



LEXAN® Solar Control sheet family

**GE Advanced Materials  
Structured Products**

## LEXAN Solar Control IR sheet brings the next generation of heat- management glazing

GE Advanced Materials' new heat-management glazing makes use of an entirely 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 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 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 warranty against reduction of light or solar transmission properties, yellowing, and breakage due to hail impact. Please contact your local GE Advanced Material sales office to get more information.

	LT	ST	SF	SC
Standard LEXAN® EXELL® D 112 sheet 3mm	0,88	0,68	1,02	0,99
LEXAN® EXELL® D Solar Control IR 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® THERMOCLEAR® sheet 16mm	0,76	0,82	0,93	0,94
LEXAN® THERMOCLEAR® Solar Control IR sheet 16mm	0,59	0,51	1,14	0,59

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

**Fig. 5:** Comparison of light transmission (LT), solar transmission (ST) and solar factor (SF). 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.

$$\text{Solar Factor} = \frac{\text{Total Light Transmission}}{\text{Total Solar Transmission}}$$

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# Let light into your life ...not heat!



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GE imagination at work 

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# LEXAN® Solar Control IR sheet

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

GE Advanced Materials' 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. 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.

Both products are 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 is being considered for public transportation applications, such as train and bus glazing. No 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 GE materials.

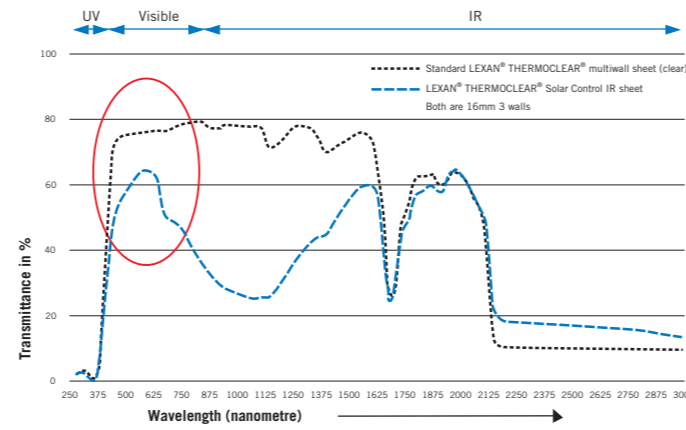
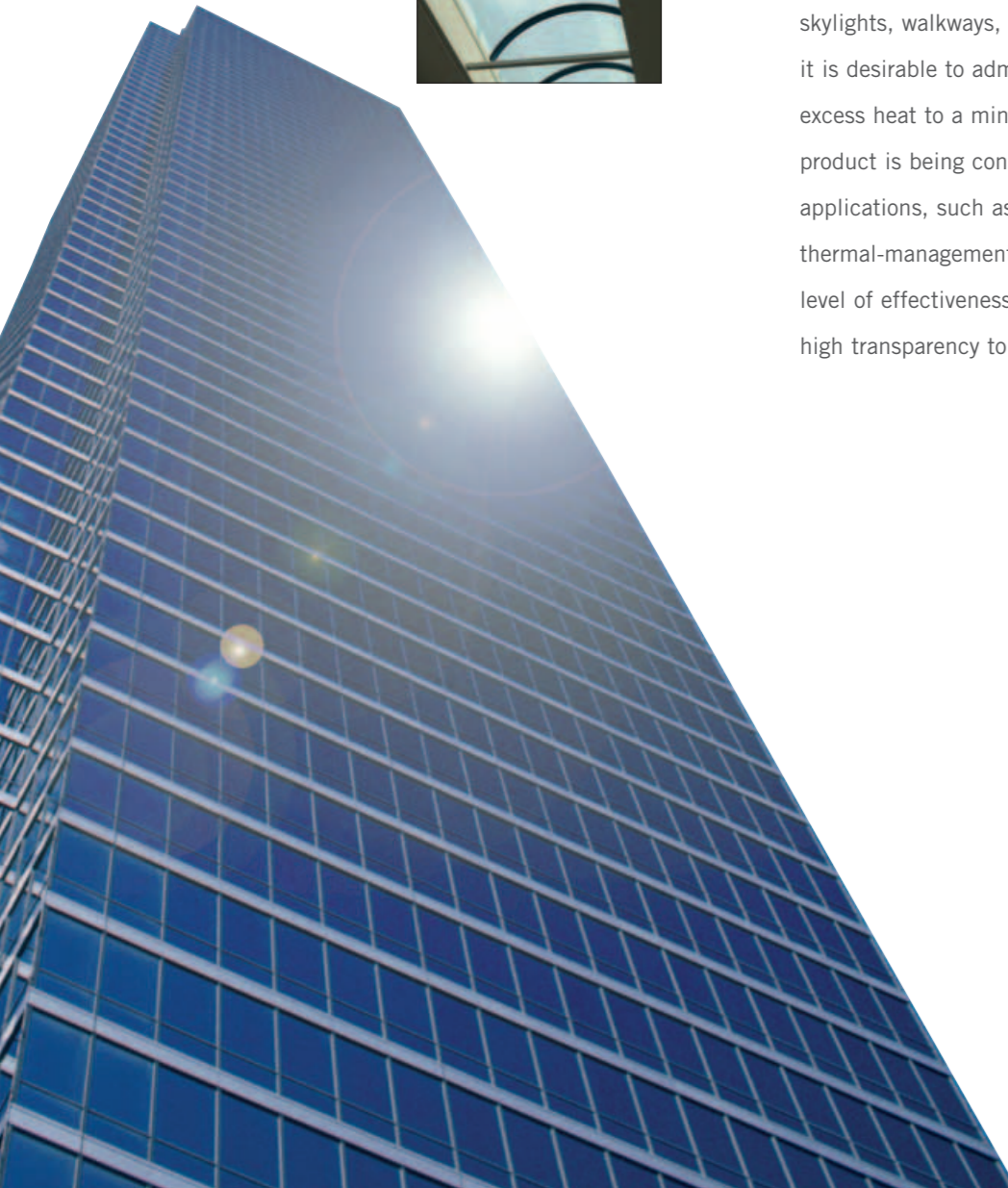
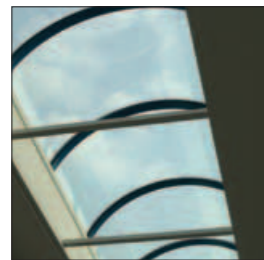


Fig.1: LEXAN® solid and multiwall sheets have the highest transmission in the visible part of the light.

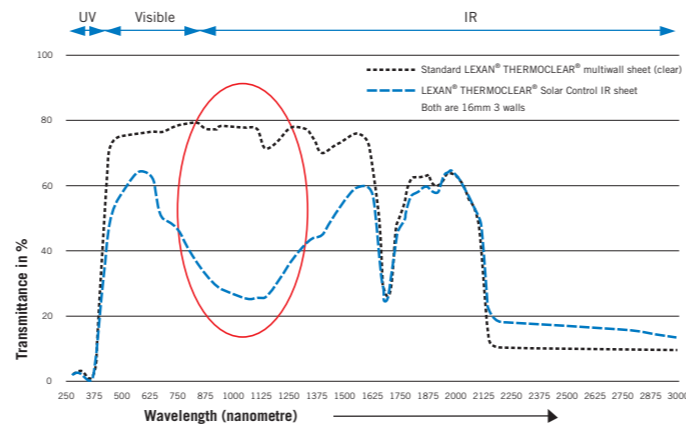


Fig.2: LEXAN® Solar Control IR sheet selectively blocks the near infrared region of the light, therefore reduces the heat build up.

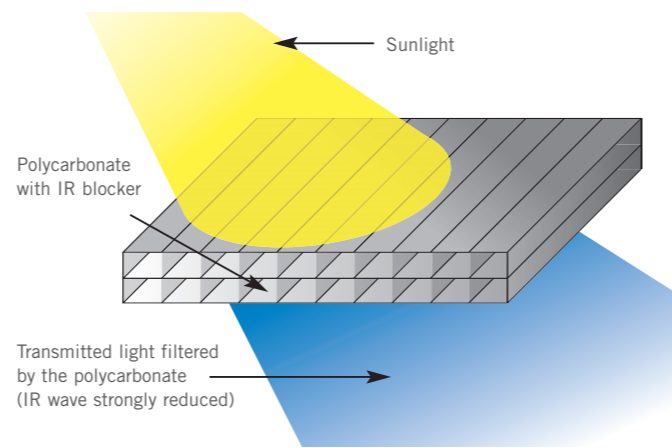


Fig.3: GE Advanced Materials' unique proprietary resin additive in the LEXAN Solar Control IR sheet selectively separates IR waves from the visible light.

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 polymer solar-control glazing, the only available 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.

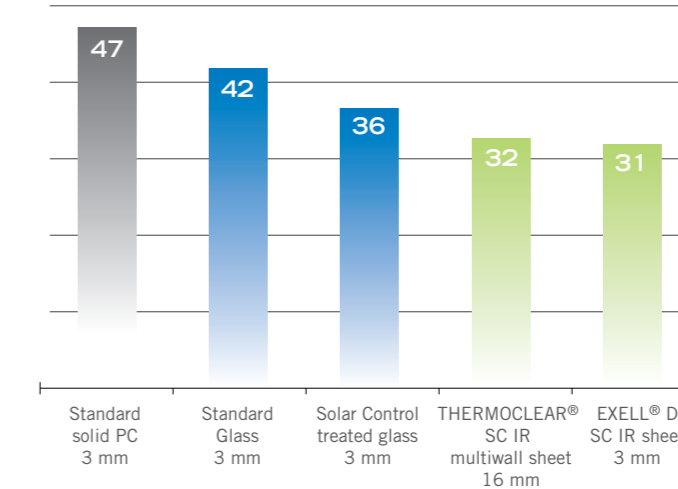


Fig.4: Comparison of total annual cooling and heating energy usage in thousands of Kwh in a modeled building.

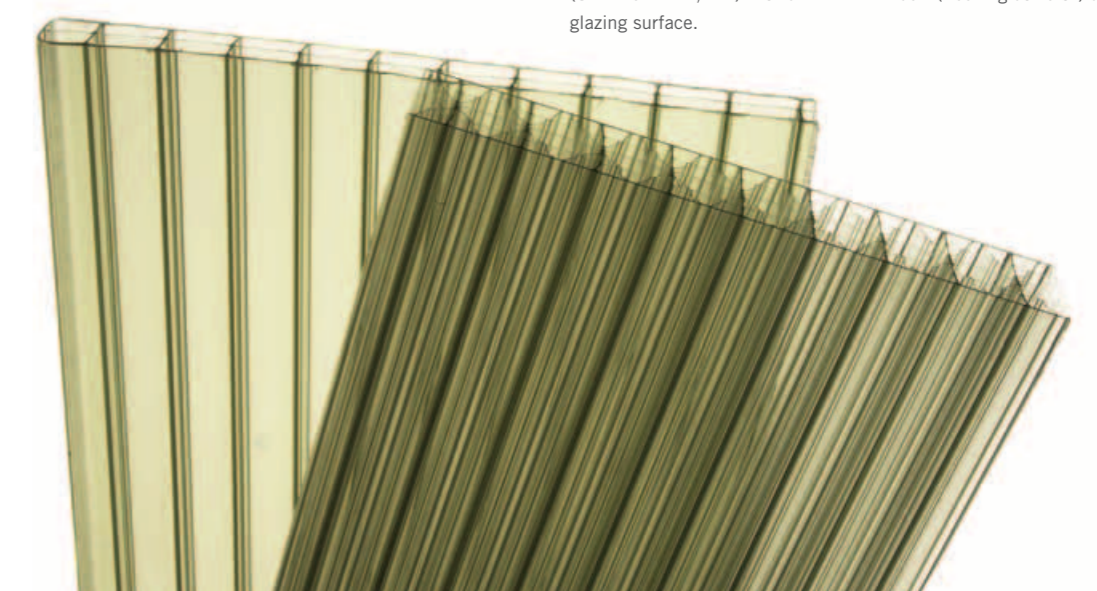
## Benefits

### 25-40% Energy Savings

GE Advanced Materials' 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 dramatically, resulting in 25%-40% energy savings in a temperature controlled environment.

In Figure 5, 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 according to building design, climate, and heating/cooling equipment. Therefore GE Advanced Materials has developed a calculation tool to estimate energy savings as a function of several of those variables. Please contact GE Advanced Materials Structured Products development engineers to get a personalized estimate of potential savings for your project.



\* GE Advanced Materials conducted a climate simulation on a model building (8 m x 6 m x 2,7 m) with an 12 m<sup>2</sup> window ( looking at north) and 48m<sup>2</sup> roof glazing surface.