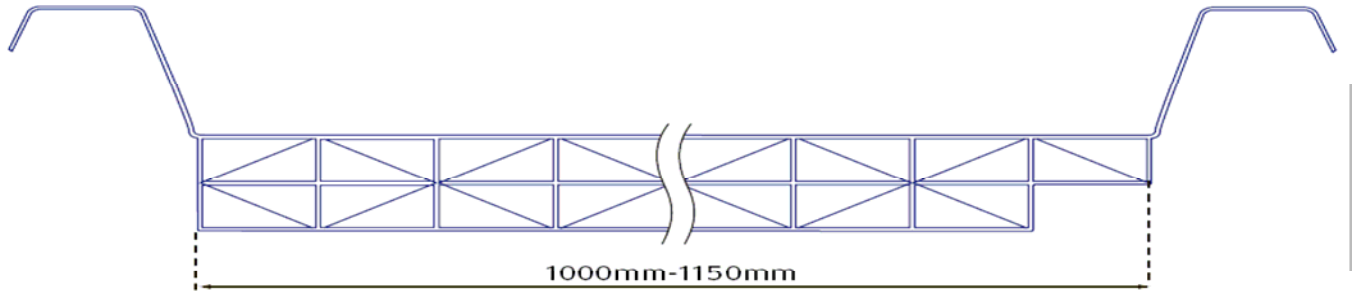


Description

Lexan* polycarbonate sheet is a unique engineering thermoplastic which combines a high level of mechanical, optical and thermal properties. When extruded in multi-wall sheet form, with side wings, its optical and impact properties in particular render this material highly suitable for industrial roof glazing with an excellent match with existing metal sandwich panels.

Lexan Flexible Thermopanel sheet, is an impact resistant, energy- saving multi-wall transparent sheet matching specific insulating metal sandwich panels.



Lexan Flexible Thermopanel Sheet offers:

- Unique three wall with X-structure
- Insulated Flexible Thermopanel with excellent match to metal sandwich panels
- UV protected outer surface
- Good light transmission and light diffusion characteristics
- Extremely high stiffness
- Excellent thermal insulation
- High impact strength
- Long-term warranted weather resistance
- Easy and fast installation
- Available in Clear and Opal White

Property Profile	Value	Test Method
Panel width ctc	1000 ± 5.0mm 1050 ± 5.0mm 1100 ± 5.0mm 1150 ± 5.0mm	
Standard length	≤6 meter -0+20 mm >6 meter -0+30 mm	
Panel thickness	30mm ±0.8 mm	
Weight	3.6 kg/m ² ±5%	
Hail impact	diam 20 mm V _z ≥ 21m/sec	TNO Test
Temperature resistance	-40 up to +100°C	UL 746 B
U-Value	1.55 W/m ² K	ISO10077 (EN673)
Coefficient of linear	7 x 10 ⁻⁵ 1/°C	DIN 53752
Fire Rating	B, S1, d0	EN13501

Typical Property Values ♦

Lexan Flexible Thermopanel Sheet	Gauge (mm)	Weight (kg/m ²)	Sound Red. value [‡] (dB)	U-Value [‡] (W/m ² K)	Hail Impact Test [¶] (m/sec)	LT* D65 (%LT)	DST [#] (%DST)	TST [#] (%TST)	SHGC [#]	LSGR [#]	SC [#]
Clear	30	3.6	23	1.55	>21	67	63	70	0.70	0.96	0.88
Opal White	30	3.6	23	1.55	>21	63	60	67	0.67	0.94	0.77

Color	Color number
Clear	112
Opal White	WH7A092X

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

‡ Sound reduction values based on Sabic calculated values according DIN 52210-75

‡ U-values based on Sabic 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) 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 an object which includes the direct Solar Transmission plus the part of the Solar Absorption reradiated inward.

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.

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).

Impact Strength

Lexan Flexible Thermopanel sheet has outstanding impact performance over a wide temperature range of -40°C to +100°C. The product has been shown capable of withstanding the extremes of weather: storms, hailstones, snowfall and ice formation.

Hail simulation

As a industrial roof glazing material Lexan Flexible Thermopanel sheet is subject to extremes of weather; storms, hailstones, wind, snowfalls and ice formation. Under these conditions, the product is virtually unbreakable and is able to withstand the subsequent temperature change to sunny conditions without breaking or buckling. In a test developed by the Dutch testing Institute TNO, samples of Lexan Flexible Thermopanel sheet have been subjected to simulated hailstones of varying diameters without significant damage. Polyamide balls of varying diameters are shot at the surface of the Lexan Flexible Thermopanel sheet sample using a pressurized air gun.

In practice, hailstones with a diameter of 20 mm can reach a terminal velocity of around 21m/s. Under these conditions, traditional roof glazing materials such as glass and acrylic fails.

It should be noted that when the glass and the acrylic are tested their failure characteristics are typically brittle, whilst the Lexan Flexible Thermopanel sheet shows ductile behavior: upon impact the ball will leave indentations but the sheet will not break.

Hail Simulation Test Results

Material	Velocity with ball diameter 20 mm
Acrylic multi-wall sheet t=16mm	7-14 m/s
Float glass t=4 mm	10 m/s
Lexan Flexible Thermopanel sheet t=30 mm	≥21 m/s
Equilibrium velocity of hail	21 m/s

SABIC Innovative Plastics, Specialty Film & Sheet offers a Ten (10) Years Limited Written Warranty* on Lexan Flexible Thermopanel sheet covering loss of strength or impact due to weathering.

Warranty

SABIC Innovative Plastics, Specialty Film & Sheet offers a Ten (10) Years Limited Written Warranty on Lexan Flexible Thermopanel sheet covering discoloration, loss of light transmission and loss of impact strength due to weathering as more specifically defined in such warranty. Please consult SABIC Innovative Plastics, Specialty Film & Sheet Sales Office for more details.

Light / Solar transmission properties

Solar heat gain within a building is caused by heat input from radiation emitted from the sun. Sunlight entering the building heats the air both directly and through absorption by the framework, furniture etc. and is released as infra-red energy. In combination with the insulating properties of Lexan Flexible Thermopanel sheet, this prevents heat escaping faster than it is created causing a temperature increase, the so-called 'greenhouse effect'. The temperature can be controlled by venting, often in combination with specially tinted opal white or Lexan Flexible Thermopanel SC IR sheet which contains a proprietary additive which selectively absorbs the near infrared region of the light. Lexan Flexible Thermopanel is, therefore, available different colors or with IR additives which both cuts down the brightness of sunlight to a pleasing level and reduces heat build up inside the building. Calculations for solar heat input through glazing are normally based on data published in 'The Institution of Heating and Ventilating Engineers Guide Book'. These calculations are based on clear glass and correction factors or shading coefficients are then applied when alternative glazing materials are used.

Fire Test Performance

Lexan Flexible Thermopanel sheet has excellent fire performance in accordance with European fire standards. It is rewarded with the rating B, S1, d0 according EN13501. More detailed information is available from SABIC Innovative Plastics, Specialty Film & Sheet Service Centre or your local representative.

Temperature Resistance

Lexan Flexible Thermopanel sheet is characterised by its excellent retention of impact strength and stiffness at elevated temperatures, even over an extended period. Lexan Flexible Thermopanel sheet has a continuous use temperature rating of -40°C up to +100°C

UV Protection

Lexan Flexible Thermopanel sheet has one side proprietary UV protected surface on the top side of the panel to help protect the system against the degrading effects of ultra violet radiation of sunlight and promotes long term optical quality under several kinds of severe weather conditions. This UV protected surface should always face outwards.

Thermal Insulation

The multi-wall structure of Lexan Flexible Thermopanel sheet offers potential advantages where thermal insulation is a major consideration. The amount of energy transmitted through the material per square meter and per degree temperature difference, referred to as the K- or U - Value, is only 1.55 W/m²K.

General Guidelines

Storage

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

Cleaning

periodic cleaning using correct procedure is recommended to prolong service life. For extensive cleaning recommendations please read our technical manual. Small surfaces; gently wash sheet with a solution of mild soap and lukewarm water, using a soft, grid-free cloth or sponge to loosen any dirt or grime.

Do not use any corrosive materials or chemicals to clean Lexan Thermoclear Plus sheets.

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 Flexible Thermopanel sheet. It is strongly advised when using sealing to check before compatibility before use.

Sawing

Lexan Flexible Thermopanel sheet can be cut easily and accurately 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 Flexible Thermopanel sheet has a greater linear thermal expansion coefficient than that of traditional glazing materials, care should be taken to allow for free expansion of the sheet to prevent bowing and internal thermal stress. Thermal expansion allowance must be made for both the length and width of the Lexan Flexible Thermopanel sheet. In general, thermal expansion of the sheet is approximately 3 mm per linear meter.



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