

Lexan* Thermoclear* Plus 9 wall Sheet

Product Datasheet

Description

Lexan* Thermoclear* Plus 9 wall sheet is a unique sheet which combines a high outstanding thermal insulation, high optical properties and an outstanding balance of low weight and high stiffness. Lexan Thermoclear Plus 9 wall sheet is member of the Lexan Thermoclear Plus 2UV sheet range of high quality, multiwall polycarbonate glazing sheets extruded from Lexan resin. Lexan Thermoclear 9 wall sheet has a two sides proprietary UV protected surface, giving superior resistance to outdoor weathering. Lexan Thermoclear Plus 9 wall sheet is available in sheet widths (w): 980, 1200, 1250 and 2100 mm (gauges 16+18 max. width 2095, 40-50mm 1200mm width only). Lexan Thermoclear Plus 9 wall is available in the standard colors Clear (112), Opal White (WH7A092X) and SC IR Green (GN8B038T).

Typical Property Values ♦

Grade-Color	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
LT2UV169X											
Clear	16	2.5	21	1.77	>21	54	51	54	0.54	1.00	0.62
Opal White	16	2.5	21	1.77	>21	47	45	49	0.49	0.96	0.56
SC IR Green	16	2.5	21	1.77	>21	38	25	39	0.39	0.97	0.44
LT2UV189X											
Clear	18	2.7	21	1.69	>21	53	51	53	0.53	1.00	0.61
Opal White	18	2.7	21	1.69	>21	46	44	48	0.48	0.96	0.56
SC IR Green	18	2.7	21	1.69	>21	39	26	39	0.39	1.00	0.45
LT2UV209X											
Clear	20	2.8	21	1.59	>21	53	50	53	0.53	1.00	0.61
Opal White	20	2.8	21	1.59	>21	47	46	50	0.50	0.94	0.57
SC IR Green	20	2.8	21	1.59	>21	37	25	39	0.39	0.95	0.44
LT2UV259X											
Clear	25	3.0	22	1.40	>21	51	49	52	0.52	0.98	0.60
Opal White	25	3.0	22	1.40	>21	44	42	47	0.47	0.94	0.54
SC IR Green	25	3.0	22	1.40	>21	36	23	37	0.37	0.97	0.42
LT2UV409X43											
Clear	40	4.3	25	1.10	>21	51	49	52	0.52	0.98	0.52
Opal White	40	4.3	25	1.10	>21	43	42	48	0.48	0.90	0.55
SC IR Green	40	4.3	25	1.10	>21	33	20	35	0.35	0.94	0.40
LT2UV459X45											
Clear	45	4.5	26	1.04	>21	50	48	52	0.52	0.96	0.52
Opal White	45	4.5	26	1.04	>21	42	42	47	0.47	0.89	0.54
SC IR Green	45	4.5	26	1.04	>21	33	20	35	0.35	0.94	0.40
LT2UV509X48											
Clear	50	4.8	26	0.99	>21	50	48	52	0.52	0.96	0.52
Opal White	50	4.8	26	0.99	>21	40	40	47	0.47	0.85	0.54
SC IR Green	50	4.8	26	0.9	>21	31	18	34	0.34	0.91	0.39

Color number reference table:

Color	Color number
Clear	112
Opal White	WH7A092X
SC IR Green	GN8B038T

♦ 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.

° Values to be proven after production trials.

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Definitions

Light Transmission D65 (% LT):

Percentage of the incident visible light that passes through an object.

Direct Solar Transmission (%DST):

Percentage of incident solar radiation that passes directly through an object.

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.

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).

Solar Transmission

Lexan Thermoclear Plus 9 wall sheet is essential opaque to all wavelengths below 385 nanometers. This useful shielding property can prevent discoloration of sensitive materials placed under or behind. 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 infrared energy. In combination with the insulation properties of Lexan Thermoclear 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 special tinted opal white or Lexan Thermoclear SC IR which contains a proprietary additive which selectively absorbs the near infrared region of the light. Lexan Thermoclear is therefore available in many 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.

UV Resistance

The complete Lexan Thermoclear Plus 9 wall 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. Both sides UV protected surfaces offers advantage in economically cutting the sheet in desired shapes, and installation mistakes are minimized since both sheet surfaces may be faced outwards.

Thermal Insulation

The multi-wall structure of Lexan Thermoclear Plus 9 wall 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. U- or K-value range from 1.77 to 0.99 W/m² K.

Fire Test Performance

Lexan Thermoclear Plus 9 wall sheet has good fire performance against many national fire codes dependent on thickness and color; please check with the local sales office for details.

Impact Strength

Lexan Thermoclear Plus 9 wall sheet has outstanding impact performance over a wide temperature range, -40°C to +120°C, and also after prolonged outdoor exposure. As a roof glazing material Lexan Thermoclear Plus 9 wall sheet is subjected to the extremes of weather; storms, hail stones, wind, snowfalls 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. Please refer to the warranty for details.

Warranty

SABIC Innovative Plastics offers a **TEN (10) YEAR LIMITED WRITTEN WARRANTY** on Lexan Thermoclear Plus 9 wall sheet covering discoloration, loss of light transmission and loss of strength due weathering. See warranty for exact details.

Deflection characteristics of Lexan* Thermoclear* Plus 9 Wall sheet

Four sides clamped:

The deflection characteristics in this particular configuration are dependent upon the ratio of the support bar spacing W / L. In practice, "W" represents the centre-to-centre distance of glazing profiles on the width of the sheet. "L" represents the centre to centre distance of glazing profiles on the length of the sheet.

W/L Ratio	Max. allowable sheet width in mm (W) LT2UV169X:							
1 : 1	2100	2000	1850	1740	1640	1540	1440	1340
1 : 1.5	1390	1280	1180	1090	1020	950	890	830
1 : > 1.5	1080	980	890	820	750	690	660	630
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

W/L Ratio	Max. allowable sheet width in mm (W) LT2UV189X:							
1 : 1	2100	2000	1870	1760	1650	1550	1450	1350
1 : 1.5	1390	1290	1190	1140	1070	1010	950	890
1 : > 1.5	1090	990	900	850	800	720	700	660
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

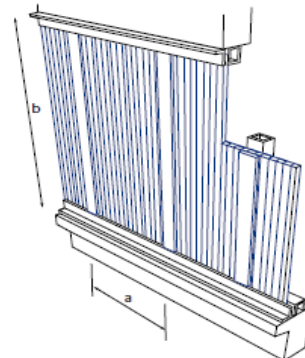
W/L Ratio	Max. allowable sheet width in mm (W) LT2UV209X:							
1 : 1	2100	2000	1880	1770	1670	1570	1470	1370
1 : 1.5	1490	1390	1290	1190	1090	1040	990	890
1 : > 1.5	1140	1040	940	890	840	760	710	680
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

W/L Ratio	Max. allowable sheet width in mm (W) LT2UV259X:							
1 : 1	2100	2000	1900	1800	1700	1600	1500	1400
1 : 1.5	1570	1450	1380	1280	1180	1100	1050	980
1 : > 1.5	1180	1080	980	900	850	790	730	680
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

W/L Ratio	Max. allowable sheet width in mm (W) LT2UV409X: (1200mm = max sheet width)							
1 : 1	1200	1200	1200	1200	1200	1200	1200	1200
1 : 1.5	1200	1200	1200	1200	1200	1200	1200	1200
1 : > 1.5	1200	1200	1200	1200	1200	1200	1200	1200
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

W/L Ratio	Max. allowable sheet width in mm (W) LT2UV459X: (1200mm = max sheet width)							
1 : 1	1200	1200	1200	1200	1200	1200	1200	1200
1 : 1.5	1200	1200	1200	1200	1200	1200	1200	1200
1 : > 1.5	1200	1200	1200	1200	1200	1200	1200	1200
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

W/L Ratio	Max. allowable sheet width in mm (W) LT2UV509X: (1200mm = max sheet width)							
1 : 1	1200	1200	1200	1200	1200	1200	1200	1200
1 : 1.5	1200	1200	1200	1200	1200	1200	1200	1200
1 : > 1.5	1200	1200	1200	1200	1200	1200	1200	1200
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000



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Product Datasheet

Two sides clamped, glazing bars parallel with rib structure:

W = centre to centre distance of glazing profiles; L = sheet length

The major factor determining the sheet deflection behavior is the distance "W" between the centre points of two adjacent supports. Since any length can be selected, the measurement "L" does not influence the overall deflection performance.

LT2UV169X:

Max. allowable sheet width in mm (W)

	1080	980	890	820	750	690	660	630
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

LT2UV189X:

Max. allowable sheet width in mm (W)

	1090	990	900	850	800	720	700	660
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

LT2UV209X:

Max. allowable sheet width in mm (W)

	1140	1040	940	890	840	760	710	680
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

LT2UV259X:

Max. allowable sheet width in mm (W)

	1180	1080	980	900	850	790	730	680
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

LT2UV409X: (1200mm = max sheet width)

Max. allowable sheet width in mm (W)

	1200	1200	1200	1200	1200	1200	1200	1200
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

LT2UV459X: (1200mm = max sheet width)

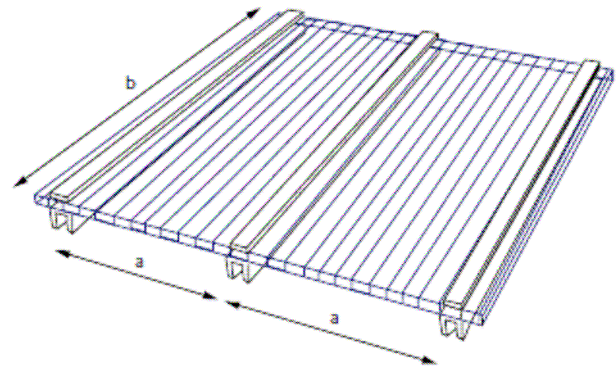
Max. allowable sheet width in mm (W)

	1200	1200	1200	1200	1200	1200	1200	1200
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000

LT2UV509X: (1200mm = max sheet width)

Max. allowable sheet width in mm (W)

	1200	1200	1200	1200	1200	1200	1200	1200
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000



Lexan* Thermoclear* Plus 9 Wall Sheet

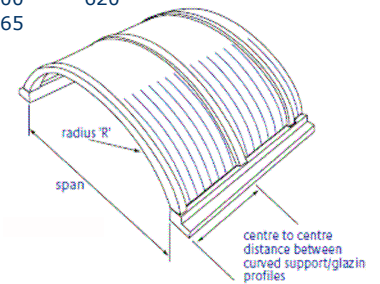
Product Datasheet

Four sides clamped; cold curved:

In this situation sheets are cold curved and clamped at four sides in wet or dry glazing profiles. Here the cold-bending radius must be parallel to the ribs of the sheets. The ratio sheet width (W) / sheet span = 1 : >2. In practice, "W" represents the centre-to-centre distance of glazing profiles on the width of the sheet. Sheet span represents the centre-to-centre distance of glazing profiles on the length of the sheet.

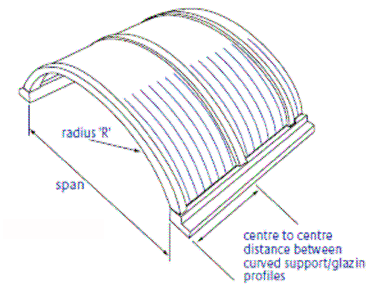
LT2UV169X:

Radius 'R' in mm	Max. allowable sheet width in mm (W)								
2800	2100	1920	1580	1330	1150	1020	920	830	
3000	2100	1780	1450	1210	1060	940	840	760	
3200	2050	1620	1320	1110	970	860	760	690	
3400	1920	1480	1210	1030	890	780	700	620	
3600	1780	1400	1120	950	830	700	665		
3800	1670	1300	1040	890	750				
4000	1560	1200	960	810					
4200	1460	1120	880						
4400	1360	1040							
4600	1300	980							
4800	1200								
5000	1100								
5200									
5400									
5600									
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000	



LT2UV189X:

Radius 'R' in mm	Max. allowable sheet width in mm (W)								
3200	2100	1700	1350	1175	1050	950	850	800	
3400	2000	1600	1250	1100	1000	900	800	750	
3600	1850	1500	1150	1050	950	850	750		
3800	1700	1350	1100	1000	900	800			
4000	1600	1250	1000	925	850				
4200	1500	1150	925	850					
4400	1400	1000	850						
4600	1300	950							
4800	1200								
5000	1100								
5200	1000								
5400	900								
5600									
5800									
6000									
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000	



Lexan* Thermoclear* Plus 9 Wall Sheet

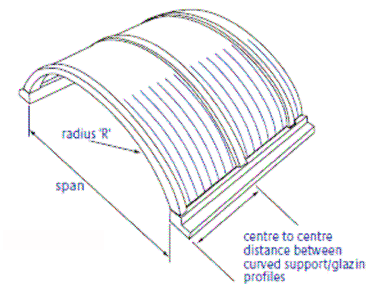
Product Datasheet

Four sides clamped; cold curved:

In this situation sheets are cold curved and clamped at four sides in wet or dry glazing profiles. Here the cold-bending radius must be parallel to the ribs of the sheets. The ratio sheet width (W) / sheet span = 1 : >2. In practice, "W" represents the centre-to-centre distance of glazing profiles on the width of the sheet. Sheet span represents the centre-to-centre distance of glazing profiles on the length of the sheet.

LT2UV209X:

Radius 'R' in mm	Max. allowable sheet width in mm (W)								
3600	1850	1500	1300	1200	1100	1000	900	850	
3700	1800	1450	1250	1150	1050	950	855	810	
3800	1750	1400	1200	1100	1000	900	810	770	
3900	1710	1360	1175	1075	975	880			
4000	1675	1325	1150	1050	950	860			
4100	1640	1300	1110	1020	950				
4200	1600	1275	1075	980					
4300	1550	1230	1035						
4400	1500	1200	1000						
4500	1450	1180	950						
4600	1400	1160							
4700	1350	1130							
4800	1300	1050							
4900	1250	980							
5000	1200								
Loading in N/m²	600	800	1000	1200	1400	1600	1800	2000	



Note on cold curved applications:

Although the Lexan Thermoclear Plus 9 Wall sheet can be cold curved in the thicknesses 16-18 and 20mm at a radius of 175 times the thickness of the sheet, there might appear an optical distortion of the internal layers. This optical distortion will have no negative influence on the mechanical performance of the product provided that the guidelines for cold curved applications in this data sheet are correctly followed.

General Guidelines

Storage

Lexan Thermoclear Plus 9 wall sheet should be stored and protected against atmospheric influences like sun, rain, etc. Care should be exercised when handling and transporting Lexan Thermoclear Plus 9 wall 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 9 wall sheets.

Chemical Resistance

Neoprene, EPT or EPDM rubbers with an approximate Shore Hardness of the 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 Plus 9 wall sheet. It is strongly advised when using sealing to check before compatibility before use.

Sawing

Lexan Thermoclear Plus 9 wall 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 Thermoclear Plus 9 wall 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 Thermoclear Plus 9 wall sheet. In general, thermal expansion of the sheet is approximately 3 mm per linear meter.



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