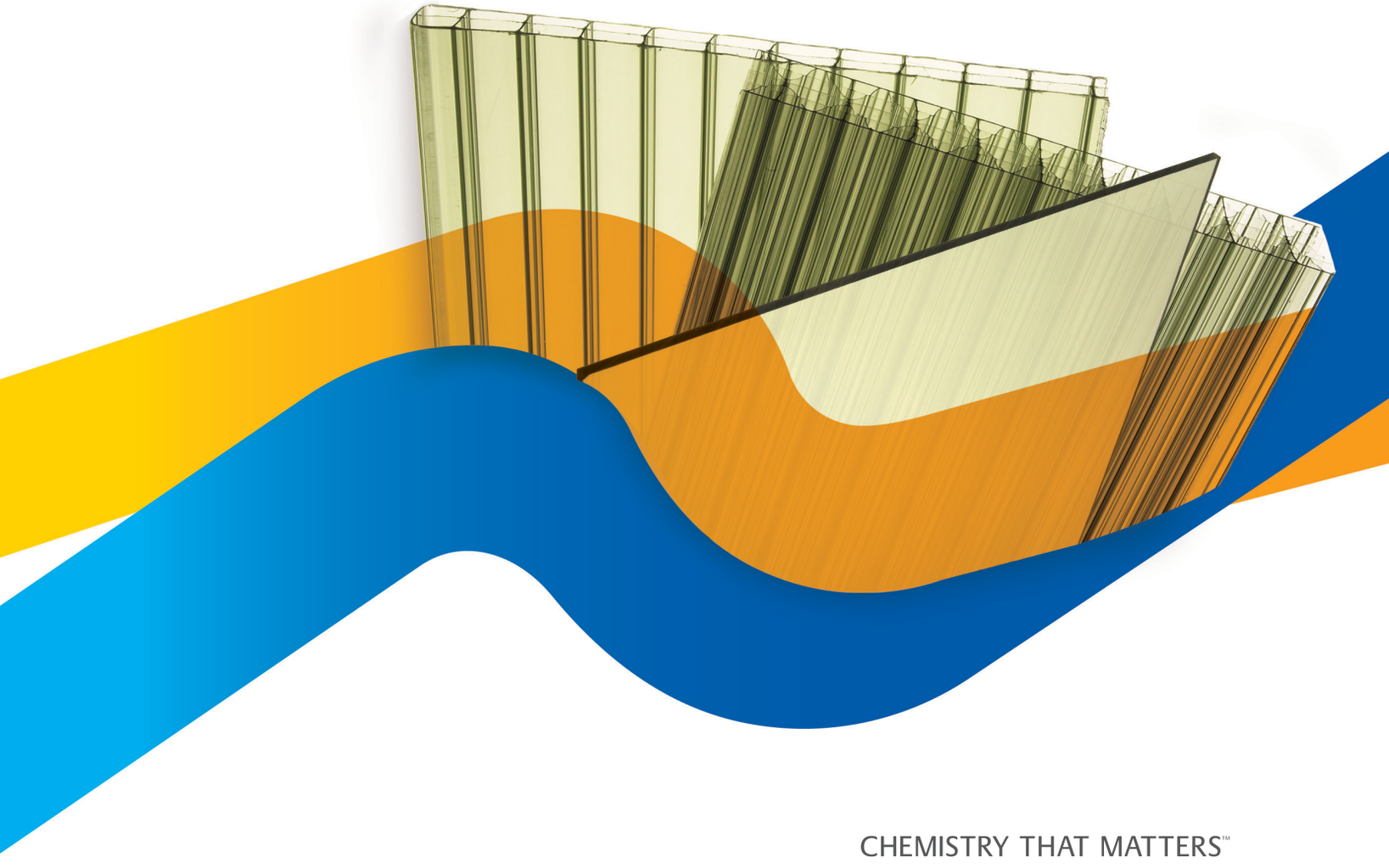
INNOVATIVE PLASTICS

LIGHT+ ENERGY

SPECIALTY FILM & SHEET

LEXAN™ Solar Control IR Sheet



CHEMISTRY THAT MATTERS™

A SABIC COMPANY

Innovative Plastics is a strategic business unit of SABIC. Founded in 1976, SABIC is today the first public, global multinational enterprise headquartered in the Middle East. Our products range from bulk commodity chemicals to highly engineered plastics for demanding applications. We are a leading producer of polyethylene, polypropylene, glycols, methanol and fertilizers and the fourth largest polyolefin producer.

SABIC's businesses are grouped into Chemicals, Performance Chemicals, Polymers, Innovative Plastics, Fertilizers and Metals. In Saudi Arabia, the Netherlands, Spain, the USA, India, China and Japan, our dedicated Technology & Innovation centers research ways to meet our customers' needs with excellence.

INNOVATING FOR CUSTOMER SUCCESS

We believe that SABIC customers deserve the full benefit of every advantage our enterprise can offer. After all, our success is defined by our customers' success. And with more than 80 years of experience pioneering advanced engineering thermoplastics, SABIC's Innovative Plastics business is positioned to help create new opportunities for growth and breakthrough applications.

We offer expertise and experience to our customers in a variety of ways:

- Material solutions to help drive innovation and market leadership.
- Design, logistics and processing expertise to spark new ideas and better efficiencies.
- Unwavering commitment to build long-term relationships with ingenuity, trust and continuous improvement.

It's what we strive for and work to deliver… a mutual benefit.

Excellence and nothing less.

LEXAN SOLAR CONTROL IR SHEET

Transparent polymer glazing reduces interior heat buildup while maintaining the highest level of light transmission.

We understand our customers' concern for top-notch energy efficiency. SABIC's family of transparent, solar-control glazing products reduces solar transmission while simultaneously offering high levels of light transmission The sheets, available in solid and multi-wall polycarbonate varieties, significantly reduce energy costs for cooling and lighting buildings.

Both solid and multiwall products are excellent candidates for roof domes, skylights, walkways, conservatories, and other buildings that require high levels of light without the excess heat. Additionally, the solid sheet product can be used for public transportation applications, such as train and bus glazing.

SOLAR CONTROL GLAZING

LEXAN Solar Control sheets give access to light while blocking heat.

Current architectural design calls for building glazings that permit high levels of natural light, both for aesthetics and to reduce energy for interior lighting. However, intensive use of glazing can lead to rapid interior heat buildup due to penetration of near-infrared (IR) radiation (solar transmission) through the glazing, especially in hot and sunny climates. This, in turn, can raise energy costs for cooling the building.

Previous solar-control glazing, the only polymer alternative, used a screen-printed coating or a co-extruded layer on one side of the sheet to absorb IR transmissions. But the coating and co-extruded layer made the glazing translucent – at best – or opaque, greatly reducing light transmission. Hence, architects who wanted to use polymer glazing had to choose between light transparency and solar control. They could not find both properties in one product unless they went to expensive solar controlled glass.

FIGURE 1

SABIC's unique proprietary resin additive in the LEXAN Solar Control IR sheet selectively separates IR waves from the visible light.

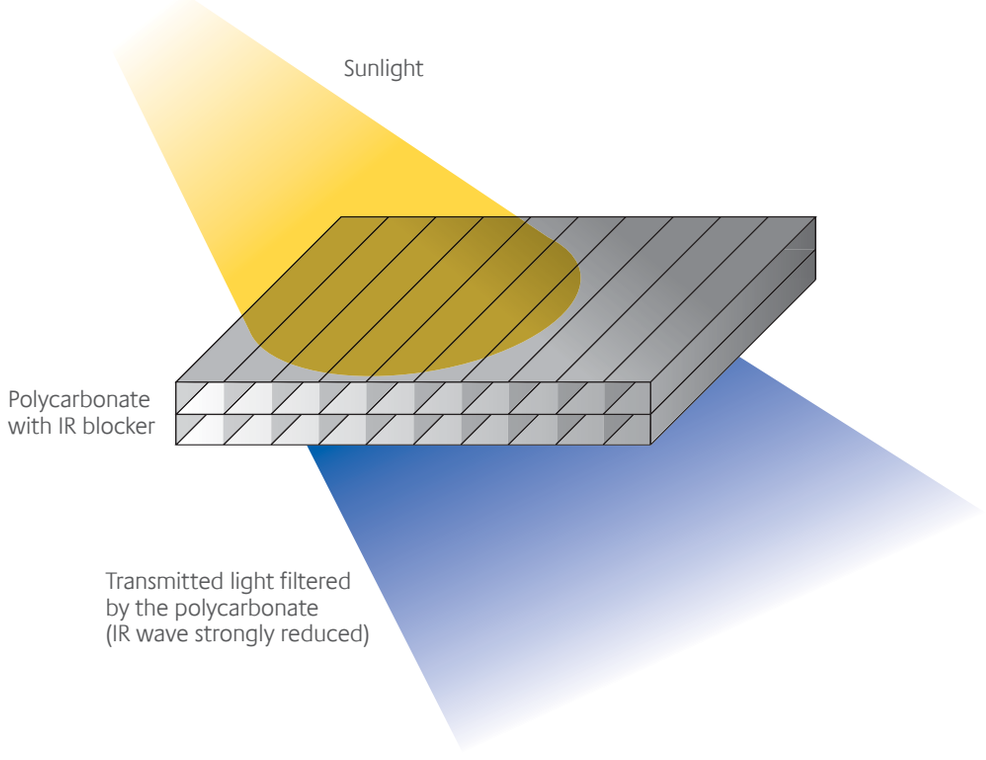


FIGURE 2

LEXAN solid and multiwall sheets have the highest transmission in the visible part of the light.

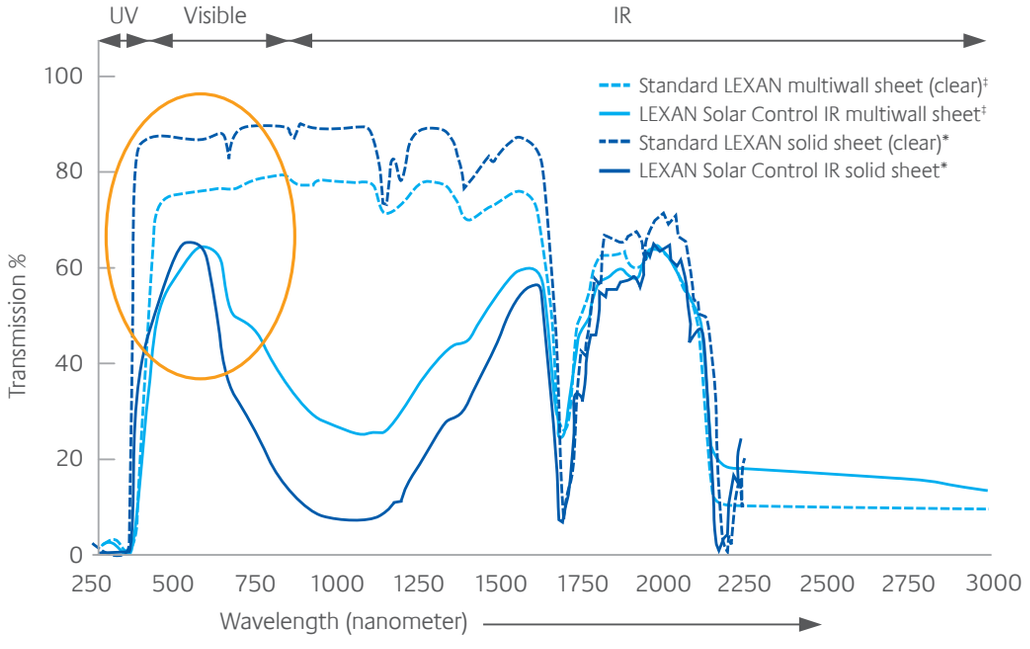
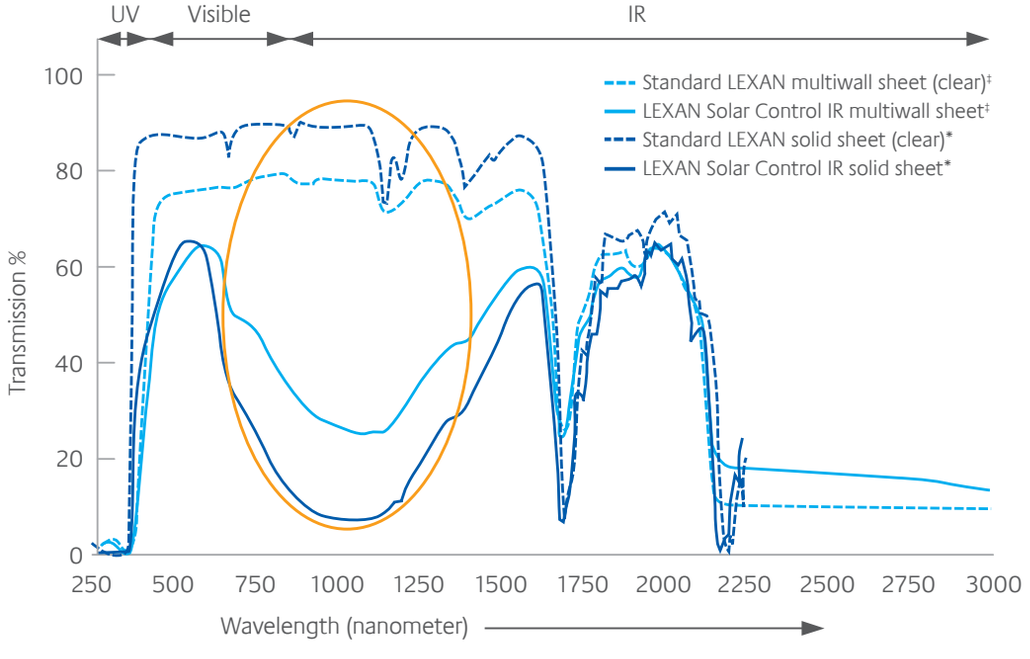


FIGURE 3

LEXAN Solar Control IR sheet selectively blocks the near infrared region of the light, therefore reduces the heat buildup.



‡ Indicates 16mm 3 walls * Indicates 3mm

BENEFITS

UP TO 40% ENERGY SAVINGS

SABIC's model-scale‡ energy consumption studies at the Welch Technology Center in India show that by using LEXAN Solar Control IR sheet, interior heat buildup can be reduced significantly, which could result in 25%-40% energy savings in a temperature controlled environment.

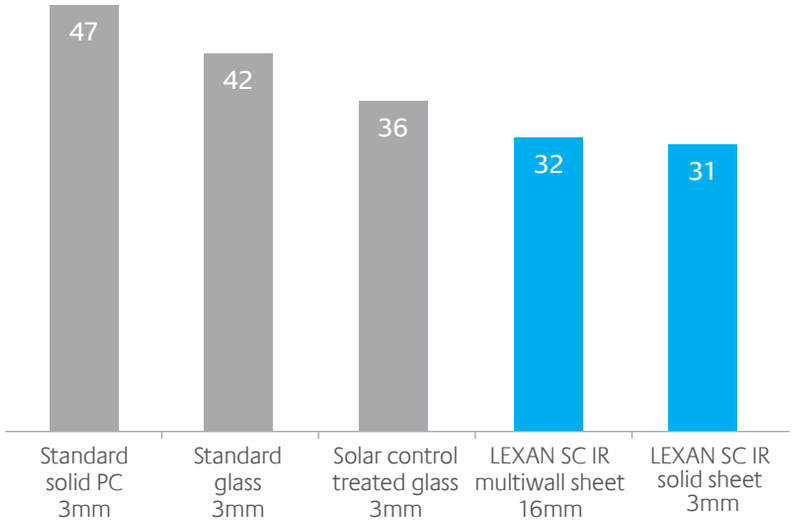
In figure 4, the relative annual energy consumption to maintain room temperature between 20 and 27 °C is shown for several materials. LEXAN Solar Control IR sheet shows the lowest energy consumption compared to other glazing solutions.

The result can vary with building design, climate, and heating/cooling equipment. Therefore, SABIC has developed a calculation tool to estimate energy savings as a function of several of those variables. Please contact Innovative Plastics Sheet & Film development engineers to get a personalized estimate of potential savings for your project.

‡ SABIC conducted a climate simulation on a model building (8 m x 6 m x 2.7 m) with a 12 m^2 window (looking at north) and 48 m^2 roof glazing surface.

FIGURE 4

Comparison of total annual cooling and heating energy usage in thousands of Kwh in a modeled building.



HEAT-MANAGEMENT GLAZING

FIGURE 5

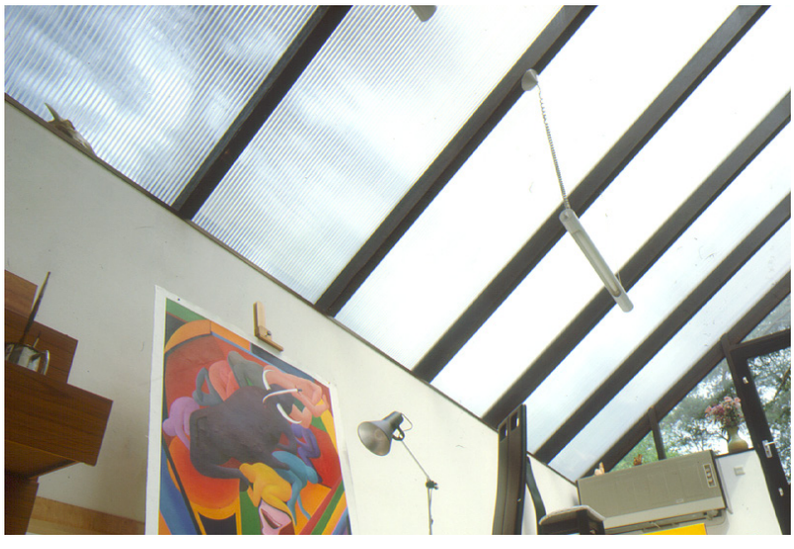
	LT	ST	LSGR	SC
Standard LEXAN solid sheet 3 mm	0.88	0.68	1.02	0.99
LEXAN Solar Control IR solid sheet 3 mm	0.61	0.51	1.21	0.58
Glass 3 mm	0.91	0.86	1.06	1.0
Low E‡ glass 3 mm	0.85	0.63	1.35	0.72
Standard clear LEXAN multiwall sheet 16 mm*	0.74	0.78	0.94	0.89
LEXAN Solar Control IR multiwall sheet 16 mm*	0.55	0.52	1.05	0.60

‡ Low-emission glass (Low-E) is a clear glass that has been coated with a microscopically-thin coating of metal oxide

* Measurement is performed according to ISO 9050 (NEN - EN410)

Comparison of light transmission (LT), solar transmission (ST) and light to solar gain ratio (LSGR). To maintain high interior lighting, you need a high light transmission (LT) value. On the other hand, to reduce heat entering the building, you need to get a low solar transmission (ST) and therefore, having a solar factor as high as possible (SF>1). SC is shading coefficient = ST/0.87.

$$\text{Light to solar gain ratio (LSGR)} = \frac{\text{Total light transmission (LT)}}{\text{Total solar transmission (ST)}}$$



LEXAN SOLAR CONTROL IR SHEET REDEFINES HEAT-MANAGEMENT GLAZING

SABIC's heat-management glazing makes use of an innovative technology platform. Instead of being translucent or opaque as previous products, the LEXAN Solar Control IR sheet materials are transparent with a light green tint, which blocks near-infrared heat but lets in high levels of light.

Proprietary resin additives are used to manage heat instead of expensive and fragile coatings, which can be damaged during handling and installation. Because the additive technology is inherent to the polymer, solar control properties are permanent and sheets are UV protected on both sides, which can help installers reduce losses due to installation errors.

PRODUCT AVAILABILITY

The solid sheet product is called LEXAN EXELL D™ Solar Control IR sheet, and the multi-wall product is called LEXAN THERMOCLEAR™ Solar Control IR sheet.

The LEXAN Solar Control IR sheet products are available in all standard gauges and dimensions. As with conventional solid and multi-wall LEXAN sheet, this glazing offers outstanding design freedom due to its ability to be cold formed and/or thermoformed (vacuum or blow form) without losing impact or weathering properties. Both versions come with a 10-year limited written warranty against reduction of light or solar transmission properties, yellowing, and breakage due to hail impact. Please contact your local SABIC sales office to get more information.

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