

Description

Lexan* Thermoclear* Solar Control IR sheet grades are members of the Lexan Thermoclear* sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. SABIC Innovative Plastics' new heat management glazing makes use of a new and innovative technology platform of solar energy absorption. The Lexan Thermoclear Solar Control IR sheets are transparent with a green (GN), blue (BL) or grey (GY) tint, which blocks near-Infrared light but lets in high levels of visible light. Lexan Solar Control IR multiwall sheet offers: high light transmission combined with low solar transmission, both sides UV protection, various structures (2/3/5/6 walls, X structures), long-term weather resistance and high impact strength.

Typical Property Values ♦

Grade-Color	Gauge (mm)	Weight (kg/m ²)	Sound reduction value [†] (dB)	U-value [‡] (W/m ² K)	Hail impact Test [§] (m/sec)	LT* D65 (% LT)	DST* (%DST)	TST* (%TST)	SHGC #	LSGR	SC
2UVIR62R13 SC IR Green	6	1.3	17	3.56	>21	66	47	60	0.60	1.10	0.69
2UVIR82R15 SC IR Green	8	1.5	18	3.26	>21	65	47	61	0.61	1.07	0.70
2UVIR102R17 SC IR Green	10	1.7	19	3.02	>21	65	45	60	0.60	1.08	0.69
SC IR Blue	10	1.7	19	3.02	>21	52	44	58	0.58	0.90	0.67
SC IR Grey	10	1.7	19	3.02	>21	20	22	42	0.42	0.48	0.48
2UVIR105R175 SC IR Green	10	1.7	20	2.39	>21	48	34	48	0.48	1.08	0.56
2UVIR163T27 SC IR Green	16	2.7	21	2.27	>21	55	36	52	0.52	1.06	0.60
SC IR Blue	16	2.7	21	2.27	>21	40	32	49	0.49	0.82	0.56
2UVIR163X29 SC IR Green	16	2.9	22	2.10	>21	46	29	45	0.45	1.02	0.52
SC IR Blue	16	2.9	22	2.10	>21	29	24	32	0.32	0.91	0.37
SC IR Grey	16	2.9	22	2.10	>21	22	18	30	0.30	0.73	0.34
2UVIR166R27 SC IR Green	16	2.7	22	1.84	>21	42	29	45	0.45	0.94	0.52
2UVIR205R33 SC IR Green	20	3.3	22	1.77	>21	46	29	46	0.46	1.00	0.53
2UVIR205X32 SC IR Green	20	3.2	22	1.69	>21						
SC IR Blue	20	3.2	22	1.69	>21	24	20	37	0.37	0.65	0.43
2UVIR256R35 SC IR Green	25	3.5	23	1.45	>21	41	26	44	0.44	0.93	0.50
SC IR Blue	25	3.5	23	1.45	>21	20	17	36	0.36	0.56	0.42
SC IR Grey	25	3.5	23	1.45	>21	12	11	30	0.30	0.40	0.34
2UVIR255X34 SC IR Green	25	3.4	23	1.51	>21	38	25	44	0.44	0.86	0.51
2UVIR325X38 SC IR Green	32	3.8	24	1.32	>21	36	23	42	0.42	0.86	0.49
SC IR Blue	32	3.8	24	1.32	>21	20	16	35	0.35	0.57	0.40
SC IR Grey	32	3.8	24	1.32	>21	12	11	30	0.30	0.40	0.34

♦ These property values have been derived from Lexan* resin data for the material used to produce this sheet product

† Sound reduction value based on SABIC Innovative Plastics calculated values according DIN 52210-75

‡ U-values based on SABIC Innovative Plastics calculated values according ISO 10077 (EN673)

§ Hail simulation test developed by TNO, the Netherlands, artificial hailstones of 20 mm diameter are shot at the sheet at min. speed of 21 m/sec.

* LT (Light Transmission), DST (Direct Solar Transmission) and TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples

TST (Total Solar Transmission) divided by 100 equals Solar Heat Gain Coefficient (SHGC) or g-value.

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Definitions

Light Transmission D65 (% LT):

Percentage of the incident visible light that passes through the sheet.

Direct Solar Transmission (%DST):

Percentage of incident solar radiation that passes directly through the sheet.

Total Solar Transmission (%TST):

The percentage of incident Solar radiation transmitted by the sheet which includes the direct Solar Transmission plus the part of the Solar Absorption reradiated inward.

Solar Heat Gain Coefficient (SHGC):

or g-value is the total solar energy that enters the interior of a building, divided by 100.

Shading Coefficient (SC):

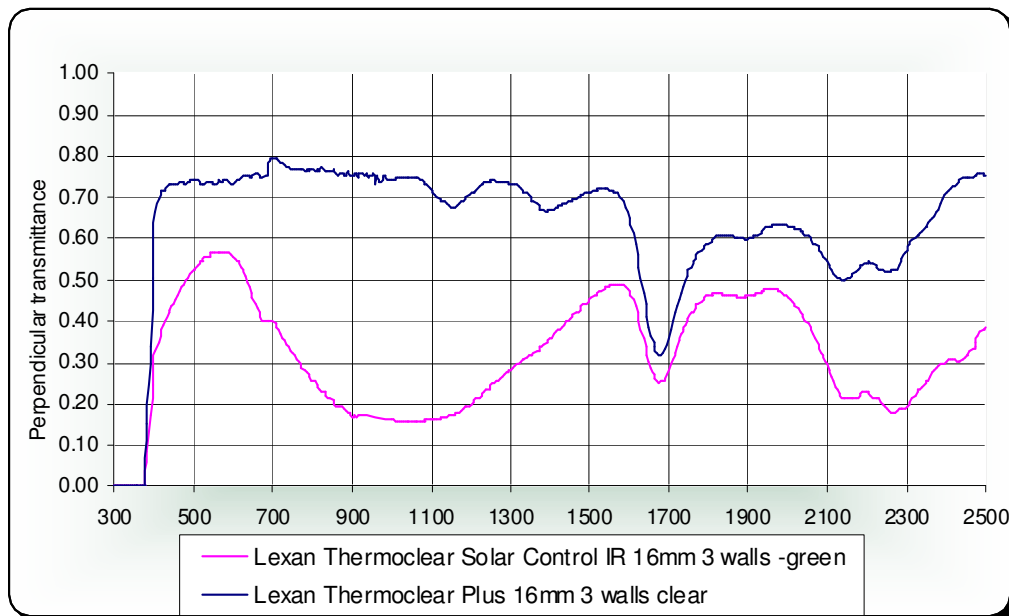
The ratio of the total solar radiation transmitted by a given material to that transmitted by normal 3 mm glass, whose light transmission is 87%. $SC = \%TST/87$.

Light to Solar Gain Ratio (LSGR):

The ratio between total light transmission (LT) and the total solar transmission (TST).

Light Transmission

As shown on the next figure, Lexan* Thermoclear* Solar Control IR sheet has a very low level of solar transmission while keeping high levels of visible light transmission.



Light Transmission Spectrum of Lexan Thermoclear Plus sheet and Lexan Thermoclear Solar Control IR sheet.

Solar Transmission

The Near Infra-red region of the light carries the largest part of the solar heat. Lexan Thermoclear Solar Control IR sheet contains a proprietary additive which selectively absorbs this part of the light spectrum while keeping the visible part to a high level.

The figure presented on previous page, shows the light spectrum of a standard Lexan Thermoclear (Clear color) sheet and of Lexan Thermoclear Solar Control IR sheet. By absorbing a large part of the Near Infra Red region, Lexan Thermoclear Solar Control IR sheet significantly reduces the solar heat build-up, helping to maintain comfortable interior temperatures and reduces air conditioning cost during hot days.

UV Resistance

Despite transmitting visible light very well, Lexan Thermoclear Solar Control IR sheet is almost opaque to radiation in the UV and far infra-red region. This useful shielding property can prevent discoloration of sensitive materials such as fabrics or other organic materials placed under or behind Lexan Thermoclear Solar Control IR sheet glazing in, for example, a factory warehouse, museum or shopping centre.

The complete Lexan Thermoclear Control IR sheet range features a proprietary both sides surface treatment designed to protect the sheet against the degrading effects of ultra-violet radiation in natural sunlight.

Warranty

SABIC Innovative Plastics offers a Ten (10) Year Limited Written Warranty on Lexan Thermoclear Solar Control IR sheet covering discoloration, loss of light transmission and loss of strength due to weathering. See warranty for exact details.

Thermal insulation

The multi-wall structure of Lexan Thermoclear Solar Control IR sheet offers significant advantages where thermal insulation is a major consideration. The hollow form provides excellent insulation characteristics with heat losses significantly lower than mono-wall glazing materials.

Fire Test Performance

Lexan Thermoclear Solar Control IR sheet has good fire behavior characteristics, and receives high ratings in several major European fire performance tests. More detailed information is available from your local SABIC Innovative Plastics Service Center or authorized dealer.

Sound insulation

The sound insulation characteristics of a material are largely pre-determined by its stiffness, mass and physical construction. According to DIN 52210-75, the maximum obtainable sound is 24dB.

Impact Strength

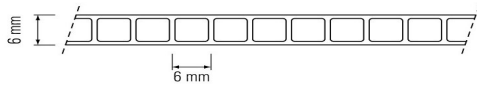
Lexan Thermoclear Solar Control IR sheet has outstanding impact performance over a wide temperature range, -40°C to 120°C, and also after prolonged outdoor exposure.

Hail Simulation

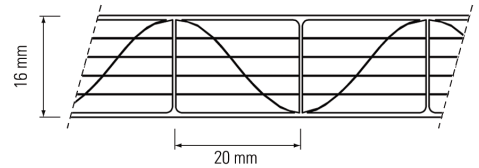
As roofing material Lexan Thermoclear Solar Control IR sheet is subjected to the extremes of weather; like storms, hail, wind, snowfall and ice formation. Under these conditions, the product is virtually unbreakable and is able to accommodate the subsequent temperature change to sunny conditions without breaking or buckling. It should be noted that when glass and acrylic are tested their failure characteristics are typical brittle, whilst Lexan Thermoclear Solar Control IR sheet shows a ductile deformation one, e.g. small indentations. SABIC Innovative Plastics offers a Ten Year (10) Limited Written Warranty on Lexan Thermoclear Solar Control IR sheet covering loss of strength or impact due to weathering.

Structures and nomenclatures

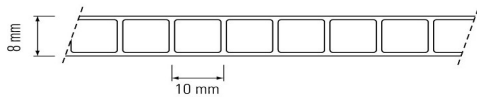
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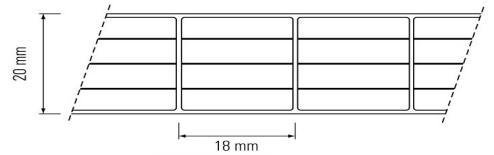
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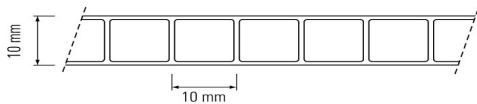
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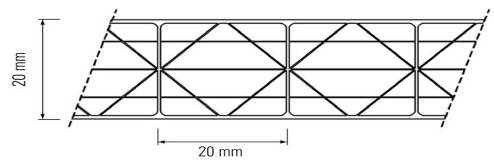
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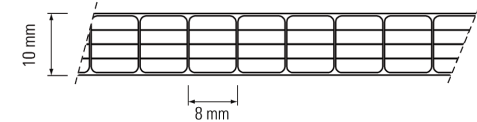
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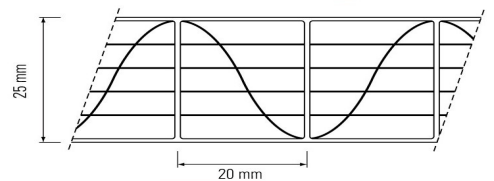
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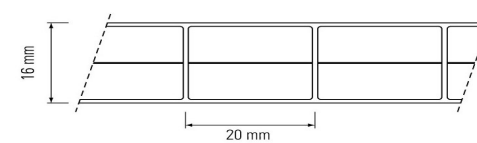
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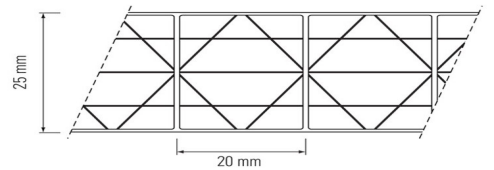
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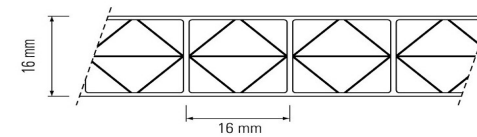
2UVIR163T27



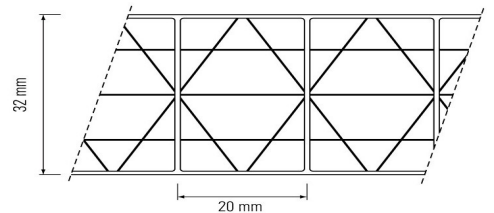
2UVIR255X34



2UVIR163X29



2UVIR325X38



General Guidelines

Storage

Lexan Thermoclear Solar Control IR sheet should be stored and protected against atmospheric influences like sun, rain, etc. Care should be exercised when handling and transporting Lexan Thermoclear Solar Control IR sheet in order to prevent scratches on the panel surface and damage to the panel edges.

Cleaning

SABIC Innovative Plastics recommends the following cleaning agent SUMALIGHT D12 from Johnson Diversey Lever (check Technical manual for further details). Small surfaces can be cleaned with luke warm water, using a soft sponge and a solution of mild soap. Do not use any corrosive materials or chemicals to clean Lexan Thermoclear Solar Control IR sheets. Using any other cleaning agents than the recommended one must have the prior approval of SABIC Innovative Plastics in order to validate the Lexan Thermoclear Solar Control IR sheet warranty.

Chemical Resistance

Neoprene, EPT or EPDM rubbers with an approximate Shore Hardness of A65 are recommended. When using glazing compounds it is essential that the sealant system accepts a certain amount of movement to allow for thermal expansion, without loss of adhesion to the frame or sheet. Silicone sealants are generally recommended for use with Lexan Thermoclear Solar Control IR sheet. It is strongly advised when using sealing compounds to check before the compatibility and performance before use.

Sawing

Lexan Thermoclear Solar Control IR sheet can be easily and accurately cut with standard workshop equipment. This includes common circular, hand and hacksaws. Saw dust should be blown out of the channels using clean compressed air. Circular saw blade should be fine-toothed panel blades. When hand or power hacksaws are used, the sheet should be clamped to the worktable to avoid undesirable vibration.

Thermal expansion allowance

Since Lexan Thermoclear Solar Control IR sheet has a greater coefficient of linear thermal expansion than that of traditional glazing materials, care should be taken to allow for free expansion of the sheet to prevent bowing and internal stress build up. Thermal expansion allowance must be made for both the length and width of the Lexan Thermoclear Solar Control IR sheet. In general, thermal expansion of the sheet is approximately 3 mm per linear meter.



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