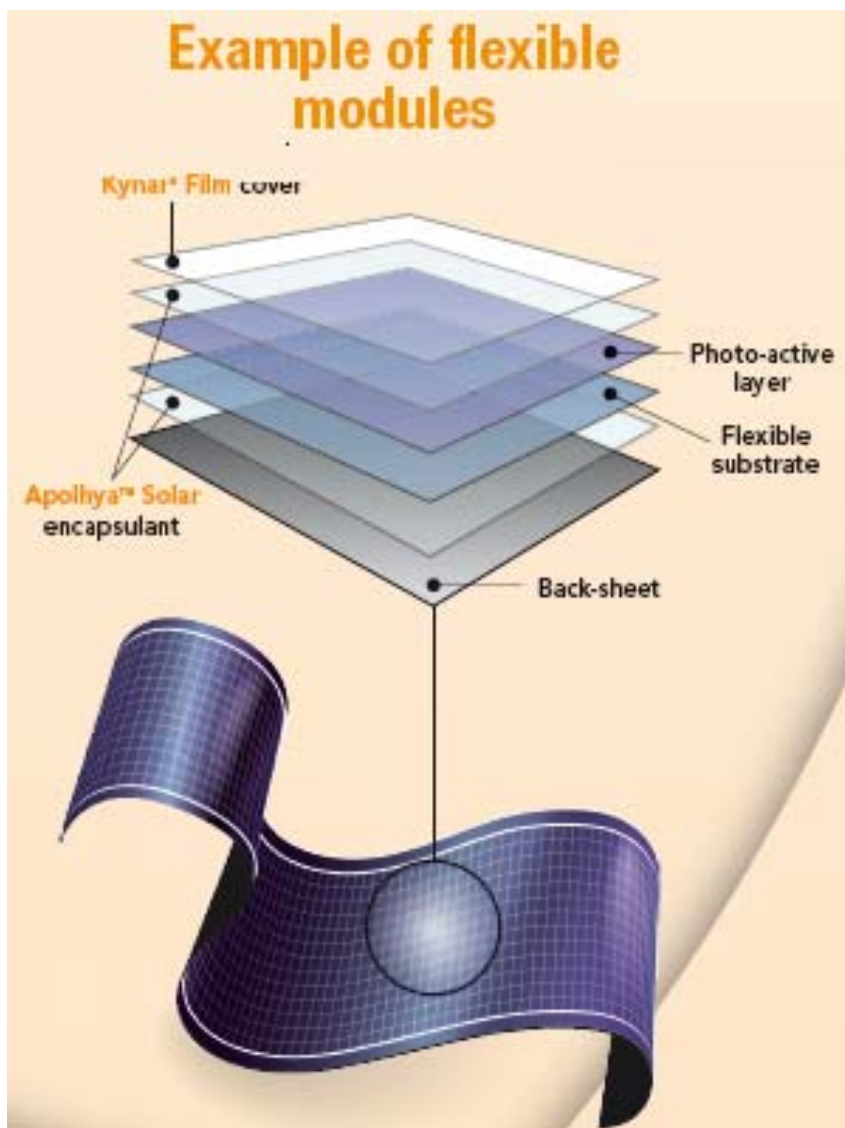
A wide range of Apolhya™ Solar grades is available based on various melt temperatures, viscosity, transparency and barrier properties, while other grades can be tailored to specific requirements.



Apolhya™ Solar LC3 film used to manufacture crystalline silicon modules

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A global chemical company and France's leading chemicals producer, Arkema consists of three businesses: Vinyl Products, Industrial Chemicals, and Performance Products. Arkema reports sales of 5.6 billion euros. Arkema has 15,000 employees in over 40 countries and six research centers located in France, the United States and Japan. With internationally recognized brands, Arkema holds leadership positions in its principal markets.

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Evatane[®], Luperox[®] Solar, Kynar[®] and Altuglas[®]: innovative brands at the service of photovoltaics

The life span of a solar panel is between 20 and 30 years. Its components must therefore ensure that it delivers excellent performance over the long term - a challenge which has now been taken up by Arkema thanks to a number of its polymers. Arkema has been present in the photovoltaics market since 2001 by offering polymers that are perfectly suited to the make-up of photovoltaic solar panels. This is the case with Evatane[®] resins, used to encapsulate the silicon in the photovoltaic cells, Luperox[®] Solar, ultra-fast crosslinking agents for these encapsulation resins, Kynar[®] Film which protects the panel's backsheet by providing long-term electrical insulation, and PMMA which is used to manufacture lenses to focus the sun's rays.

To develop these products, Arkema implements a particularly dynamic R&D policy motivated by two objectives:

- To extend the lifetime and improve the performance of solar panels: Arkema aims to provide the players of the photovoltaics sector with solutions to help protect electrical circuits and active materials in photovoltaic panels.
- To reduce the time and cost involved in the manufacture of panels: joint development programs are put in place with photovoltaics manufacturers in order to keep on improving manufacturing processes as well as the yield of photovoltaic panels.

Evatane[®] : the ideal encapsulant for photovoltaic cells

Arkema's Evatane[®] polymers are ethylene vinyl acetate (EVA) resins with a high vinyl acetate content, used in a large number of applications: hotmelt glues, packaging film, halogen-free cable sheathing, semi-conductors, etc. In the make-up of solar panels, EVAs provide the adhesion of the various layers (glass, silicon, backsheet) and the protection of silicon cells and electrical circuits. Evatane[®] polymers offer the ideal characteristics of durability and stability over time for the encapsulation of the panels: outstanding transparency related to the tube production process, high UV resistance, good electrical insulation, and good crosslinking ability.

Luperox[®] Solar: ultra-fast crosslinking agents

The world's second leading producer of organic peroxides (used as crosslinking agents for EVA, rubber and polyethylene), Arkema recently developed organic peroxide grades for the crosslinking of EVA used in the encapsulation of photovoltaic cells, Luperox[®] Solar Cure and Luperox[®] Solar Fast: one particular feature of these organic peroxides is their ability to speed up the crosslinking of EVA and hence increase

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the production output of solar panels. Additionally, these new granule peroxides (masterbatches) are very easy to use, store and dose.

Kynar® Film: protection for photovoltaic cells

Arkema's Kynar® PVDF (polyvinylidene fluoride) is a fluorinated polymer used in the manufacture of the film making up the backsheet of the panels.

With its excellent resistance to UVs and the most extreme climatic and environmental conditions, and its moisture barrier properties, it ensures the electrical insulation of the panel's backsheet over the long term. Its excellent reflectivity also helps increase the yield of the photovoltaic cells. To guarantee these properties, Arkema subjected samples to extreme conditions (temperature, moisture, UV rays, etc.) in climatic chambers which speed up ageing. The results of these tests showed that Kynar® Film offers particularly effective ageing resistance, with no yellowing or embrittlement. Arkema boasts over 40 years' experience using Kynar® PVDF as an architectural coating that can withstand UVs and weathering.

Recently, Arkema's R&D teams developed a KPK™ three-layer backsheet jointly with the company Krempel: These laminates comprise 3 layers, with PVDF films as the 2 outer sides, efficiently protecting from UV ageing and moisture the PET core layer which imparts electrical insulation to KPK™.

PMMA: toward a new generation of concentrated photovoltaic panels (CPV)?

PMMA, or acrylic glass, offers inherent qualities which make it a material of the future for the photovoltaics sector: excellent transparency, very high resistance to UVs and weathering, great design flexibility, and excellent surface hardness protecting it from scratches.

Currently, the high cost of solar panels is linked to the price of silicon. Hence researchers are looking to develop panels that produce just as much energy but with less silicon: one of the solutions consists in using lenses which focus the light onto narrow strips of silicon; this is the principle of concentrated photovoltaic technology.

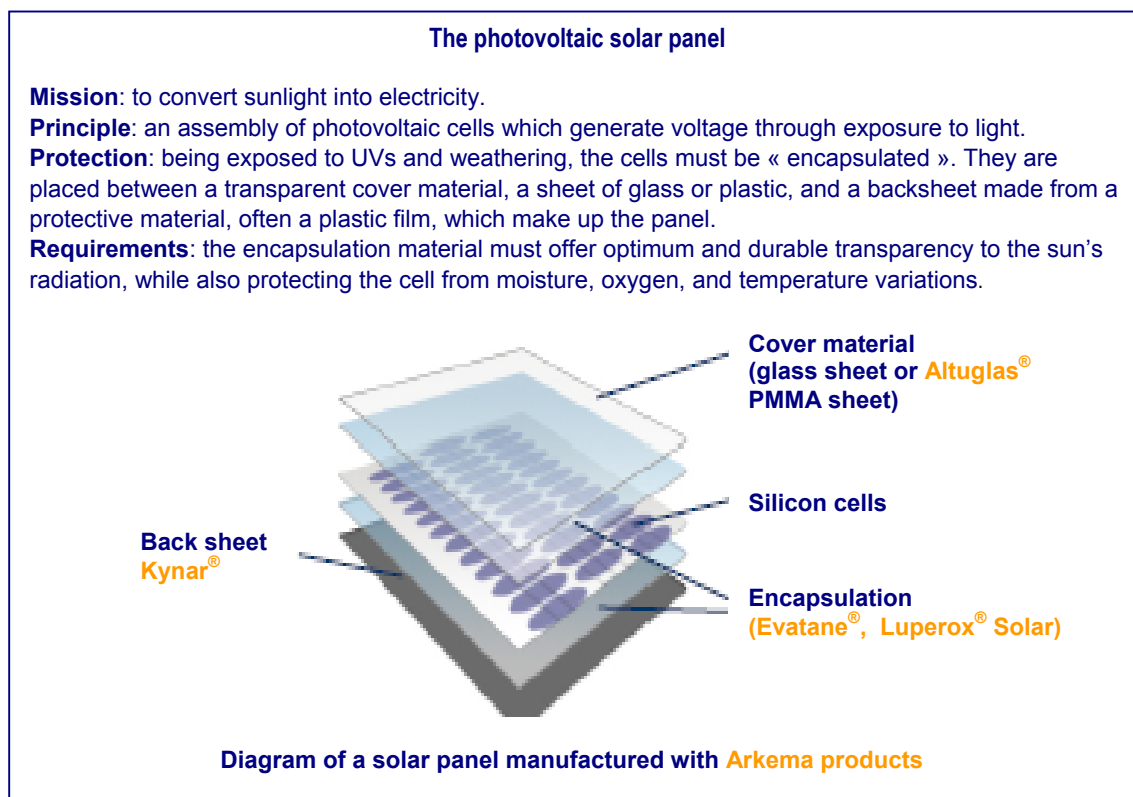
PMMA becomes totally relevant in this context: glass lenses are heavy and difficult to manufacture, while PMMA, with its excellent transparency, easy moulding, and durability, can be used to manufacture lenses that concentrate light efficiently (widely known as Fresnel lenses) and so help enhance the effectiveness of photovoltaic panels while reducing their cost as a smaller amount of silicon is needed.

PMMA lenses are already used in the medical and automotive sectors. However, in the case of solar panels, PMMA needs to withstand high temperatures. Altuglas International stands out in this field as it offers a product that is unique on the market: the Altuglas® HT 121 grade which can withstand 100°C. This high temperature resistant grade with excellent dimensional stability can also be used for the manufacture of frontsheets for standard technology photovoltaic panels, replacing glass and so reducing the weight of the module.

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Altuglas International is involved in a number of research projects aimed at integrating PMMA lenses in the manufacture of solar panels.

Finally, Arkema is unveiling at the Hamburg *Photovoltaic Solar 2009* tradeshow its latest innovation dedicated to the photovoltaics market: Apolhya™ Solar, a new nanostructured thermoplastic polymer intended for the encapsulation of new generation photovoltaic modules (see press release)



More information on:

www.arkema.com/photovoltaics

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