

SABIC
Innovative
Plastics™

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Lexan* Solar Control sheet family



Let light into your life
...not heat!

Sharing our futures

New transparent polymer glazing to reduce interior heat build up while maintaining the highest level of light transmission

SABIC Innovative Plastics' new family of transparent, solar-control glazing products in solid and multi-wall polycarbonate sheets significantly reduce solar transmission while simultaneously offering high levels of light transmission, helping save energy costs for cooling and lighting buildings.

Both solid and multiwall products can be excellent candidates for roof domes, skylights, walkways, conservatories and other buildings where it is desirable to admit high levels of light while keeping excess heat to a minimum. Additionally, the solid sheet product can be used for public transportation applications, such as train and bus glazing. It's unlikely that other thermal-management, polymer-based glazing provides both the level of effectiveness in blocking (absorbing) infrared heat and high transparency to visible light as these new SABIC Innovative Plastics products.

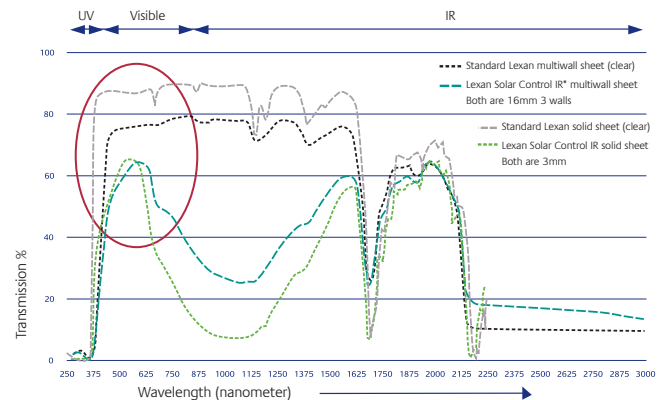


New Lexan® solar control solid and multiwall sheet controls heat and allows high level of light

Current architectural design calls for building glazings that permits high levels of natural light, for both 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.

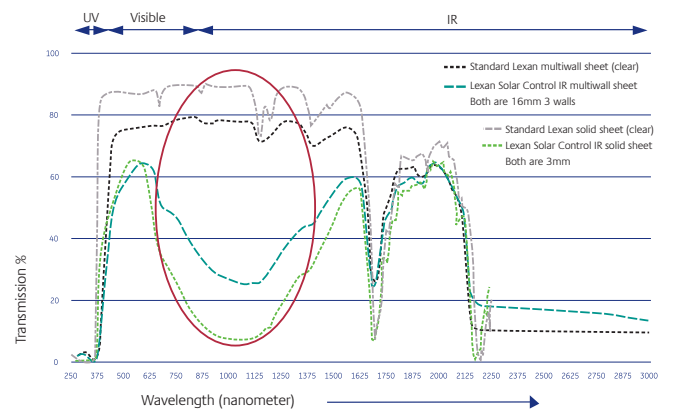
Previous solar-control glazing, the only polymer alternative, used a screen-printed coating or a co-extruded layer on one side of the sheet to absorb IR transmissions. But the coating and co-extruded layer made the glazing translucent – at best – or opaque, greatly reducing light transmission. Hence, 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



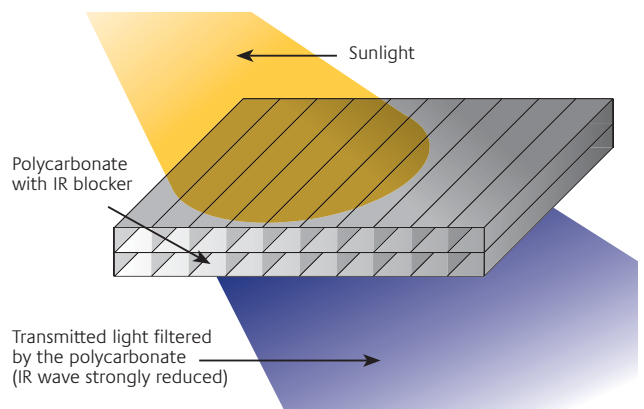
Lexan solid and multiwall sheets have the highest transmission in the visible part of the light.

Figure 2



Lexan Solar Control IR sheet selectively blocks the near infrared region of the light, therefore reduces the heat build up.

Figure 3



SABIC Innovative Plastics' unique proprietary resin additive in the Lexan Solar Control IR sheet selectively separates IR waves from the visible light.

Up to 40% energy savings

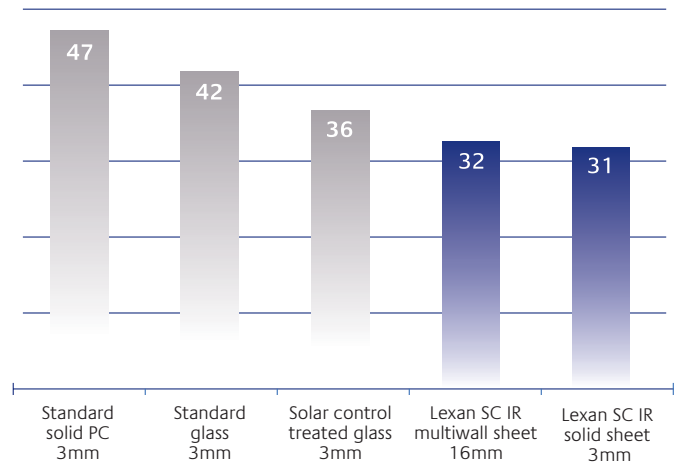
SABIC Innovative Plastics' model-scale[†] energy consumption studies at the Welch Technology Center in India show that by using Lexan[®] Solar Control IR[®] sheet, interior heat build up can be reduced significantly, which could result in 25%-40% energy savings in a temperature controlled environment.

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.

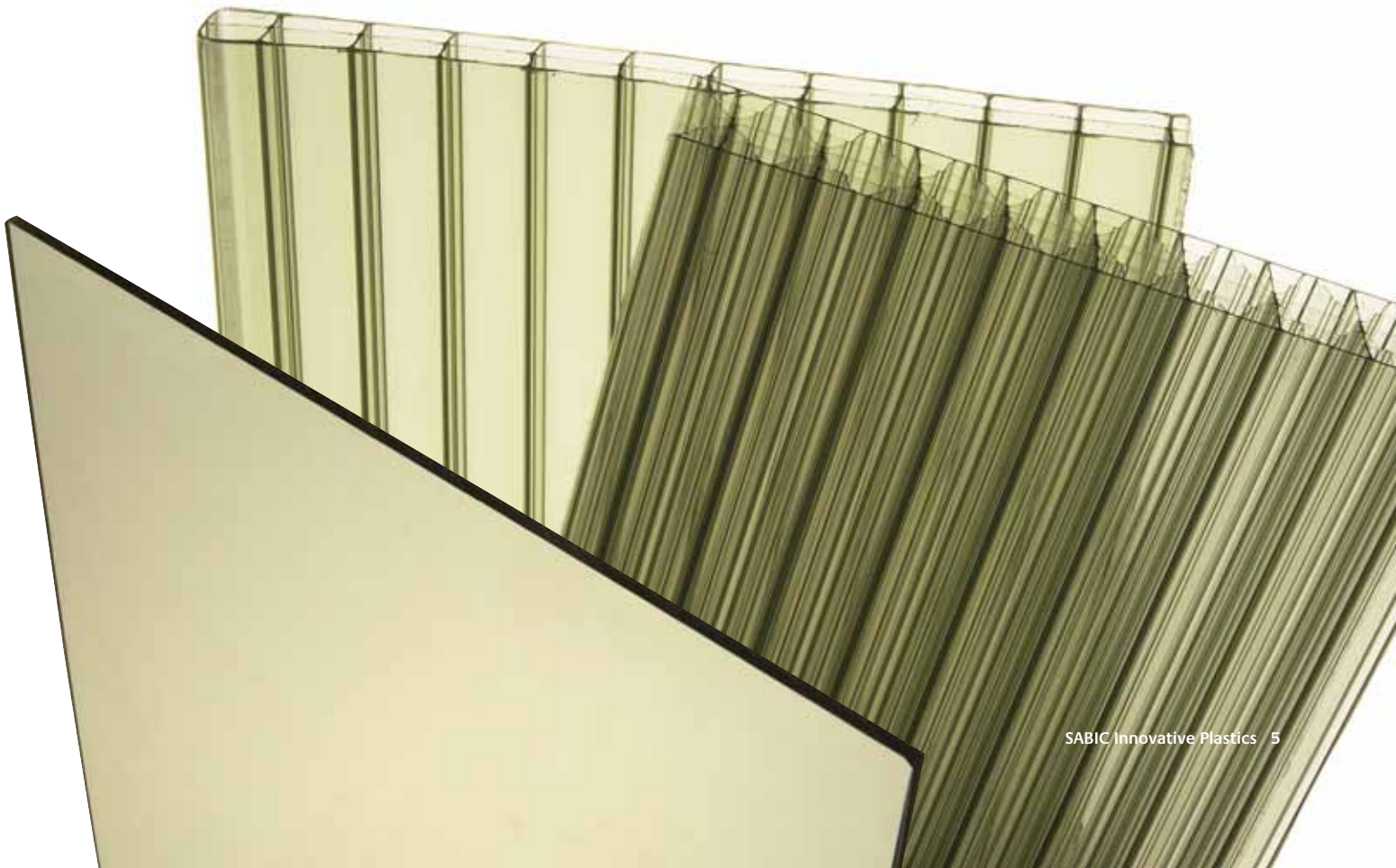
The result can vary with building design, climate and heating/cooling equipment. Therefore SABIC Innovative Plastics has developed a calculation tool to estimate energy savings as a function of several of those variables. Please contact SABIC Innovative Plastics Sheet & Film development engineers to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

[†] SABIC Innovative Plastics conducted a climate simulation on a model building (8m x 6m x 2,7m) with an 12m² window (looking at north) and 48m² roof glazing surface.

Figure 4



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



Lexan* Solar Control IR* sheet brings the next generation of heat-management glazing

SABIC Innovative Plastics' new heat-management glazing makes use of a new and 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 new Lexan Solar Control IR sheet products are available in all standard gauges and dimensions. As with conventional solid and multi-wall Lexan sheet, this new 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 Innovative Plastics sales office to get more information.

Figure 5

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

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



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