

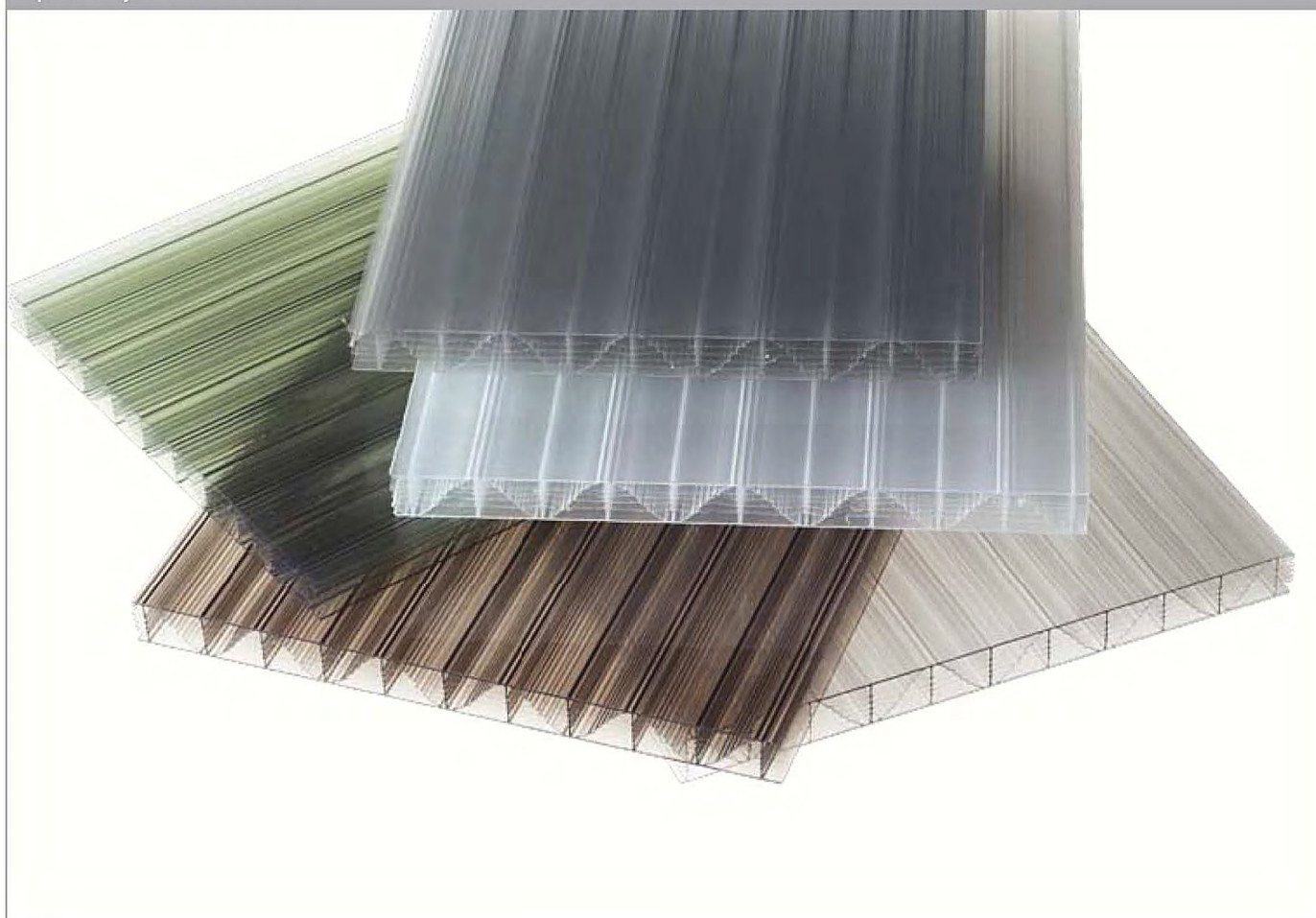
SABIC  
Innovative  
Plastics™



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Specialty Film & Sheet



# Lexan\* Thermoclear\* Multi-wall Polycarbonate Sheet

Technical Manual USA

sharing our futures

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## Lexan\* Polycarbonate Resin

Lexan\* polycarbonate is a unique engineering thermoplastic which combines a high level of mechanical, optical and thermal properties. The versatility of this material makes it suitable for many engineering applications. When extruded in sheet form, its optical and impact properties in particular render this material an ideal candidate for a wide range of glazing applications. SABIC Innovative Plastics has developed a whole range of products to suit the most demanding of these application needs.

Typical applications include:

- Industrial Roofs and Sidewalls
- Commercial Greenhouses
- Sunroom, Swimming Pool and Conservatory Roofing
- Shopping Center Roofing
- Railway/Metro Station
- Football Stadium Roofing
- Rooflights

### Lexan\* Multi-wall sheet

#### Lexan\* Thermoclear\* Plus sheet (LT2UV)

Lexan\* Thermoclear\* Plus sheet features as of 4.5mm thickness a unique 2 side proprietary surface treatment designed to protect the sheet against the degrading effects of ultra-violet radiation in natural sunlight. 2 sides UV protected surfaces offers advantage in economical cutting the sheet in desired shapes and installation mistakes are minimized since both sheet surfaces may be faced outwards.

#### Lexan Thermoclear SunXP sheet (LT2XP)

Lexan Thermoclear SunXP sheet offers next to remarkable impact strength, high light transmission, light weight, long term weather resistance and, due to the multi-wall construction, outstanding thermal insulation properties an even more unique 2 side proprietary surface treatment which provides almost total resistance against degradation caused by UV radiation in sunlight. The entire Lexan Thermoclear SunXP sheet range carries a **Fifteen Year Limited Written Warranty** against discoloration, loss of light transmission and/or loss of strength due to weathering.

#### Lexan Thermoclear Easyclean sheet (LTE)

Lexan Thermoclear Easyclean sheet makes use of a new and innovative technology platform of self cleaning properties. The extraordinary hydrophobic coating on the outside surface reduces the surface tension of polycarbonate and increases the contact angle of water to the sheet this causes larger droplets to form and wash away dirt as the droplets roll down the sheet. Lexan Thermoclear Easyclean comes standard with a unique 2 side UV proprietary surface treatment but can be combined with Dripgard property on the inner side

of the sheet forming a unique combination of having a Thermoclear sheet with self cleaning properties on the out side and a surface treatment on the inside which reduces the formation of condensation droplets to prevent loss of light transmission.

#### Lexan Thermoclear Dripgard\* sheet (LTD)

Lexan Thermoclear Dripgard sheet, in addition to the extraordinary properties of standard 2 side UV resistant Lexan Thermoclear sheet, also features a specially developed coating on the inner surface which reduces the formation of condensation droplets. This property is particularly important in helping to prevent crop spoilage in commercial greenhouses, by falling condensation droplets. There is no reduction in light transmission due to condensation water droplets. It is the ideal roof glazing material in any application where water drops are unacceptable. For instance: greenhouses/verandas/sunrooms/ swimming pool enclosures/industrial roof glazing.

#### Lexan Thermoclear Solar Control IR sheet (2UVIR)

Lexan Thermoclear Solar Control IR sheet 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 multi wall sheet offers: high light transmission combined with low solar transmission, 2 sides unique UV protection, various structures (2/3/5/6/9 walls, X structures), long-term weathering resistance and high impact strength.



### **Lexan Thermoclear Solar Control sheet (LTC-SC)**

Lexan Thermoclear Solar Control sheet features in addition to the extraordinary properties of standard Lexan Thermoclear sheet, a unique and specially developed Solar Control Coating at the non UV protected side of the sheet which reduces the heat build-up beneath the sheet. Despite the reduction of the heat build-up a high light transmission will remain. The excellent properties result in an agreeable comfort level inside the building.

### **Lexan Thermoclear Venetian sheet (LTC-VEN)**

Lexan Thermoclear Venetian grades are members of the Lexan Thermoclear sheet range of high quality, multi-wall polycarbonate glazing sheets extruded from Lexan resin. LTC Venetian is a multiwall sheet which has been screen printed with white stripes on the non UV coated side. The white striped side should always be installed facing inwards, the other side, clearly identified as protected against UV, being installed facing outwards. Although the screen printed white stripes are mainly intended for additional decorative purposes, the belonging shadow effect results in an improved comfort level inside the building.

### **Lexan Thermoclick\* sheet**

Lexan Thermoclick sheet is an X-structured multi wall polycarbonate panel with profiled tongue and groove connections. This inter-connecting system eliminates the need for vertical profiles, thereby saving costs and enhancing aesthetics. It is an ideal product to create flush profile-free facades in different colors and effects, this combined with the ease of installation and the variety in colors in particular render this panel highly suitable for facades and wall cladding. Lexan Thermoclick sheet has a one side proprietary surface treatment designed to protect the sheet against the degrading effects of ultra-violet radiation in natural sunlight.

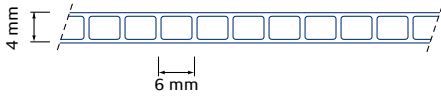
Typical applications include:

- Industrial Sidewalls
- Commercial Side walls Greenhouses
- Railway/Metro Station
- Interior decoration

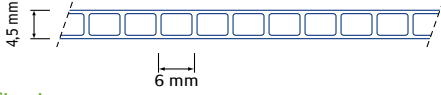


Lexan Multiwall sheet structures:

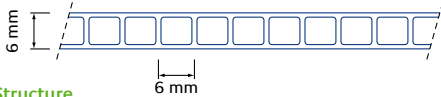
42RS Structure



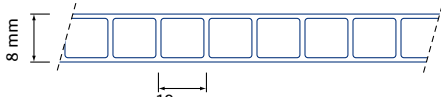
452RS Structure



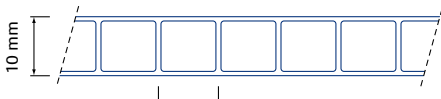
62RS Structure



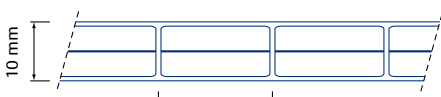
82RS Structure



102RS Structure



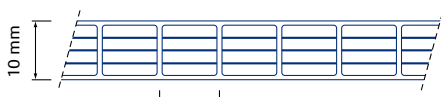
103RS Structure



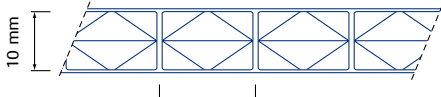
103TS Structure



105RS Structure



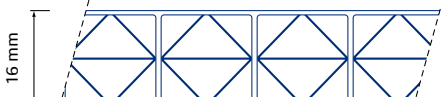
103X Structure



163TS Structure



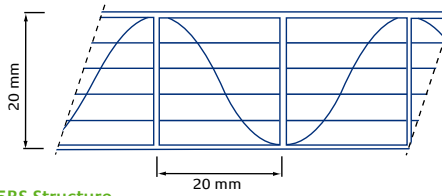
163X Structure



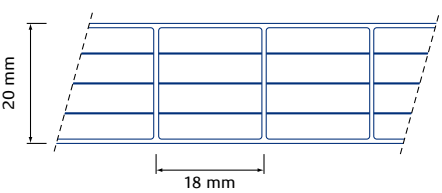
166RS Structure



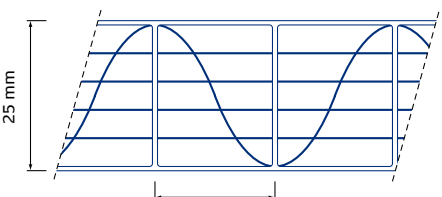
206RS Structure



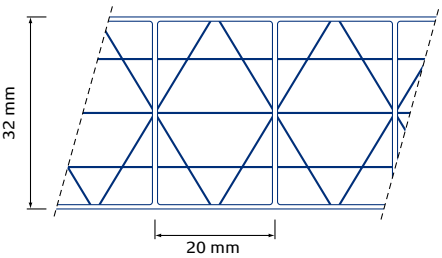
205RS Structure



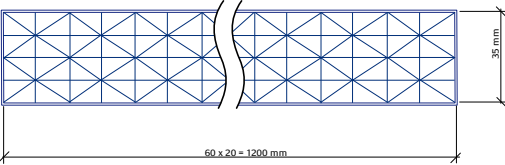
256RS Structure



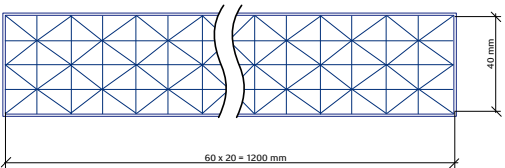
325X Structure



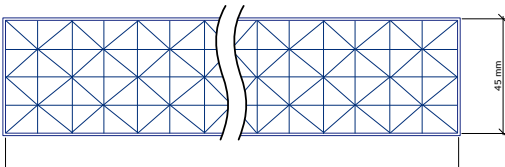
359X Structure



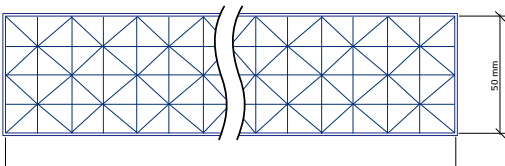
409X Structure



459X Structure

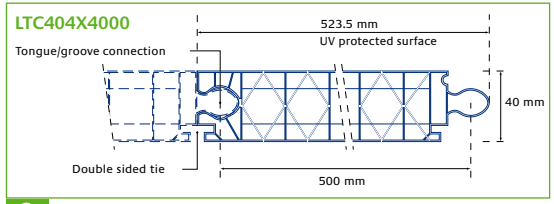


509X Structure



**Lexan Thermoclick sheet**

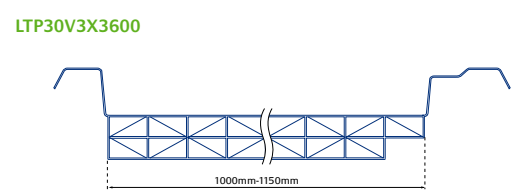
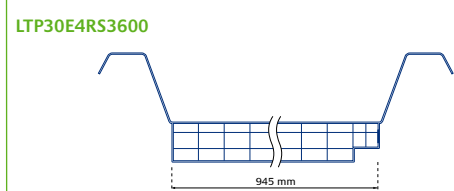
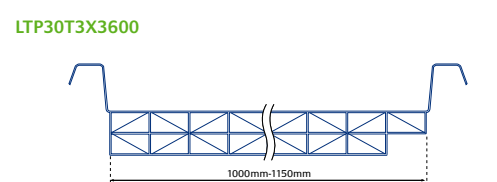
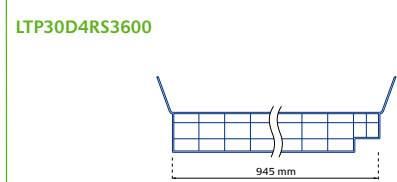
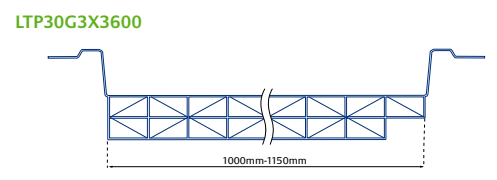
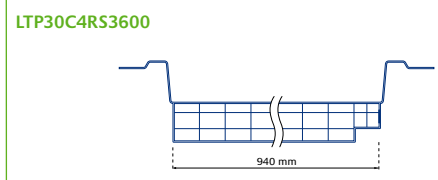
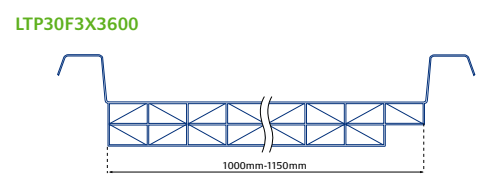
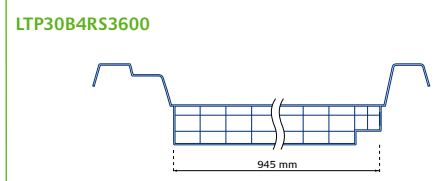
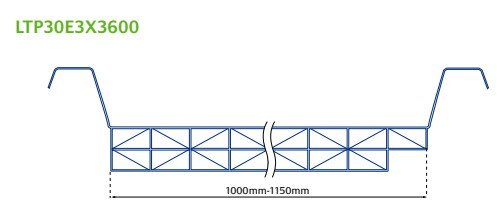
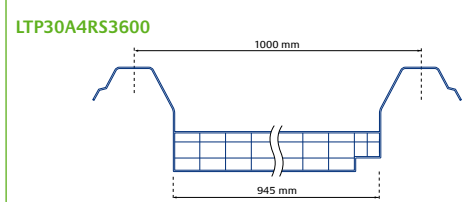
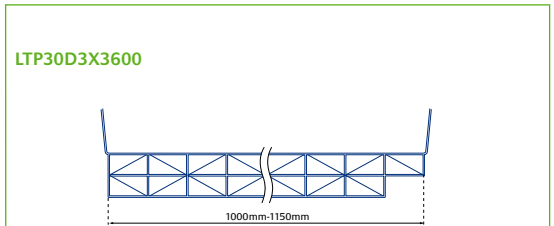
Lexan Thermoclick sheet system is an impact resistant, energy-saving multi-wall sheet with profiled tongue and groove connection, joint cover on the outside and groove for double sided tie on the inside.



2

**Lexan Thermopanel sheet**

Lexan Thermopanel sheet is an impact resistant, energy saving multi-wall transparent sheet with calibrated multi form side wings matching any insulating corrugated metal panel. Its optical and impact properties in particular render this panel a strong candidate as roofglazing for insulated corrugated metal industrial buildings.



3



Description

**Lexan Thermoclear/Drippard/Plus sheet**  
**LT(C)(D)(2UV)10(2)(3)(5)(6)(9)(RS)(TS)(X)17**

**LT(C)(D)(2UV)**

LTC = Lexan Thermoclear sheet  
 LTD = Lexan Thermoclear Drippard sheet  
 LT2UV = Lexan Thermoclear sheet 2-sides U.V. protected

**10** sheet thickness in mm

**(2)(3)(5)(6)(9)**

2 = double wall  
 3 = triple wall  
 5 = five wall  
 6 = six wall  
 9 = nine wall

**(RS)(TS)(X)**

RS = Rectangular structure  
 TS = Tunnel structure  
 X = X structure

**17** 17 = 1.7 kg/m<sup>2</sup>

**Lexan Thermoclear Venetian/Solar Control sheet**  
**LTC 32(2)(3)(5)(6)(9)(RS)(TS)(X)38(VENS)(SC)**

**32** Sheet thickness in mm

**(2)(3)(5)(6)**

2 = double wall  
 3 = triple wall  
 5 = five wall  
 6 = six wall

**(RS)(TS)(X)**

RS = Rectangular structure  
 TS = Tunnel structure  
 X = X structure

**38** 38 = 3.8 kg/m<sup>2</sup>

**(VENS)(SC)**

VENS = Venetian white stripes printed  
 SC = Solar Control coated

**Lexan Thermoclick sheet**  
**LTC40(4)(X)(4000)**

**LTC** LTC = Lexan Thermoclear sheet

**40** sheet thickness in mm

**(4)** 4 = four wall

**(X)** X = X structure

**(4000)** weight in g/m<sup>2</sup>

**Lexan Thermopanel sheet**  
**LTP30(A)(B)(C)(D)(A)(B)(C)(D)(E)(F)(G)(T)(V)4RS(4000)(3600)**

**LTP** LTC = Lexan Thermopanel sheet

**30** sheet thickness in mm

**(A)(B)(C)(D)** A, B, C, D = type of corrugation

**(E)(F)(G)(T)(V)** E, F, G, T, V = Type of wing configuration

**(3x)(4RS)** 4 = Four wall  
 RS = Rectangular structure

**(4000)(3600)** weight in g/m<sup>2</sup>

**Lexan Thermoclear Solar control IR**  
**2UV(IR)16(2)(3)(5)(6)(9)6RS(27)**

**2UV(IR)** 2UV(IR) = Lexan Thermoclear Solar Control IR

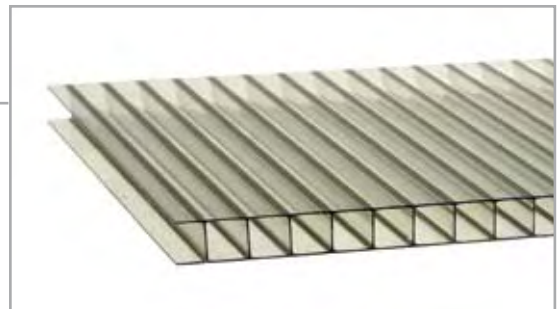
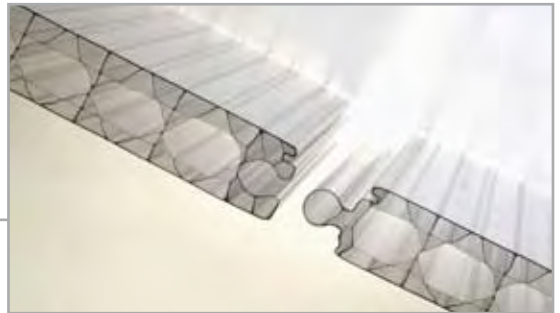
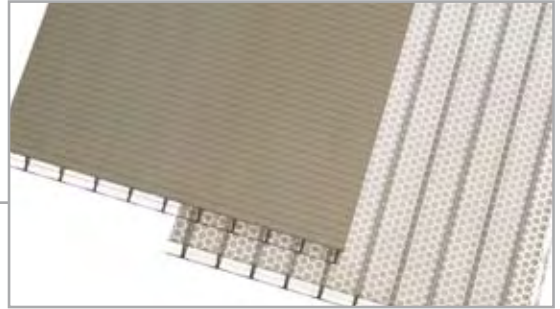
**16** sheet thickness in mm

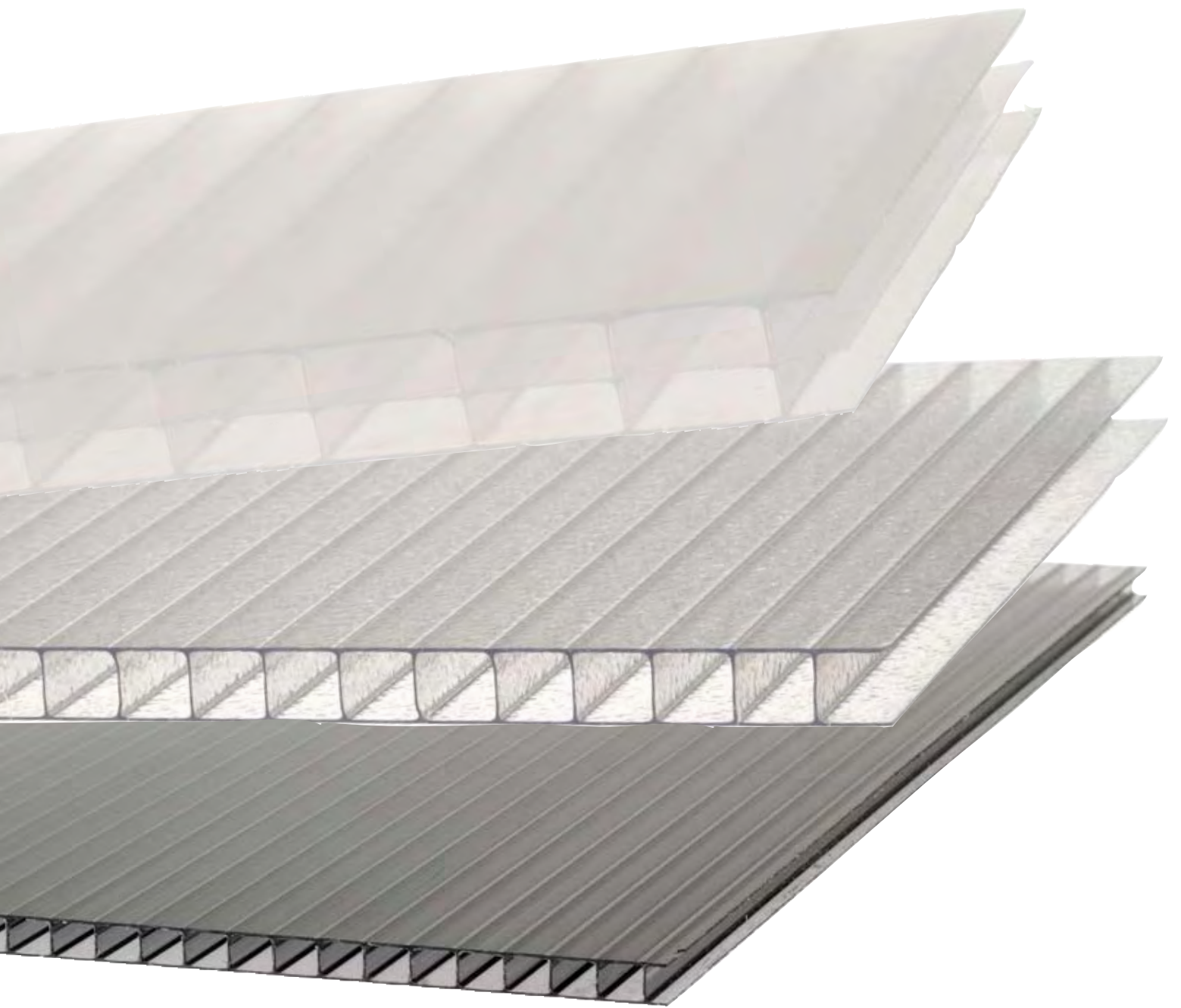
**(2)(3)(5)(6)(9)**

2 = double wall  
 3 = triple wall  
 5 = five wall  
 6 = six wall  
 9 = nine wall

**6RS** 6 = Four wall  
 RS = Rectangular structure

**27** 27 = 2.7 kg/m<sup>2</sup>





## Product Availability

Table1: Standard Lexan Thermoclear sheet Products

Product code	Standard sheet width in inches.									
	19,69	37,20	38,58	39,37	41,34	43,31	45,28	47,24	49,21	82,68
<b>Lexan Thermoclear Plus sheet</b>										
LT2UV452RS10									X	X
LT2UV62RS13									X	X
LT2UV82RS15									X	X
LT2UV83TS17									X	X
LT2UV102RS17									X	X
LT2UV103RS19										X
LT2UV103TS17					X				X	X
LT2UV103TS20									X	X
LT2UV105R175									X	X
LT2UV163TS27									X	X
LT2UV163X29			X		X				X	X
LT2UV163TS28			X		X			X	X	X
LT2UV163X28			X						X	X
LT2UV206RS30			X						X	X
LT2UV205RS33									X	
LT2UV205X32			X						X	X
LT2UV256RS35			X						X	X
LT2UV325X38									X	
LT2UV359X40								X		
LT2UV409X43								X		
LT2UV459X45								X		
LT2UV509X48								X		
Standard sheet lengths: 6000-7000mm										
<b>Lexan Thermoclear SunXP sheet</b>										
LT2XP452RS10									X	X
LT2XP62RS13									X	X
LT2XP82RS15									X	X
LT2XP83TS17									X	X
LT2XP102RS17									X	X
LT2XP103RS19										X
LT2XP103TS17									X	X
LT2XP103TS20									X	X
LT2XP103X20			X		X			X		X
LT2XP105R175									X	X
LT2XP163TS27			X		X			X	X	X
LT2XP163TS28			X		X				X	X
LT2XP163X29			X		X			X		X
LT2XP166RS27			X						X	X
LT2XP205RS33			X						X	X
LT2XP205X32									X	
LT2XP206RS30			X						X	X
LT2XP256RS35			X						X	X
LT2XP325X38									X	
LT2XP359X40								X		
LT2XP409X43								X		
LT2XP459X45								X		
LT2XP509X48								X		
Standard sheet lengths: 6000-7000 mm										

## Product Availability

Continued Table 1: Standard Lexan Thermoclear sheet Products

Product code	Standard sheet width in inches.									
	19,69	37,20	38,58	39,37	41,34	43,31	45,28	47,24	49,21	82,68
<b>Lexan Thermoclear Easyclean sheet</b>										
LTE452RS1000									X	X
LTE62RS13									X	X
LTE82RS15									X	X
LTE83TS17									X	X
LTE102RS17									X	X
LTE103RS19										X
LTE103TS17									X	X
LTE103TS20									X	X
LTE103X20			X		X			X		X
LTE105R175									X	X
LTE163TS27			X		X			X	X	X
LTE163TS28			X		X			X	X	X
LTE163X29			X		X			X		X
LTE166RS27			X						X	X
LTE205RS33			X						X	X
LTE205X32									X	
LTE206RS35			X						X	X
LTE256RS35			X						X	X
LTE325X38									X	
LTE359X40								X		
LTE409X43								X		
LTE459X45								X		
LTE509X48								X		
Standard sheet lengths: 6000-7000 mm										
<b>Lexan Thermoclear Drippard sheet</b>										
LTD62RS13										X
LTD82RS15										X
LTD102RS17									X	X
LTD103TS17										X
LTD103RS19										X
LTD163TS28			X						X	X
LTD163X29								X		X
LTD205RS33									X	X
LTD256RS35									X	X
Standard sheet lengths: 6000-7000 mm										

## Product Availability

Continued Table1: Standard Lexan Thermoclear sheet Products

Product code	Standard sheet width in inches.									
	19,69	37,20	38,58	39,37	41,34	43,31	45,28	47,24	49,21	82,68
<b>Lexan Thermoclear Solar Control IR sheet</b>										
2UVIR62RS13									X	X
2UVIR82RS15									X	X
2UVIR102RS17									X	X
2UVIR105R175									X	X
2UVIR163TS27			X		X			X	X	X
2UVIR163X29			X		X			X		X
2UVIR166RS27			X						X	X
2UVIR205RS33			X						X	X
2UVIR205X32									X	
2UVIR325X38									X	
2UVIR359x40								X		
2UVIR409x43								X		
2UVIR459x45								X		
2UVIR509X48								X		
Standard sheet lengths: 6000-7000 mm										
<b>Lexan Thermoclear Solar Control sheet</b>										
LTC62RS13 SC										2100x6000
LTC102RS17 SC									1250x6000	2100x6000
LTC163TS27 SC			980x6000						1250x6000	2100x6000
LTC205RS33 SC			980x6000						1250x6000	
LTC256RS35 SC										2100x6000
LTC325X38 SC									1250x3500	1250x4000
									1250x4500	1250x6000
<b>Lexan Thermoclear Venetian sheet</b>										
LTC62RS13 VENS										2100x6000
LTC102RS17 VENS									1250x6000	2100x6000
LTC163TS27 VENS			980x6000						1250x6000	2100x6000
LTC205RS33 VENS			980x6000						1250x6000	
LTC256RS35 VENS										2100x6000
LTC325X38 VENS									1250x3500	1250x4000
									1250x4500	1250x6000
<b>Lexan Thermoclick sheet</b>										
LTC404x4000		X								
Standard sheet length: 6000-7000 mm										
<b>Lexan Thermopanel sheet</b>										
LTP30(A,B,C,D,E)4RS3600		X								
LTP30(A,B,C,D,E,F,G,T,V)3X3600				X	X	X	X			
Standard sheet lengths: 6000-7000 mm										
<b>Lexan Thermoclear sheet</b>										
LTC42RS800										X
Standard sheet length: 6000-7000 mm										

## Lexan Multi-wall sheet Products

Typical property values for:

Lexan Thermoclear Plus (LT2UV)

Lexan Thermoclear sheet (LTC)

Lexan Thermoclear Drippgard (LTD)

Lexan Thermoclear Easyclean (LTE)

Lexan Thermoclear Sun XP (LT2XP)

Table 2: Lexan Thermoclear sheet Product Selection

walls	grade name	gauge (inch)	weight(lbs/ft <sup>2</sup> )	rib distance (inch)	'ISO 10077 U value (BTU/ft <sup>2</sup> hr F)	** LT clear 112 (%)	** LT opal white WH7A092X (%)	*** TST clear 112 (%)	*** TST opal white WH7A092X (%)
2-Wall	LTC42RS800	0,16	0,164	0,24	0,697	83	67	83	70
	LT2UV452RS10	0,18	0,205	0,24	0,680	83	67	83	70
	LT2UV62RS13	0,24	0,266	0,24	0,627	82	66	82	69
	LT2UV82RS15	0,31	0,307	0,39	0,574	81	64	82	68
	LT2UV102RS17	0,39	0,348	0,39	0,532	81	64	80	68
3-Wall	LT2UV83TS17	0,31	0,348	0,39	0,514	73	61	75	66
	LT2UV103TS17	0,39	0,348	0,39	0,472	73	61	75	66
	LT2UV103RS19	0,39	0,389	0,79	0,474	74	63	78	69
	LT2UV163TS27	0,63	0,553	0,79	0,400	74	63	78	69
X-Structure 3-Wall	LT2UV103X20	0,39	0,410	0,63	0,461	71	62	71	67
	LT2UV163X28	0,63	0,573	0,63	0,370	67	60	71	64
5-Wall	LT2UV105R175	0,39	0,358	0,31	0,421	65	60	65	59
	LT2UV205RS33	0,79	0,676	0,71	0,312	64	55	71	60
6-Wall	LT2UV166RS27	0,63	0,553	0,79	0,324	61	52	64	60
	LT2UV206RS30	0,79	0,614	0,79	0,284	61	50	64	61
	LT2UV256RS35	0,98	0,717	0,79	0,255	58	49	66	63
X-Structure 5-Wall	LT2UV205X32	0,79	0,655	0,79	0,298	58	50	66	51
	LT2UV255X34	0,98	0,696	0,79	0,266	57	49	65	54
	LT2UV325X38	1,26	0,778	0,79	0,232	55	48	65	48
Double X-Structure 9-Wall	LT2UV359X40	1,38	0,819	0,79	0,209	51	44	53	49
	LT2UV409X43	1,57	0,881	0,79	0,194	51	43	52	48
	LT2UV459X45	1,77	0,922	0,79	0,182	50	42	52	47
	LT2UV509X48	1,97	0,983	0,79	0,173	50	40	52	47
Thermoclick X-Structure 4 Wall	LTC404X4000	1,57	0,819	1,57	0,248	59	50	64	57
Thermopanel 4-Wall	LTP30(A,B,C,D,E)4RS36	1,18	0,737	0,79	0,335	68	62	68	68
Thermopanel X-structure 3-Wall	LTP30 (A,B,C,D,E,F,G,V)T3X36	1,18	0,737	0,79	0,306	67	63	70	67

# U-values based on SABIC-IP calculated values according ISO 10077 (EN673)

\*\*\* LT (Light Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples

TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples



Table 3: Typical properties for Lexan Thermoclear Venetian (LTC VEN) sheet

Sheet thickness inch	0,39	0,63	0,79	0,98	1,26
Structure	2RS	3TS	5RS	6RS	5X
Approx. weight lbs/ft2	0,348	0,553/0,573	0,676	0,717	0,778
<b>Clear code 112</b>					
Light transmission**%	46	41	40	38	36
Total Solar transmission %	49	43	41	39	38
Shading Coefficient	0,65	0,62	0,60	0,65	0,52
U-value BTU/ft2 hr F	0,532	0,400	0,312		0,232
Sound insulation dB	19	21	22	23	24
Hail impact test Bullet 20 mm Velocity FT/sec	>69	>69	>69	>69	>69

•U-values based on SABIC-IP calculated values according ISO 10077 (EN673)  
 \*\*LT (Light Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples  
 #TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples  
 \*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."

Table 3a: Typical properties for Lexan Thermoclear Solar Control (LTC SC) sheet

Sheet thickness inch	0,39	0,63	0,63	0,79	0,98	1,26
Structure	2RS	3TS	3X	5RS	6RS	5X
Approx. weight lbs/ft2	0,348	0,573	0,594	0,676	0,717	0,778
<b>Clear code 112 + SC</b>						
Light transmission**%	66	60	56	53	48	47
Total Solar transmission %	54	50	46	44	41	39
Shading coefficient	0,72	0,69	0,68	0,61	0,67	0,58
U-value BTU/ft2 hr F	0,532	0,400	0,370	0,312	0,255	0,232
Sound insulation dB	19	21	21	22	23	24
Hail impact test Bullet 20 mm Velocity FT/sec	>69	>69	>69	>69	>69	>69

•U-values based on SABIC-IP calculated values according ISO 10077 (EN673)  
 \*\*LT (Light Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples  
 #TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples  
 \*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."

Table 3b: Typical properties for Lexan Thermoclear Solar Control IR (2UVIR) sheet (Green color)

Sheet thickness inch	0,39	0,63	0,63	0,79	0,98	1,26
Structure	5RS	3TS	3X	5RS	6RS	5X
Approx. weight lbs/ft2	0,358	0,553	0,594	0,676	0,717	0,778
<b>Green code GN8B038T</b>						
Light transmission**%	48	55	46	46	41	36
Total Solar transmission %	34	36	29	29	26	23
Shading coefficient	0,56	0,60	0,52	0,53	0,50	0,49
U-value BTU/ft2 hr F	0,421	0,400	0,370	0,312	0,255	0,232
Sound insulation dB	20	21	22	22	23	24
Hail impact test Bullet 20 mm Velocity FT/sec	>69	>69	>69	>69	>69	>69

•U-values based on SABIC-IP calculated values according ISO 10077 (EN673)  
 \*\*LT (Light Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples  
 #TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples  
 \*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."

Table 4: Typical properties for Lexan Polycarbonate Sheet

Property Physical	Test method	Unit	Value
<b>Density</b>	<b>ISO 1183</b>	<b>lbs/in<sup>3</sup></b>	<b>0,043</b>
Water absorption, 50% RH / 23°C	ISO62	%	0,15
Water absorption, saturation / 23°C	ISO 62	%	0,35
<b>Mechanical</b>			
Tensile stress at yield 1,97"/min	ISO 527	MPa	60
Tensile stress at break 1,97"/min	ISO 527	MPa	70
Tensile strain at yield 1,97"/min	ISO 527	%	6
Tensile strain at break 1,97"/min	ISO 527	%	120
Tensile modulus 0,079"/min	ISO 527	MPa	2300
Flexural stress at yield 0,079"/min	ISO 178	MPa	90
Flexural stress at break 0,079"/min	ISO 178	MPa	2300
Hardness H358/30 95	ISO 2039/1	MPa	95
<b>Thermal</b>			
Vicat Softening Temperature, rate B/120	ISO 306	°F	293
HTD/Ae, 1.8 MPa edgew. 120*1*04/sp=100	ISO 75	°F	260,6
Thermal conductivity	ISO 8302	BTU/hr ft °F	0,116
Coeff. of lin. Therm. Exp.extr. 23-80°C	ISO 11359-2	1/°F	4.00 E-05
<b>Electrical</b>			
Volume resistivity	IEC 60093	Ohm.in	5,9 E15

These property values have been derived from Lexan resin data for the material used to produce this sheet product. Variation within normal tolerances are possible for various colors. These typical values are not intended for specification purposes. If minimum certifiable properties are required please contact your local SABIC Innovative Plastics, Specialty Film & sheet representative. All values are measured at least after 48 hours storage at 23°C/50% relative humidity. All properties are measured on injection molded samples. All samples are prepared according ISO 294.



**Impact Strength**

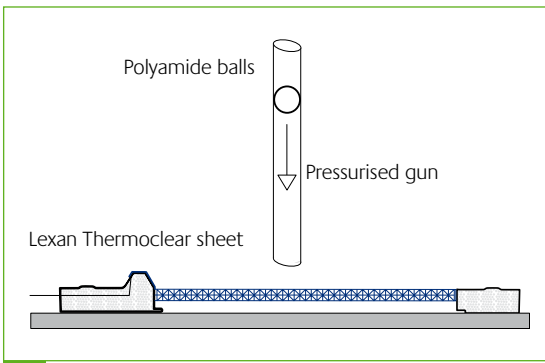
Lexan Thermoclear sheet has outstanding impact performance over a wide temperature range, -40°C to +120°C, and also after prolonged outdoor exposure.

**Hail Resistance**

As a roof glazing material Lexan Thermoclear sheet is subject to extremes of weather; storms, hail-stones, 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 Thermoclear sheet have been subjected to simulated hail-stones of varying diameters without significant damage.

A test sample is clamped into a metal frame and polymide balls of varying diameters are fired at the surface of the sample using a pressurized airgun.



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In practice, hail-stones with a diameter of 20 mm can reach a terminal velocity of around 21 m/s. Under these conditions materials such as glass and acrylic fail.

It should be noted that when the glass and the acrylic are tested their failure characteristics are typically brittle, whilst the Lexan Thermoclear showed ductile behaviour: upon impact the ball will leave indentations but the sheet will not break (See fig. 4).

SABIC Innovative Plastics offers a Ten Years Written Limited Warranty on Lexan Thermoclear sheet covering loss of strength or impact due to weathering.

4. Represents material failure at this speed

Table 5: Hail Simulation Test Results

Material	Ball diameter
	<b>0,79"</b>
Acrylic multi-wall sheet t=0,63"	23-46 ft/s
Float glass t=0,16"	33 ft/s
Lexan Thermoclear sheet t=0,39"	>69 ft/s
Lexan Thermoclear sheet t=0,63"	>69 ft/s
Equilibrium velocity of hail stones in practice	>69 ft/s

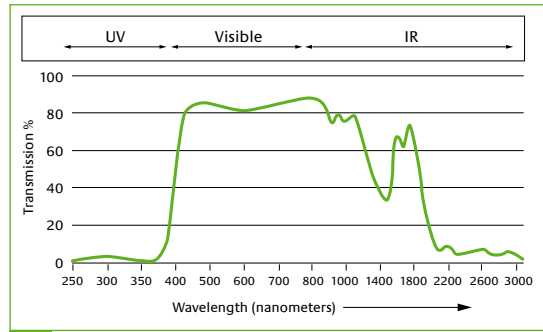
## Light Transmission

The sunlight which reaches the surface of the earth has a wavelength that ranges between 295 – 2140 nanometres (10E-9 metres). This optical window is divided into the following sections:

UV-B Middle ultraviolet region	280 – 315 nm
UV-A Near ultraviolet region	315 – 380 nm
Visible light region	380 – 780 nm
Near infra-red region	780 – 1400 nm
Middle infra-red region	1400 – 3000 nm

As shown in fig. 5, Lexan Thermoclear sheet has the highest transmission in the visible light.

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



5. Light Transmission Spectrum of Lexan Thermoclear sheet

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**Temperature Increase Inside the Building**

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 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 specially tinted Lexan Thermoclear sheet, by Lexan Thermoclear Venetian Grades and Lexan Thermoclear Solar Control SC/IR.

**Solar Control**

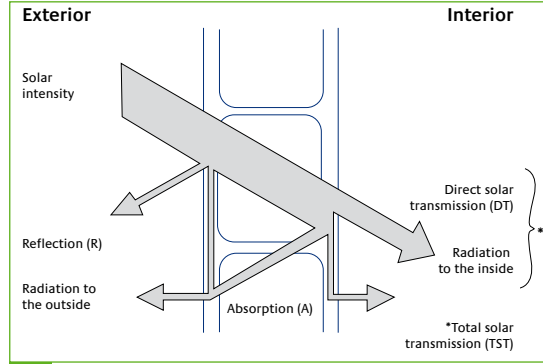
Transparent grades of Lexan Thermoclear sheet have excellent light transmission, between 38 and 83% depending upon thickness. However, for buildings in hot climates or with south facing aspects, Lexan Thermoclear sheet is available in translucent grades of bronze, grey, blue, green, opal white, Lexan Thermoclear Solar Control sheet and Lexan Thermoclear Venetian sheet with screen printed white stripes on the non UV protected side. These grades significantly reduce solar heat build-up, helping to maintain comfortable interior temperatures.

The specially tinted sheet, Lexan Thermoclear Venetian sheet and Lexan Thermoclear Solar Control sheet cuts down the brightness of sunlight to a pleasing level and reduces air conditioning costs in the summer.

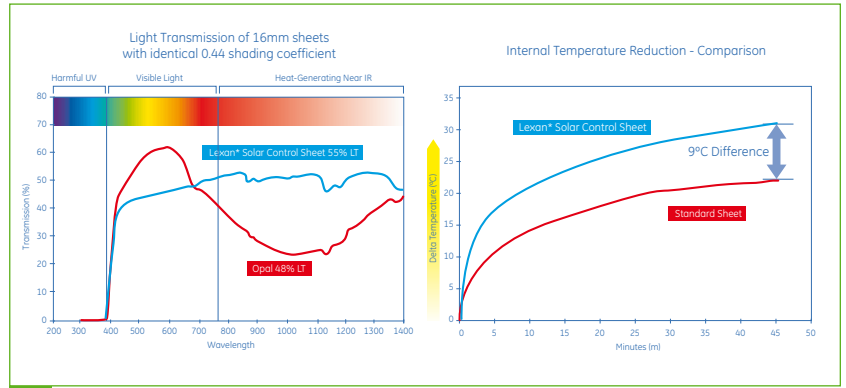
Lexan Thermoclear Solar Control IR (SCIR) sheet does not significantly, like most other solar control products, block or reflect sun light but absorbs that part of the light spectrum which create solar transmission. Lexan Thermoclear SC/IR is an excellent candidate for those applications where there is a need for high light transmission together with a low solar transmission.

**Solar Heat Gain**

The solar radiation reaching the sheet is reflected, absorbed and transmitted, as shown in fig. 6. The greatest proportion is transmitted and the total solar transmission (TST) is the sum of the direct transmission (DT) and the inwardly released part of the absorbed energy (A). Table 6 lists the solar control properties of the Lexan Thermoclear sheet range and Lexan Thermoclear Venetian products.



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Table 6: Total Solar Transmission# in % Solar Control IR (LTC-IR)

Structure	Grade Name	gauge (Inch)	weight (lbs/ft2)	rib distance (Inch)	ISO 10077 U value • (W/m²K)	LT** SC IR Green (%)	LT** SC IR Blue (%)	LT** SC IR Grey (%)	TST# SC IR Green (%)	TST# SC IR Blue (%)	TST# SC IR Grey (%)	SC†† SC IR Green (%)	SC†† SC IR Blue (%)	SC†† SC IR Grey (%)
2-Wall	2UVIR6/2RS13	0,24	0,266	0,24	0,627	66			60			0,69		
	2UVIR8/2RS15	0,31	0,307	0,39	0,574	65			61			0,70		
	2UVIR10/2RS17	0,39	0,348	0,39	0,532	65	52	20	60	58	42	0,69	0,67	0,48
3-Wall	2UVIR16/3TS27	0,63	0,553	0,79	0,400	55	36		52	49		0,60	0,56	
3-Wall X-structure	2UVIR16/3X29	0,63	0,594	0,63	0,370	46	29	22	45	32	30	0,52	0,37	0,34
5-Wall	2UVIR10/5RS175	0,39	0,358	0,31	0,421	48			48			0,56		
	2UVIR20/5RS33	0,98	0,676	0,71	0,312	46			46			0,53		
5-Wall X-structure	2UVIR20/5X32	0,98	0,655	0,79	0,298		24			37			0,51	
	2UVIR32/5X38	1,26	0,778	0,79	0,232	36	20	12	42	35	30	0,49	0,40	0,34
6-Wall	2UVIR16/6RS27	0,63	0,553	0,79	0,324	42			45			0,52		

• U-values based on Sabic calculated values according ISO 10077 (EN673)

\*\*LT (Light Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples

#TST (Total Solar Transmission) measurements according ISO 9050 (EN 410) on 600x600 mm samples

\*††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."

### UV Protection

Solar radiation has a particularly harmful effect upon polymeric materials initiating degradation by causing superficial surface crazing. These crazes become sites for further erosion from water, dust, chemicals, etc. The degree to which these conditions affect the polymer depend largely upon environmental parameters such as geographical location, altitude, seasonal variations, etc.

Lexan Thermoclear sheet has on one or both sides a unique proprietary UV-protected surface, giving excellent resistance to outdoor weathering. This unique protection ensures long-term optical quality under intensive UV exposure, and maintains the superior toughness of the polycarbonate material in comparison to other thermoplastic glazing.

### Typical Values of Thermoclear sheet

Research into the long-term effects of weathering on glazing materials is basically focused upon measuring product performance through material property changes, typically mechanical strength, impact resistance, colour retention, transparency, etc.

Under ISO 4892, a test has been developed using high intensity Xenon lamps to simulate natural sunlight. Together with UV filters and programmable rain cycles, the test is able to simulate natural conditions.

Accelerated weathering tests have been carried out on Lexan Thermoclear sheet by SABIC Innovative Plastics. Using in-house Xenon 1200 apparatus, these tests were carried out according to ISO 4892. However, even tougher demands were placed on the material by removing the UV filter for 1/6 of the cycle. Placed within this environment, Lexan Thermoclear sheet was exposed to 5,000 hours. Experience with the Xenon test equipment indicates that this relates to 15 years' natural exposure in a moderate European climate. Following the test the optical properties of light transmission and yellowness index were measured and compared with an un-aged sample.

### WARRANTY

SABIC Innovative Plastics offers a Ten Year Written Limited Warranty on Lexan Thermoclear sheet covering discolouration, loss of light transmission and loss of impact strength due to weathering as more specifically defined in such warranty. Please consult your local distributor or SABIC Innovative Plastics Sales Office for more details.





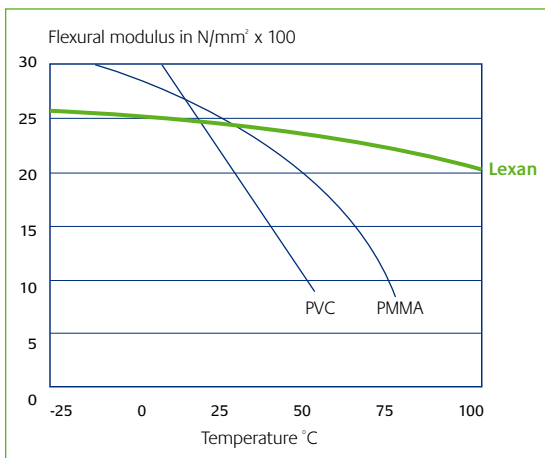
## Temperature Resistance

The heat build-up of glazing materials can be seen as a function of the solar energy absorption of the glazing material and the solar intensity.

In areas with intense sun radiation, and when high energy absorbing tinted glazing is installed, heat build-up of the glazing can be considerable. Calculations and actual measurements on installed Lexan Thermoclear sheet in several projects throughout Europe have shown that sheet surface temperatures of 100°C can exist.

## Dimensional Stability

Lexan Thermoclear sheet is characterised by its excellent retention of impact strength and stiffness at elevated temperatures, even over an extended period. Lexan Thermoclear sheet retains 85% of its room temperature flexural modulus at 80°C.



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## Continuous use Temperature

### UL Ratings

The U.S.A. Underwriters Laboratories continuous-use temperature rating can be considered as a reliable indicator of a thermoplastic's long-term high temperature performance. The most important properties of the thermoplastic are tested at various temperatures. Test results are extrapolated over a period of 10 years and no property may lose more than 50% of its original value. Table 7 outlines the UL continuous use temperatures of typical thermoplastic glazing materials.

Table 7: UL Temperature Ratings UL746B

Underwriters Laboratories	Continuous-use Temperature Rating	Softening Temperature
Lexan polycarbonate	212°F	293°F
Acrylic	122°F	212°F
PVC	122°F	158°F

Lexan Thermoclear sheet has a continuous-use temperature of 100°C. At the other end of the scale the minimum continuous-use temperature has been set at -40°C. However, using Lexan Thermoclear sheet at lower temperatures is possible since the embrittlement temperature is as low as -110°C.

## Fire Performance

Lexan Thermoclear sheet has good fire behaviour characteristics, and receives high ratings in several major European fire performance tests including EN13501. More detailed information is available from your local SABIC Innovative Plastics Service Centre or authorised dealer.

## Weight Factors

Lexan Thermoclear sheet is an ideal replacement for the more traditional glazing materials. It is safe and easy to handle, cut and install and is virtually unbreakable. Its light weight offers significant savings in terms of transportation, handling and installation. When compared with 6 mm wired glass, 10 mm Lexan Thermoclear sheet offers weight savings of more than 85%.

Lexan Thermoclear sheet has shown in many applications that its lightness and ease of handling have contributed to significant savings in overall installation costs.

Table 8: Weight

Lexan Thermoclear sheet	Thickness inch	Weight lbs/ft2
	0,16	0,164
	0,18	0,205
	0,24	0,266
	0,31	0,307
	0,39	0,348 - 0,410
	0,63	0,553 - 0,597
	0,79	0,614 - 0,676
	0,98	0,696 - 0,717
	1,26	0,778
	1,38	0,819
	1,57	0,881
	1,77	0,922
	1,97	0,983
Lexan Thermoclick sheet		
	1,57	0,819
Lexan Thermopanel sheet		
	1,18	0,737

## Sound Insulation

The sound insulation characteristics of a material are largely pre-determined by its stiffness, mass and physical construction. In accordance with DIN 52210-75, the maximum obtainable sound transmission class for a particular thickness of Lexan Thermoclear sheet is listed below.

8. Dimensional stability. Flexural modulus in N/mm² x100

Table 9: Sound Reduction Values

Lexan Thermoclear sheet	Thickness inch	Sound Reduction dB
	0,16	15
	0,18	16
	0,24	18
	0,31	18
	0,39	19
	0,63	21
	0,79	22
	0,98	23
	1,26	23
	1,38	24
	1,57	25
	1,77	26
	1,97	26
<b>Lexan Thermoclick sheet</b>		
	1,57	21
<b>Lexan Thermopanel sheet</b>		
	1,18	22

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

## Thermal Insulation

The multi-wall structure of Lexan Thermoclear 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. Heat loss is normally referred to as the U-value, which is the amount of energy transmitted through a material per square metre of glazing area and per degree temperature difference. It is expressed in terms of BTU/ft<sup>2</sup>.

Table 10: Material U-values BTU/ft<sup>2</sup> hr F.

Lexan Thermo-clear sheet	Thickness mm	U-value
	0,18 (2RS)	0,697
	0,24 (2RS)	0,627
	0,32 (2RS)	0,574
	0,39 (2RS)	0,532
	0,39 (3RS)	0,474
	0,39 (3TS)	0,472
	0,39 (3X)	0,461
	0,63 (3TS)	0,400
	0,63 (3X)	0,370
	0,63 (6RS)	0,324
	0,79 (5X)	0,312
	0,79 (5RS)	0,298
	0,79 (6RS)	0,284
	0,98 (5X)	0,266
	0,98 (6RS)	0,255
	1,26 (5X)	0,232
	1,38 (9X)	0,210
	1,58 (9X)	0,194
	1,77 (9X)	0,181
	1,97 (9X)	1,730
<b>Lexan Thermoclick sheet</b>		
	1,57 (4X)	0,248
<b>Lexan Thermopanel sheet</b>		
	1,18 (A,B,C,D) (4RS/3,6)	0,335
	1,18 (A,B,C,D,F,G,V,T) (3X/3,6)	0,306

U-values based on Sabic-IP calculated values according ISO 10077 (EN673)

## Overglazing

Installing Lexan Thermoclear sheet in front or behind the existing glazed window provides additional energy savings. For effective insulation, the best results are obtained when leaving a 20-50 mm air gap between the existing glazing and the Lexan multi-wall sheet.

## Double Lexan Multi-wall sheet Units

Extremely low U-values can be obtained by double-glazed multi-wall Lexan sheet units. A combination of Lexan Thermoclear sheet outside and Lexan Thermoclear sheet inside, with an air gap of 20-50 mm will dramatically reduce the heat loss factor in applications such as curved and pitched roof lights.

## Energy Loss Calculations

The need to reduce energy consumption, and therefore energy costs, is one of the highest priorities in any business today. Substantial savings of more than 50% are possible when installing Lexan Thermoclear sheet instead of mono-layer glass. When calculating according to the guidelines given in the DIN standard 4701, an average annual saving of between 0.9 - 1.3 litres of oil or 1.0 - 1.5 m<sup>3</sup> of gas per m<sup>2</sup> of glazing area will be obtained by decreasing the U-value by 0.1 W/m<sup>2</sup>K.

Table 13 shows the minimum and maximum amount of savings of fuel consumption per m<sup>2</sup> glazing area when the U-value is decreased by varying amounts.

### Calculation example

Annual fuel saving when glass is replaced by Lexan Thermoclear sheet.

Data:

4 mm glass, U-value - 5.8 W/m<sup>2</sup>K

10 mm Lexan Thermoclear sheet, U-value - 3.0 W/m<sup>2</sup>K

U-value difference: 5.8 - 3.0 = 2.8 W/m<sup>2</sup>K. As shown in Table 12, the minimum and maximum amount of annual fuel savings per m<sup>2</sup> glazing area are:

25.2 - 36.4 litres of oil

28 - 42 m<sup>3</sup> of gas

Table 11: Overglazing

Glass Thickness inch	Air space inch	Thermoclear sheet Thickness inch	U-value BTU/ft <sup>2</sup> hr F
0,16	0,79 - 1,97	0,24 (2RS)	0,382
0,16	0,79 - 1,97	0,31 (2RS)	0,368
0,16	0,79 - 1,97	0,39 (2RS)	0,347
0,16	0,79 - 1,97	0,39 (3TS)	0,298

Installing Lexan Thermoclear sheet in front or behind the existing glazed window provides additional energy savings. For effective insulation, the best results are obtained when leaving a 20-50 mm air gap between the existing glazing and the Lexan multi-wall sheet.

Table 12: Double Lexan Multi-wall sheet Units

Thermoclear sheet outside	Air gap inch	Thermoclear sheet inside	U-value BTU/ft <sup>2</sup> hr F
0,24 (2RS)	0,79 - 1,97	0,18 (2RS)	0,322
0,31 (2RS)	0,79 - 1,97	0,18 (2RS)	0,313
0,39 (2RS)	0,79 - 1,97	0,24 (2RS)	0,284
0,63 (3TS)	0,79 - 1,97	0,24 (2RS)	0,250
0,63 (3TS)	0,79 - 1,97	0,31 (2RS)	0,245
0,79 (5RS)	0,79 - 1,97	0,24 (2RS)	0,210
0,79 (5RS)	0,79 - 1,97	0,31 (2RS)	0,204

Table 13

U-value difference BTU/ft <sup>2</sup> hr F	Annual saving per 10,8 ft <sup>2</sup> glazing area	
	Oil - Gallon	Gas - ft <sup>3</sup>
0,02	0,24-0,35	35-53
0,04	0,48-0,69	71-106
0,05	0,72-1,04	106-159
0,07	0,96-1,38	141-212
0,09	1,19-1,72	177-265
0,11	1,43-2,07	212-318
0,12	1,67-2,41	247-371
0,14	1,91-2,75	283-424
0,16	2,14-3,1	318-477
0,18	2,38-3,44	353-530
0,21	2,86-4,13	424-636
0,25	3,33-4,81	494-742
0,28	3,81-5,5	565-848
0,32	4,28-6,19	636-953
0,35	4,76-6,87	706-1059
0,39	5,24-7,56	777-1165
0,42	5,71-8,25	848-1271
0,46	6,19-8,93	918-1377
0,49	6,66-9,62	989-1483
0,53	7,14-10,31	1059-1589
0,56	7,61-10,99	1130-1695
0,60	8,09-11,68	1201-1801
0,63	8,56-12,37	1271-1907
0,67	9,04-13,06	1342-2013
0,70	9,52-13,74	1413-2119

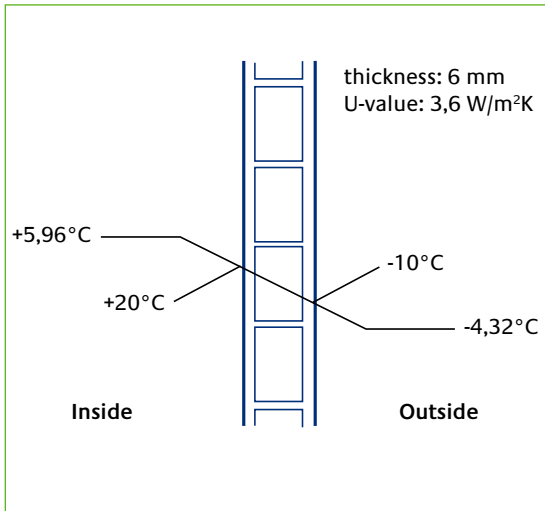
### Note:

The exact amount of annual fuel savings is strongly dependent upon the building type, location and regional environmental conditions. Local authority engineering departments usually have official data relating to average temperature differences throughout the year.

**Cold Radiation**

The excellent insulation properties of Lexan Thermoclear sheet will also contribute to a reduction in the radiation of cold into the building. The lower the U-value, the higher the inner sheet surface temperature will be maintained during the winter season.

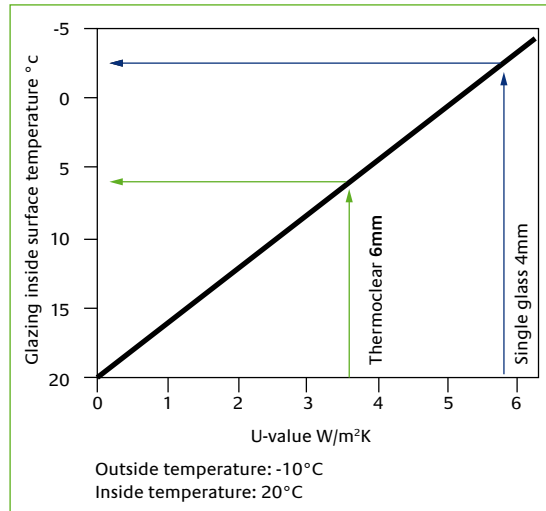
Fig. 9 presents an example of the temperature profile through 6 mm Lexan Thermoclear sheet when the outside temperature is  $-10^{\circ}\text{C}$  and the inside building temperature is  $+20^{\circ}\text{C}$ .



9

The multi-wall construction creates an air space which results in a moderate sheet surface temperature. Under the conditions indicated, the inner sheet surface temperature remains far above zero so that there is no cold radiation to the inside of the building.

Fig. 10 compares Lexan Thermoclear sheet with single glazed glass under the same conditions. The inside glass surface temperature is well below zero, which means that cold radiation will negatively influence the overall building temperature and will affect the comfort level near the windows.



10

9. Temperature process through Lexan Thermoclear sheet at low outside temperature.

10. Comparison of Lexan Thermoclear sheet with single glazed glass under the same conditions.

These cleaning recommendations apply to all Lexan polycarbonate sheet products, including, but not limited to, Lexan solid sheet and signs, Lexan coated Margard\* sheet and Lexan multiwall sheet. Periodic cleaning using correct procedures can help to prolong service life. For cleaning, it is recommended that the following instructions be adhered to:

### Cleaning Procedure for Small Areas – Manual

1. 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.
2. Fresh paint splashes, grease and smeared glazing compounds can be removed easily before drying by rubbing lightly with a soft cloth using petroleum ether (BP65), hexane or heptane. Afterwards, wash the sheet using mild soap and lukewarm water.
3. Scratches and minor abrasions can be minimized by using a mild automobile polish. We suggest that a test be made on a small area of Lexan sheet with the polish selected and that the polish manufacturer's instructions be followed, prior to using the polish on the entire sheet.
4. Finally, thoroughly rinse with clean water to remove any cleaner residue and dry the surface with a soft cloth to prevent water spotting.

### Cleaning Procedure for Large Areas - Automated

1. Clean the surface using a high-pressure water cleaner (max. 100bar or 1,450psi) and/or a steam cleaner. We suggest that a test be made on a small area, prior to cleaning the entire sheet.
2. Use of additives to the water and/or steam should be avoided.

### Other Important Instructions for All Lexan sheets:

- Never use abrasive or highly alkaline cleaner on Lexan polycarbonate materials.
- Never use aromatic or halogenated solvents like toluene, benzene, gasoline, acetone or carbon tetrachloride on Lexan polycarbonate materials.
- Use of incompatible cleaning materials with Lexan sheet can cause structural and/or surface damage.
- Contact with harsh solvents such as methyl ethyl ketone (MEK) or hydrochloric acid can result in surface degradation and possible crazing of Lexan sheet.
- Never scrub with brushes, steel wool or other abrasive materials.
- Never use squeegees, razorblades or other sharp instruments to remove deposits or spots.
- Do not clean Lexan polycarbonate in direct sunlight or at high temperatures as this can lead to staining.
- For all mentioned chemicals consult the manufacturer's material safety datasheet (MSDS) for proper safety precautions.

### Additional Important Considerations for Multiwall, Corrugated and Sign sheet:

- Cleaners and solvents generally recommended for use on polycarbonate are not necessarily compatible with the UV-protected surfaces of Lexan multiwall, corrugated and sign polycarbonate materials.
- Do not use alcohols on the UV-protected surfaces of Lexan sheet.
- Never clean the Dripgard surface of Lexan multiwall and corrugated sheets.



**Condensation**

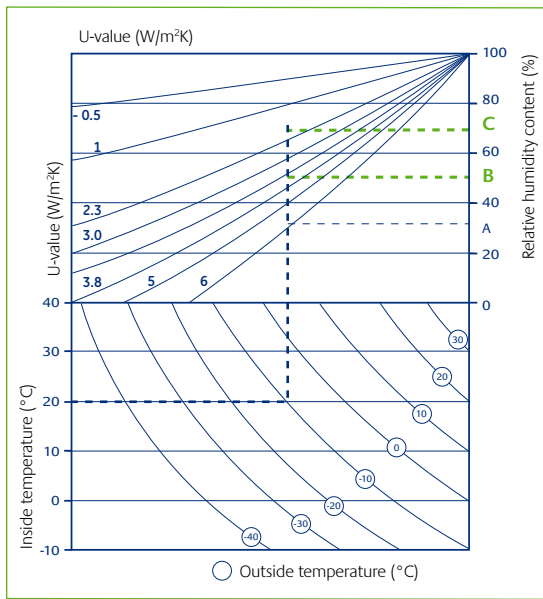
Condensation is formed when moisture in the atmosphere changes back to water as it comes into contact with a surface at a temperature below the ‘dewpoint’ of the surrounding air.

Water droplets on the surface of the glazing reduce light transmission, and, if they fall, can spoil plants or damage sensitive goods and equipment underneath. Lexan Thermoclear Dripgard sheet has a special one-sided coating that inhibits the formation of condensation droplets. The coating lowers the surface tension and the droplets form a thin layer of water over the whole surface of the sheet.

When the sheet is correctly installed, this thin, transparent water film runs off the sheet surface into the profile drainage system without falling to the ground and without affecting the light transmission values of the glazing.

Fig. 11 shows a typical condensation prediction chart showing the relationships between internal and external temperatures, relative humidity and the U-value. The dotted lines on the chart illustrate clearly how glass with a high U-value is more prone to condensation than Lexan Thermoclear Dripgard sheet.

**Example:**



11

Inside temperature: 20°C  
 Outside temperature: -10°C

Condensation will occur on:

- A Glass U-value 5.8 w/m<sup>2</sup>K at a humidity content of: 32%
- B LTC 6 mm U-value 3.56 w/m<sup>2</sup>K at a humidity content of: 50%
- C LTC 20 mm U-value 1.8 w/m<sup>2</sup>K at a humidity content of: 68%

**Chemical Resistance**

Lexan Thermoclear sheet has been successfully used in combination with many building materials and glazing compounds. Taking into account the complexity of chemical compatibility, all chemicals which come into contact with polycarbonate should always be tested in the particular application. For sheet products, the most common materials are sealants, gaskets and the various cleaning media. Chemical compatibility testing is an ongoing process at SABIC Innovative Plastics and many standard products have already been tested. A complete list of recommended cleaners, gaskets and sealants is available upon request. However, a shortened list of some of the more common compounds is shown below.

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. Momentive Silicones’ sealants are generally recommended for use with Lexan Thermoclear sheet, see Table 14. It is strongly advised when using other sealing compounds to check compatibility before use.

11. Condensation Prediction Chart showing the relationships between internal and external temperatures, relative humidity and the U-value

Table 14: Recommended Sealants

Sealant	Supplier
Silpruf	Momentive
MultiSil	Momentive

Compatible Neoprene, EPT or EPDM rubbers with an approximate Shore Hardness of the A65 are recommended, and compatibility reports for different rubber types are available upon request.

Table 15: Recommended Gasket Systems

Gasket Type*	Supplier
EPDM	Helvoet
Chloropene, RZ4-35-81	
EPDM 4330, 4431, 5530, 5531	Vredestein
EPDM 3300/670, 64470	Phoenix

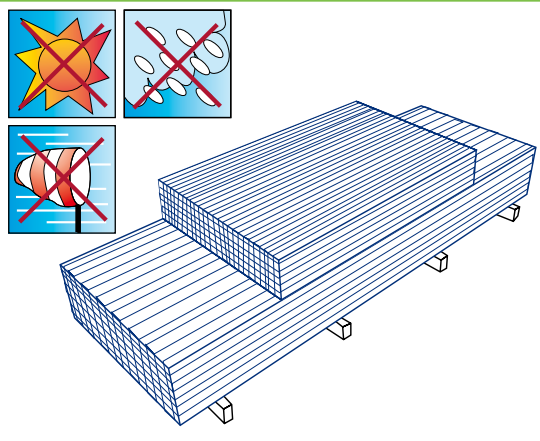
\* more grades available

In case of doubt about any aspect of the chemical compatibility of the Lexan Thermoclear sheet range, always consult your nearest SABIC Innovative Plastics Sales Office for further advice.



**Storage**

Lexan Thermoclear sheet should be stored and protected against atmospheric influences like sun, rain, etc. Lexan Thermoclear sheets of the same length should be stacked together horizontally or, if different lengths, graded with the longest sheet at the bottom of the stack in order to avoid unsupported overhangs. The stacks should be supported on timber bearers and should not be placed where they can be walked on or driven into.



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**Handling**

As with all glazing materials, care should be exercised when handling and transporting Lexan Thermoclear sheet in order to prevent scratches and damage to sheet edges. Each sheet is packaged as follows to minimise the risk of these problems:

- The top face is covered with printed masking. Lexan Thermoclear (1UV) and Dripgard masking have a blue print, Lexan Thermoclear Plus (2UV) has a red print, Lexan SunXP and Easyclean have a green printed masking.
- The bottom face has a neutral masking.
- The edges of the sheets have colored tape on them, blue for Lexan Thermoclear (1UV), yellow for Lexan Thermoclear Plus (2UV), green for Dripgard, purple for Easyclean and red tape for SunXP.
- The sheet should be kept in their packaging until immediately prior to installation.

**Sawing**

Lexan Thermoclear 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 dry compressed air. Circular saws should have fine-toothed panel blades. When hand or power hacksaws are used, the sheet should be clamped to the worktable to avoid undesirable vibration. To avoid scratching the surface do not remove the protective masking. When finished the edges of the Lexan Thermoclear sheet should be free of notches and swarf build-up.

With the smaller wall section Lexan Thermoclear sheet, (up to 10 mm), it is possible to cut the sheet with a knife. However, it is important that the knife is sharp.

**Drilling**

Holes can be drilled by a power drill using standard high speed steel twist drills or drills with an angular wedged bit. When drilling, support should be given immediately beneath the drill to avoid vibration. Very clean holes are easily obtained. The use of liquid cooling media is not recommended.

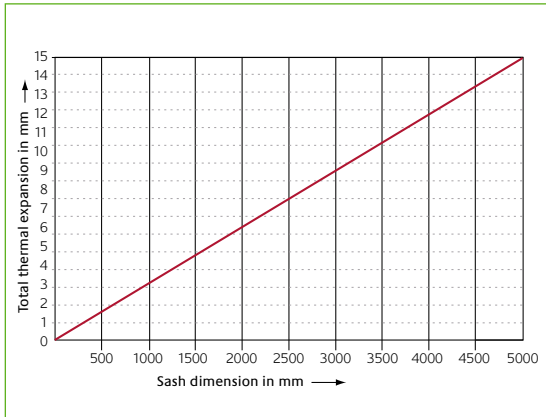


**Installation**

Glazing with Lexan Thermoclear sheet should be considered a finishing operation and seen as the final step in the completion of an application.

**Thermal Expansion Allowance**

Since Lexan Thermoclear 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 thermal stress.



13

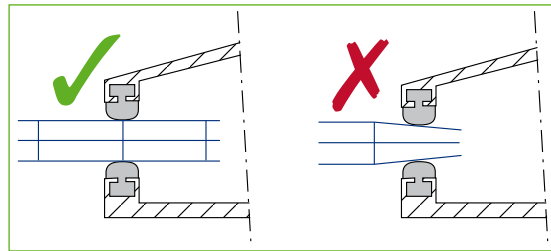
Allowance for thermal expansion must be made for both the length and the width of the Lexan Thermoclear sheet. The recommended allowances for various sheet dimensions are outlined in the graph. The sheet must be trimmed to allow for at least as much as the indicated thermal expansion.

**In general:** Thermal expansion of the sheet is approximately 3 mm per linear metre at a delta of 50°C.

**Sheet Edge Clamping Conditions**

The following recommendations apply to installations involving both flat glazing, i.e. vertical, horizontal or inclined, and curved glazing. It is extremely important when installing Lexan Thermoclear sheet that the edges are correctly clamped, whether the application involves wet or dry glazing conditions.

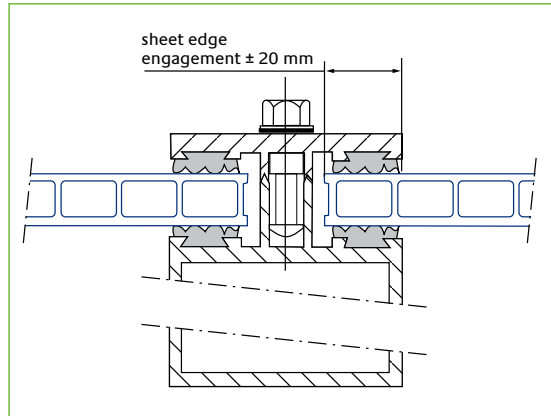
A cover plate, or glazing bead, with rubber gaskets or silicone sealant, hold the sheet in place and create a water-tight seal. In both cases there must be sufficient clearance to allow for thermal expansion of the sheet. It is also important that the edge of the sheet is engaged for a minimum of 20 mm into the glazing frame with at least one rib located in the clamping area. See fig. 14 and 15.



14

In general the total rebate depth for each profile should include a minimum of 20 mm sheet edge engagement and an allowance for thermal expansion.

# Due to the rib geometry of Lexan Thermoclear sheet, at a thickness of ≥16 mm, additional precautions should be taken. In this case it is important that the sheet is cut such that at least one rib is located in the centre of the rebate.



15

13. This figure shows Thermal Expansion Allowance at various sash dimensions

14, 15. Indicates correct\* installation when clamping the sheet in a profile

**Dry Glazing Systems**

This selection illustrates some glazing proposals using commercially available profiles which have proven to be successful in combination with Lexan Thermoclear sheet. Situations may occur where sheet expansion exceeds sealant limitations and, often for aesthetic reasons, this type of 'dry' glazing system provides an ideal solution.

The advantage of dry systems is that the rubber gaskets snap-fit into the glazing strips which then allow free movement of the sheet during expansion and contraction. See fig.16 and 17.

**WARNING!**

**Do not use PVC gaskets.**

Due to the migration of additives from soft PVC, the Lexan Thermoclear sheet can be chemically affected resulting in surface cracks or even sheet breakage.

A wide range of easy to use glazing bars and fixing accessories, designed specifically for glazing Lexan Thermoclear sheet, is available from most of the approved Lexan Thermoclear sheet distributors and specialised installers.

**Wet Glazing Systems**

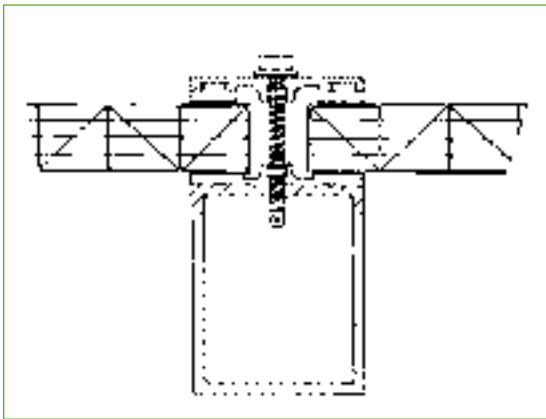
This type of installation system is mainly used in small domestic type applications, car ports, warehouses, conservatories and other glass replacement situations.

With standard metal profiles or wooden sections, in combination with glazing tapes and glazing compounds, many different configurations are possible. See fig.18 and 19.

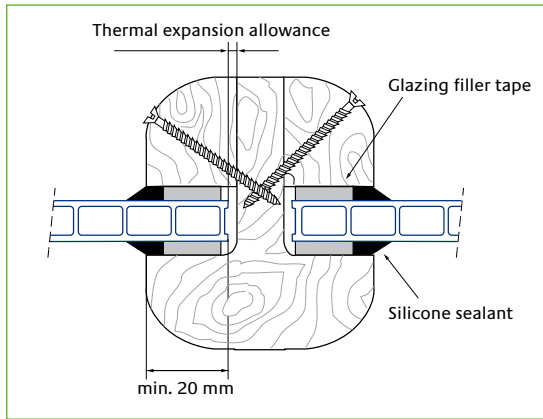
When using glazing compounds it is essential that the sealant system accepts a certain amount of movement, to allow for thermal expansion, without loss of adhesion to the frame or sheet. Silicone sealants are generally recommended for use with Lexan Thermoclear sheet, but it is strongly advised when using sealing compounds to check compatibility before use.

Care should be taken not to use amine nor benzamide curing silicone sealants, which are not compatible with Lexan sheet and result in crazing, particularly when stress is involved. See page 17, Table 5, for suitable sealant.

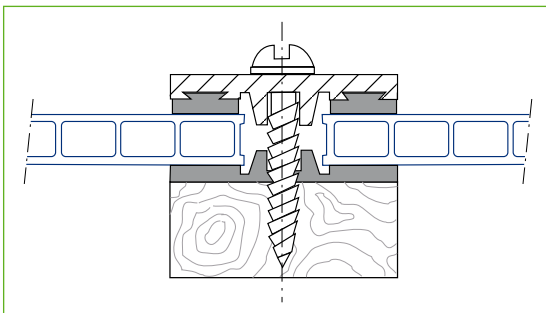
16-17-18-19. Different installation profile examples



16



18



17



19

## Edge sealing

In all cases Lexan Thermoclear sheet should be mounted with the ribs running downwards to assist condensation water drainage. Algae growth, in the form of a green deposit inside the sheet channels, may occasionally be a problem. It is the result of permanent condensation inside the channels due to particular temperature conditions.

Since moisture build-up and dust/insect contamination inside the channels can be a major problem, one of the most important aspects of installation is edge sealing, particularly of the open-ended channels. There are several techniques that can be adopted to significantly reduce contamination, the choice depending largely on the prevailing environmental conditions.

## Sealing Tape

It should be noted that the tape delivered on Thermoclear sheet is for protection, during transportation and storage, only and is not an impermeable sealing/ installation tape. This tape should be replaced prior to installation with a tape as described below.

Before taping, approximately 50 mm of the masking should be removed from all sheet edges. The remaining masking should be removed only when installation is completed.

- The tape should have good weathering resistance, without loss of long-term adhesion or mechanical strength.
- The tape should have good resistance to tearing and other damage during installation and handling.
- In close co-operation with the company Multifoil, an anti-dust impermeable tape G3600 and an anti-dust venting tape AD3400/AD4500 have been developed. Multifoil will provide within Europe a 10 Year Guarantee on the operation of the tapes.

## MULTIFOIL B.V.

Laanakkerweg 12  
4131 PA Vianen  
The Netherlands  
tel. +31 347 366 717  
fax. +31 347 366 718

## Sealing Guidelines

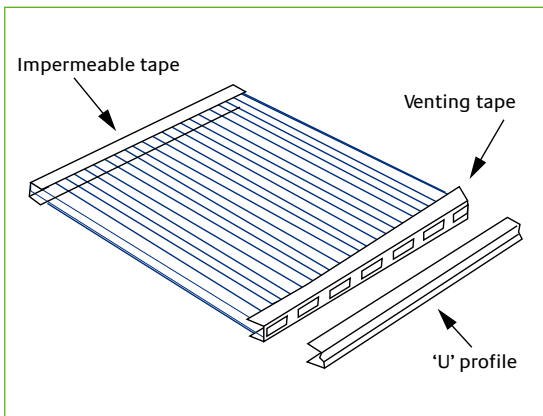
The following Guidelines are recommended to minimise sealing and contamination problems:

- Ensure that all sheet edges are smooth and rounded before applying the tape.
- All channels should be blown free of dust before sealing.
- Ensure tape is completely covered by glazing profiles, flashings, end closures, etc. No tape should be left exposed when installation is complete.
- Replace any damaged tape before final installation.
- Recommended sealing tapes for glazing Lexan Thermoclear sheet are available from most approved Lexan Thermoclear distributors and specialised installers.

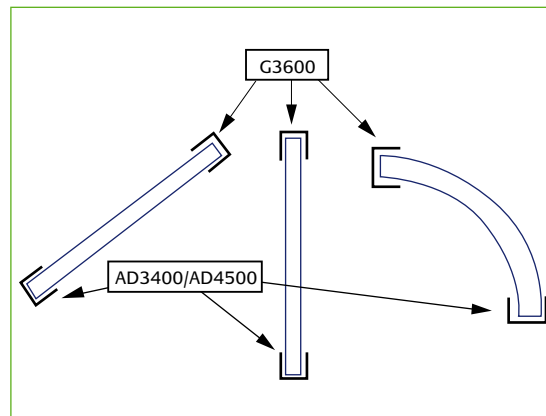
## Standard Glazing Conditions

In standard glazing conditions, the top end channels are sealed with an impermeable tape and the bottom end channels are sealed with a perforated filter tape. See fig. 20 and 21.

An additional 'U' profile can be installed to cover the perforated bottom tape and to facilitate condensation drainage. (See fig. 24 and 25).



20



21

In semicircular barrel vaults both channel ends should be sealed with perforated filter tape e.g. Multifoil AD 3400. See fig. 22

Care should be taken to provide a clearance between both the sheet edges and the sash platform to allow for condensation drainage. See fig. 23 and 24.

In general the total rebate depth for each profile should include a minimum of 20 mm sheet edge engagement and an allowance for thermal expansion.

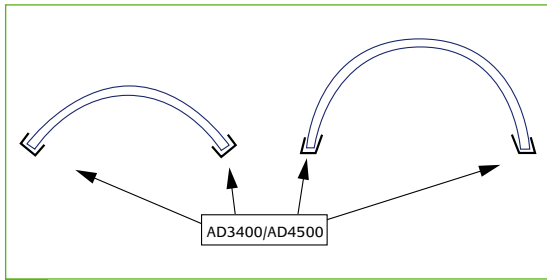
## Specific Glazing Conditions

In certain environments, it is recommended that both channel ends are sealed with an impermeable tape. See fig. 25.

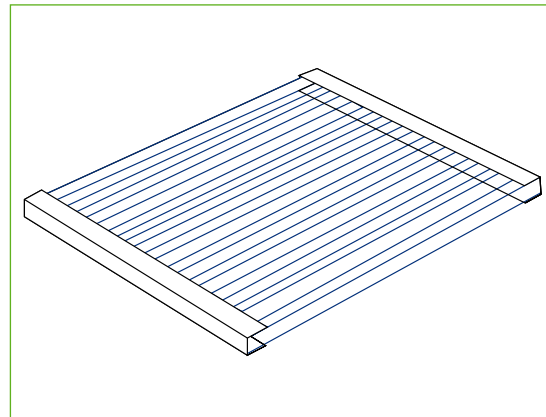
These environments include:

- Extremely dusty environments (sawmills – welding stations, etc)
- Low humidity/dry conditions (shopping centres – warehouses, etc)
- Limited temperature difference between the interior and exterior (football stadia – metro/railway station roofing, etc)

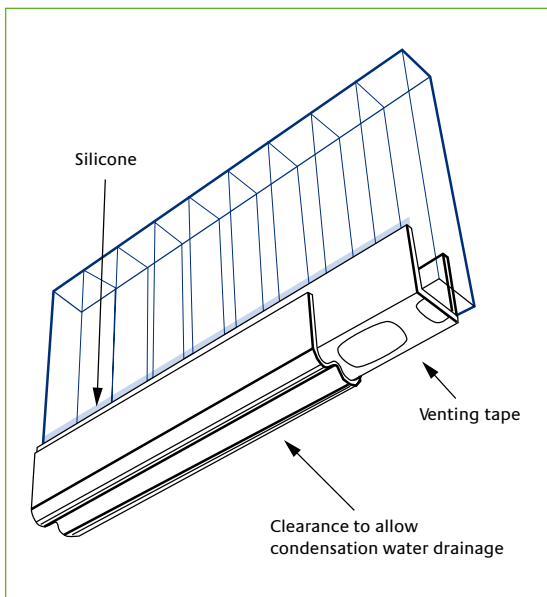
## 25. Impermeable tape on both sides



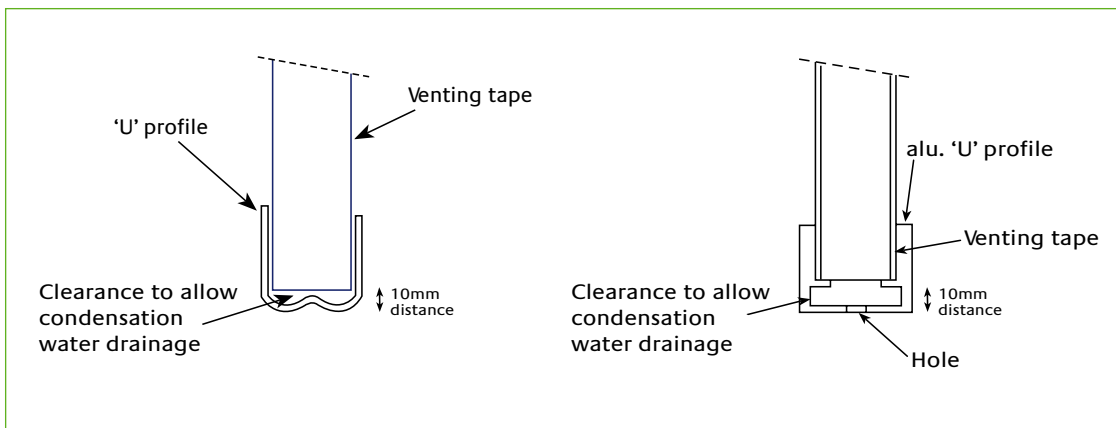
22



25



23



24

## Dynamic Wind Pressure

The wind speed is used to determine the actual loading upon the glazing panels. In mathematical terms, the pressure loading is calculated by multiplying the square of the design wind speed by 0.613.

$$q = KV^2$$

where  $q$  = dynamic wind pressure in  $N/m^2$   
 $K = 0.613$   
 $V$  = design wind speed in metres/second

Table 16: Values of  $q$  in SI units ( $N/m^2$ )

wind speed m/s	wind pressure $N/m^2$
10	61
15	138
20	245
25	383
30	552
35	751
40	981
45	1240
50	1530
55	1850
60	2210
65	2590

For glazing projects with an unusual loading condition, please contact your local SABIC Innovative Plastics Sales Office

The Beaufort scale transforms wind into static pressure:

WIND	light	moderate	strong	storm
Speed (km/h)	20	40-60	80-100	120-140
Speed (m/sec)	6	11-17	22-28	33-39
Static pressure ( $N/m^2$ )	20	80-170	300-480	680-950

Table 16a:

Height of Building ft	wind speed ft/s	wind pressure lb/ft <sup>2</sup>
0 – 26	93	10,4
26 – 66	117	16,7
66 – 328	138	23,0
> 328	150	26,1

## Pressure Coefficient

To allow for local fluctuations in the acceleration/ deceleration of the wind by building or glazing geometry, it is necessary to include an appropriate pressure coefficient.

Determine pressure coefficients requires knowledge of:

- Form and type of building
- Height of glazing
- Shape of glazing e.g.
  - Flat vertical
  - Inclined roofing
  - Curved glazing

The wind loading is obtained by multiplying the dynamic wind pressure by the pressure coefficient. The total wind loading can be positive indicated a wind pressure force or negative indicating a wind suction load. Detailed pressure coefficient values can be found in the appropriate national building norms.

## Snow Loading

Snow loading on roof glazing can be considered equivalent to a vertically, uniformly distributed load, acting per  $m^2$  of the horizontal projection of the glazing. A roof made of Lexan Thermoclear sheet does not permit immediate melting of the snow, due to its excellent thermal insulation, and therefore the load produced by the snow must be carefully taken into consideration.

## Snow-indicative weights per centimetre of height

- fresh snowfall - 0.8-1.9  $kg/m^2$  per cmh.
- wet snowfall - 2-8  $kg/m^2$  per cmh.

Snow loading factors can be obtained from the appropriate local building norm.

## Computer Aided sheet Engineering

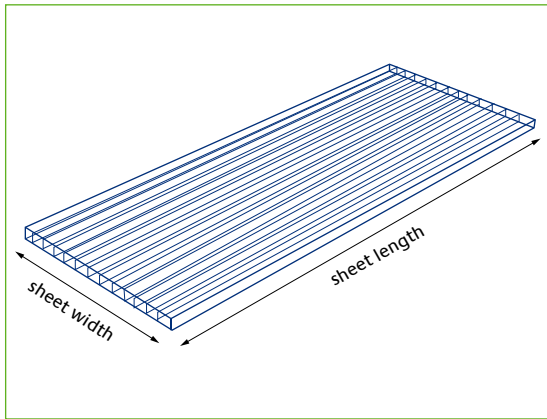
A computer aided design programme has been developed especially for large glazing projects, or projects with an uncommon shape or unusual loading conditions. The programme creates the finite element model of a particular glazing design, applies the specified loads and edge conditions and runs the deflection analysis. Consult your nearest SABIC Innovative Plastics Technical Service Centre for further advice.



**Support Conditions**

**Note**

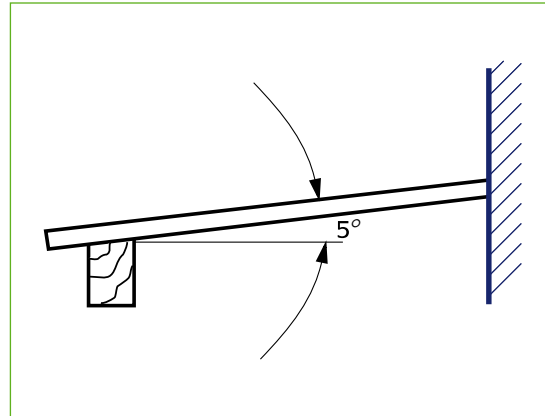
Regardless of the support configuration selected, the sheet should always be installed so that the rib structure channels are sloping downwards. Sheet “width” is the dimension perpendicular to the rib structure, “length” the dimension parallel.



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**Sloped roofing**

For sloped glazing applications a minimum slope of 5° (9 cm/m sheet length) is advised to allow for rainwater drainage.

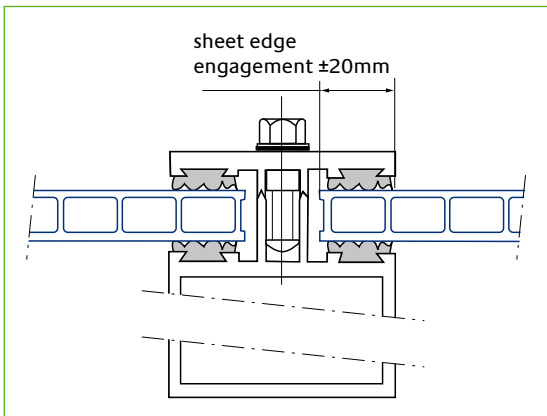


28

**Safety Factor**

Tables 17, 18 and 19 indicate the maximum allowable sheet size at a specified loading which results in an acceptable sheet deflection behaviour without the risk of sheet buckling or pop-out effect calculated with a safety factor of 1.5.

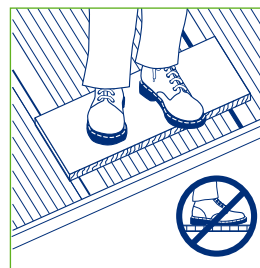
N.B. The values indicated in the Tables are applicable for a Lexan Thermoclear sheet edge engagement in the glazing frame of at least 20 mm.



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**Site Safety**

On roof constructions Lexan Thermoclear sheet should not be used to support a person’s weight during installation or cleaning. A temporary wooden beam or other device, supported by the roof members, should always be used.



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## Flat Glazing sheet Thickness

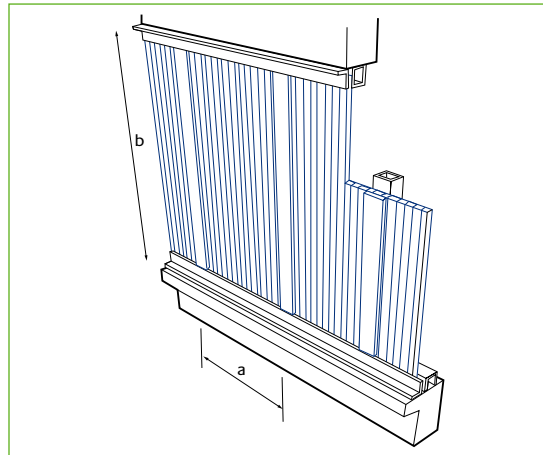
The deflection characteristics in this particular configuration are dependent upon the ratio of the support bar spacing a:b, see Figure 30.

In practice “a” represents the centre to centre distance of glazing profiles on the short glazing side i.e. the width of sheet.

“b” represents the centre to centre distance of glazing profiles on the long glazing side i.e. length of sheet.

Table 17 indicates the maximum allowable short glazing side of three different ratios of glazing bar spacing.

Ratio sheet width “a”: sheet length “b” 1:1  
 Ratio sheet width “a”: sheet length “b” 1:<1.5  
 Ratio sheet width “a”: sheet length “b” 1:>1.5



30

Table 17: Centre to Centre Distance (inch) of glazing profiles (shortest side (a))

	Ratio sheet width: sheet length																							
	1:1	1:<1.5	1:>1.5	1:1	1:<1.5	1:>1.5	1:1	1:<1.5	1:>1.5	1:1	1:<1.5	1:>1.5	1:1	1:<1.5	1:>1.5	1:1	1:<1.5	1:>1.5						
Loading in lb/ft <sup>2</sup>	12,5			16,7			20,9			25,1			29,2			33,4			37,6			41,8		
LT2UV452RS10	690	850	450																					
LT2UV62RS13	41,3	36,2	24,0	37,4	33,5	22,4	35,4	30,7	20,9															
LT2UV82RS15	49,2	43,3	28,3	45,3	40,2	25,8	42,3	37,0	24,0	40,2	35,4	22,4	38,2	32,7	21,1	36,6	30,7	20,1						
LT2UV102RS17	59,1	45,3	32,1	54,1	42,1	28,7	50,4	37,4	26,4	47,8	36,2	24,4	45,7	33,5	23,0	43,7	31,5	21,5	42,1	29,9	20,5			
LT2UV103RS19	57,9	43,7	31,5	53,3	40,7	28,7	49,8	36,8	26,6	47,4	35,2	24,6	45,3	32,7	22,6	43,5	30,7	21,3	41,9	29,3	20,1			
LT2UV103X20	70,9	49,2	35,4	66,9	46,5	34,3	63,0	44,1	31,9	59,8	41,3	29,5	57,1	39,4	28,3	53,1	37,4	27,6	51,2	35,4	26,0	47,2	33,5	24,4
LT2UV103T20	60,6	51,6	35,0	55,5	49,2	31,9	52,0	45,3	29,5	49,2	41,7	27,6	47,2	38,6	26,0	45,3	36,2	24,8	43,7	33,9	24,0	42,1	31,9	23,0
LT2UV105RS175	63,0	47,2	33,5	59,1	43,3	31,5	56,1	41,3	29,5	54,1	38,6	27,6	51,2	37,4	25,6	47,2	35,4	23,6	43,3	33,5	21,7	39,4	31,5	19,7
LT2UV163TS27	66,9	55,9	43,3	63,0	51,6	38,6	59,1	47,6	34,6	57,1	44,1	31,9	55,1	41,7	29,5	51,2	39,4	27,6	49,2	37,4	26,2	47,2	35,4	24,4
LT2UV163TS28	82,7	55,9	43,3	76,8	51,6	38,6	71,9	47,6	34,6	67,9	44,1	31,9	65,0	41,7	29,5	61,0	39,4	27,6	58,1	37,4	26,2	49,2	35,4	24,4
LT2UV163X29	82,7	66,9	47,2	82,7	63,0	45,3	74,8	57,1	43,3	70,9	53,1	41,3	66,9	47,2	39,4	63,0	43,3	37,4	59,1	39,4	35,4	55,1	37,4	33,5
LT2UV166RS27	70,9	55,1	45,3	66,9	53,1	41,3	63,0	48,0	38,6	59,1	45,3	37,4	55,9	43,3	35,4	51,2	41,3	34,6	47,2	39,4	33,5	43,3	37,4	31,5
LT2UV205RS33	82,7	63,0	47,2	82,7	59,1	45,3	78,7	55,1	41,3	74,8	51,2	38,6	66,9	47,2	35,4	63,0	45,3	33,5	59,1	41,3	31,5	55,1	39,4	29,5
LT2UV205X32	49,2'	49,2'	49,2'	49,2'	49,2'	47,2	49,2'	49,2'	45,3	49,2'	49,2'	43,3	49,2'	49,2'	41,3	49,2'	49,2'	39,4	49,2'	49,2'	38,6	49,2'	49,2'	36,2
LT2UV206RS30	49,2'	49,2'	49,2'	49,2'	47,2'	45,3'	49,2'	47,2'	45,3'	49,2'	47,2'	43,3'	49,2'	43,3'	39,4'	49,2'	43,3'	38,6'	47,2'	38,6'	35,4'	45,3'	37,4'	33,5'
LT2UV255X34	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	47,2	49,2'	49,2'	43,3	49,2'	49,2'	39,4
LT2UV256RS35	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	47,2	49,2'	49,2'	45,3	49,2'	49,2'	43,3	49,2'	49,2'	41,3	49,2'	49,2'	39,4	49,2'	49,2'	37,4
LT2UV325X38	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	49,2'	47,2	49,2'	49,2'	43,3
LT2UV359X40	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'
LT2UV409X43	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'
LT2UV459X45	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'
LT2UV509X48	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'	47,2'

\* centre to centre distance = maximum sheet width

### Example I

Window size: width 800 mm  
 length: 1200 mm  
 (Ratio a:b = 1 : 1.5)  
 Loading: 1600 N/m<sup>2</sup>  
 Required sheet type: LT2UV10/2RS17

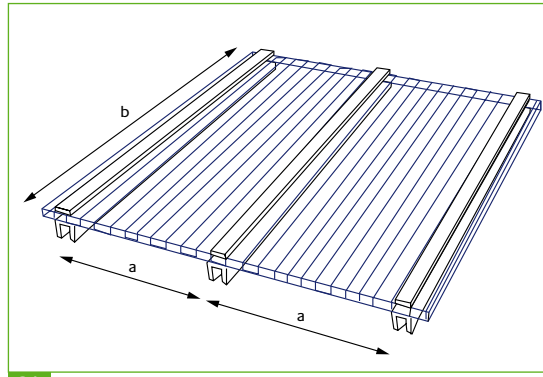
### Example II

Window size: width 1100 mm  
 length 3000 mm  
 (Ratio a:b = 1 : >1.5)  
 Loading: 600 N/m<sup>2</sup>  
 Required sheet type: LT2UV16/3TS28 or LTUV16/3TS27

## Two sides clamped, glazing bars parallel with rib structure

a = centre to centre distance of glazing profiles  
 b = sheet length

The major factor determining the sheet deflection behaviour is the distance “a” between the centre points of two adjacent supports. Since any length of sheet can be selected, the measurement “b” does not influence the overall deflection performance.



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Table 18: Centre to Centre Distance (inch) of glazing profiles “a”; glazing profiles parallel with the rib structure

Loading in lb/ft <sup>2</sup>	centre to centre distance (inch)							
	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
LT2UV62RS13	22,4	20,9						
LT2UV82RS15	25,8	2,4	22,4	21,1	20,1			
LT2UV102RS17	28,7	26,4	24,4	23,0	21,5	20,5		
LT2UV103RS19	31,5	28,7	26,6	24,6	22,6	21,3	20,1	0,0
LT2UV103X20	35,4	34,3	31,9	29,5	28,3	27,6	26,0	25,2
LT2UV103T20	35,0	31,9	29,5	27,6	26,0	24,8	24,0	
LT2UV105RS175	33,5	31,5	29,5	27,6	25,6	23,6	21,7	
LT2UV163TS27	43,3	38,6	34,6	31,9	29,5	27,6	26,2	24,4
LT2UV163TS28	43,3	38,6	34,6	31,9	29,5	27,6	26,2	24,4
LT2UV163X29	47,2	45,3	43,3	41,3	39,4	37,4	35,4	33,5
LT2UV166RS27	45,3	41,3	38,6	37,4	35,4	34,6	33,5	31,5
LT2UV205RS33	47,2	45,7	42,1	38,6	36,2	33,9	31,9	30,3
LT2UV205X32	49,2	49,2	49,2	45,3	41,3	39,4	37,4	35,4
LT2UV206RS30	49,2	47,2	43,3	41,3	39,4	37,4	35,4	31,5
LT2UV255X34	49,2	49,2	49,2	49,2	46,3	43,3	41,3	39,4
LT2UV256RS35	49,2	49,2	47,2	45,3	43,3	41,3	39,4	37,4
LT2UV325X38	49,2	49,2	49,2	49,2	49,2	47,2	45,3	43,3
LT2UV359X40	47,2	47,2	47,2	47,2	47,2	47,2	47,2	47,2
LT2UV409X43	47,2	47,2	47,2	47,2	47,2	47,2	47,2	47,2
LT2UV459X45	47,2	47,2	47,2	47,2	47,2	47,2	47,2	47,2
LT2UV509X48	47,2	47,2	47,2	47,2	47,2	47,2	47,2	47,2

\* centre to centre distance = maximum sheet width

In this situation, the major factor influencing deflection behaviour is the purlin spacing.  
The sheet width has no influence on the deflection behaviour of the sheet when exposed to loading.  
This means that any sheet width up to the maximum standard width can be selected.

In the case of vertical glazing, should a greater span width be required, a standard polycarbonate "H" profile is sufficient to join two sheets together to form a sound, water-tight joint. No additional vertical glazing support bars are necessary.

In the case of sloped glazing, a support/glazing profile is recommended to join two sheets together, not only for a watertight joint, but also to avoid excessive sheet deflection already caused by the sheet's own weight. Fastening Lexan Thermoclear sheet to the intermediate purlins using conventional nuts, bolts and washers is possible. However, all joints and clamping areas require support in the form of compatible rubber washers to distribute the clamping force over as wide an area as possible. To facilitate this, large metal washers laminated with compatible rubber and assembled with spacing collars should be used. Bolts should not be tightened so that the force permanently deforms the sheet or restricts its natural expansion and contraction. An alternative method of assembly involves a specially designed polyamide "cladding button" which is available at any authorised Lexan Thermoclear sheet distributor. The button is designed so that the compatible rubber gasket is an integral part of the bolt which has a large head to distribute the clamping forces.

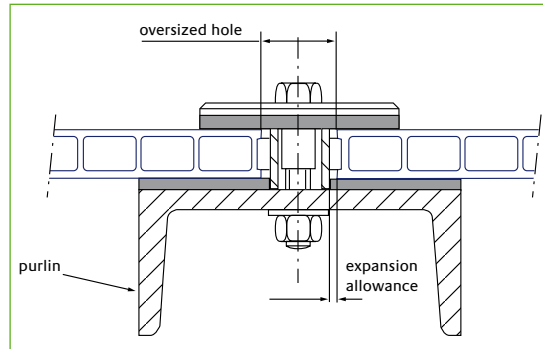
When using any type of bolt assembly it is important to remember that the spacing between the hole and the sheet edge should be at least 40 mm.

### Note

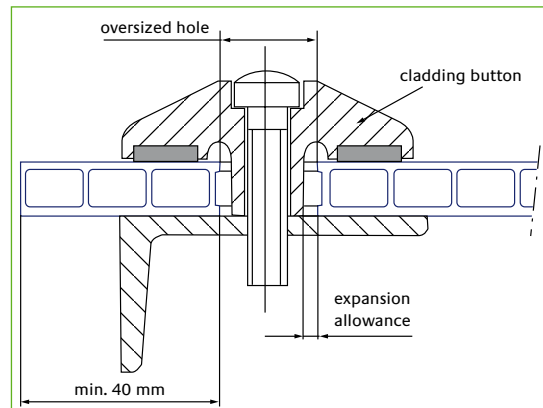
When applying the glazing method described above, the following points must be taken into consideration.

- Penetration of water and dust between the "H" profile and the sheet surface may create streaks. By applying a recommended silicone sealant this penetration can be restricted.
- It is extremely difficult to obtain a watertight connection between the washer or button and the Lexan Thermoclear sheet surface.
- Water and dust can easily penetrate into the bolted sheet channel which consequently results in algae growth or cobweb formation.

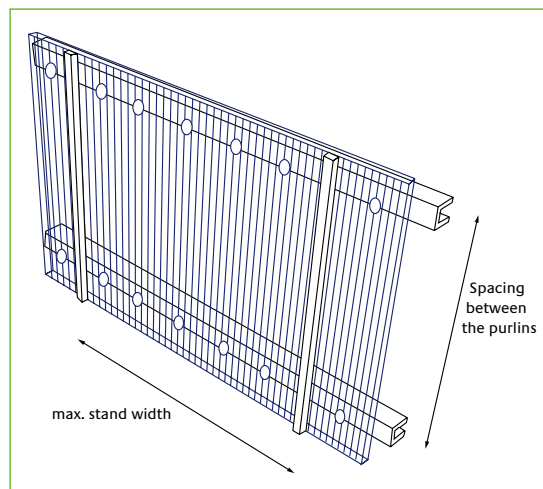
Consider this glazing system as suitable only when appearance is of minor importance.



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**Table 19: Centre to centre distance of purlins in inch; glazing profiles 90° to rib structure**

centre to centre distance (mm)								
Loading in Nm <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
LT2UV452RS10	500							
LT2UV62RS13	27,2	24,8	23,2	22,4	21,3	20,5	19,7	18,9
LT2UV82RS15	32,7	29,9	28,3	26,8	25,6	24,8	23,6	22,8
LT2UV103RS19	35,4	35,8	33,7	31,5	30,3	29,1	28,0	0,0
LT2UV103X19	35,4	35,8	33,7	31,5	30,3	29,1	28,0	0,0
LT2UV102RS17	39,8	36,6	34,4	32,7	31,1	29,9	28,7	28,0
LT2UV103T20	39,8	36,6	34,4	32,7	31,1	29,9	28,7	28,0
LT2UV105RS175	39,8	36,6	34,4	32,7	31,1	29,9	28,7	28,7
LT2UV163TS27	57,1	52,2	48,8	46,5	44,5	42,7	41,3	39,4
LT2UV163TS28	57,1	52,2	48,8	46,5	44,5	42,7	41,3	39,4
LT2UV163X29	57,1	52,2	48,8	46,5	44,5	42,7	41,3	39,4
LT2UV166RS27	57,1	52,2	48,8	46,5	44,5	42,7	41,3	39,4
LT2UV205RS33	61,0	56,7	53,1	50,2	48,0	46,3	44,9	43,3
LT2UV206RS30	61,0	56,7	53,1	50,2	48,0	46,3	44,9	43,3
LT2UV255X34	65,9	60,0	56,5	53,5	50,8	49,2	47,2	45,3
LT2UV256RS35	65,9	60,0	56,5	53,5	50,8	49,2	47,2	45,3
LT2UV329X38	78,7	72,8	66,9	63,0	59,1	57,1	55,1	53,1
LT2UV359X40	78,7	74,8	70,9	66,9	63,0	59,1	57,1	55,1
LT2UV409X43	82,7	78,7	74,8	70,9	66,9	63,0	61,0	59,1
LT2UV459X45	90,6	86,6	82,7	78,7	74,8	70,9	66,9	63,0
LT2UV509X48	94,5	90,6	86,6	82,7	78,7	74,8	70,9	66,9

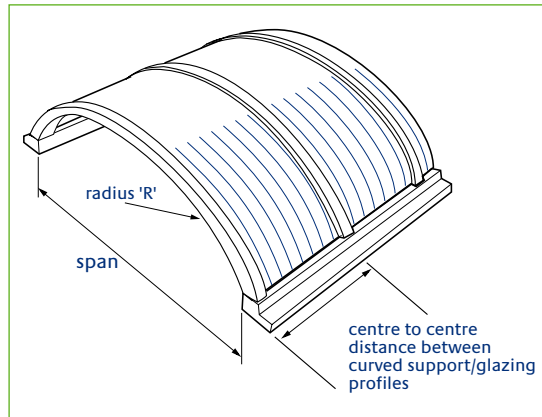


Lexan Thermoclear sheet can be successfully cold-curved over curved support glazing profiles, to suit many glazing applications, e.g. domes, roof-lights, etc. Providing the radius is not below the minimum recommended value, then the introduced stress by cold-curving will not have any adverse effect upon the mechanical performance of the sheet. Sheets must always be bent longitudinally, never across the width of the sheet.

The loading characteristics given in Table 21 are based upon curved glazing applications clamped on all four edges. The Table shows linear buckling load values, (calculated with a safety factor of 2.0), against installation radii for different sheet widths. sheet length 'L' needs to be greater than sheet width 'W' to facilitate curvature; in practice, a ratio of 1:2 or less is never contemplated because of the practicalities of installation geometry.

**Table 20: Minimum radius values**

Lexan Thermoclear sheet thickness	Min. Radius in inch
0,24	41,34
0,31	55,12
0,39	68,90
0,63	110,24
0,79	137,80



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**Table 21: Centre to centre distance (inch) curved glazing profiles**

LT2UV62RS13								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
41,3	82,7	70,9	59,1	49,2	42,1	37,8	33,9	29,5
47,2	74,8	59,1	49,2	39,4	35,4	31,5	27,6	23,6
51,2	66,9	55,1	43,3	35,4	31,1	27,6	24,8	22,4
55,1	63,0	47,2	37,8	32,7	28,3	24,8	22,4	19,7
59,1	57,1	43,3	35,4	29,5	26,0	22,4	19,7	17,7
63,0	53,1	39,4	32,3	26,8	23,6	19,7	17,7	17,7
66,9	49,2	36,6	29,9	25,6	20,9	17,7	17,7	17,7
70,9	45,3	33,9	27,6	24,4	17,7	17,7	17,7	17,7
74,8	41,3	31,5	25,2	22,8	17,7	17,7	17,7	17,7
78,7	36,2	29,5	23,6	20,9	17,7	17,7	17,7	17,7
82,7	33,5	27,6	21,7	18,5	17,7	17,7	17,7	17,7
86,6	31,5	26,4	19,7	17,7	17,7	17,7	17,7	17,7
90,6	29,5	23,6	17,7	17,7	17,7	17,7	17,7	17,7
94,5	27,6	21,7	17,7	17,7	17,7	17,7	17,7	17,7
98,4	25,6	21,7	17,7	17,7	17,7	17,7	17,7	17,7
102,4	25,6	19,7	17,7	17,7	17,7	17,7	17,7	17,7
106,3	25,6	19,7	17,7	17,7	17,7	17,7	17,7	17,7

LT2UV82RS15								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
55,1	82,7	74,8	66,9	51,2	43,3	39,4	34,3	30,7
59,1	78,7	66,9	53,1	45,7	39,4	34,6	31,5	28,3
63,0	76,8	65,0	50,0	41,7	36,2	31,9	28,3	26,0
66,9	72,0	59,4	46,5	39,0	33,9	29,9	26,4	23,6
70,9	67,3	53,9	42,9	36,2	31,5	28,0	24,4	21,7
74,8	63,0	48,4	39,4	33,1	28,7	25,6	22,8	21,7
78,7	58,3	45,3	36,2	30,7	26,8	23,6	21,7	21,7
82,7	54,3	42,1	34,3	28,7	25,2	21,7	21,7	21,7
86,6	52,0	38,6	32,3	27,6	23,6	21,7	21,7	21,7
90,6	48,0	36,6	30,3	26,0	21,7	21,7	21,7	21,7
94,5	45,3	34,6	27,6	23,6	21,7	21,7	21,7	21,7
98,4	43,3	32,7	25,6	21,7	21,7	21,7	21,7	21,7
102,4	40,2	29,5	23,6	21,7	21,7	21,7	21,7	21,7
106,3	37,4	27,6	23,6	21,7	21,7	21,7	21,7	21,7
110,2	34,3	27,6	23,6	21,7	21,7	21,7	21,7	21,7

LT2UV102RS17								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
68,9	82,7	76,0	60,2	52,0	44,9	39,4	35,4	31,5
74,8	82,7	66,1	54,3	45,7	40,2	34,6	31,5	28,3
78,7	78,7	63,0	50,4	42,5	36,6	32,7	29,5	26,8
82,7	74,8	57,9	47,2	39,8	34,3	30,3	27,6	23,6
86,6	71,7	54,7	44,1	37,4	32,3	30,7	25,6	22,0
90,6	66,9	51,2	41,7	35,0	30,7	27,2	24,4	22,0
94,5	63,0	48,4	39,4	33,1	29,1	24,8	24,4	22,0
98,4	60,2	45,3	37,4	31,5	27,6	24,8	24,4	22,0
102,4	57,1	42,1	35,4	29,5	26,0	24,8	24,4	22,0
106,3	54,3	38,6	33,9	27,6	26,0	24,8	24,4	22,0
110,2	50,4	36,6	32,3	27,6	26,0	24,8	24,4	22,0
114,2	48,0	35,4	31,1	27,6	26,0	24,8	24,4	22,0
118,1	45,7	34,6	29,5	27,6	26,0	24,8	24,4	22,0
126,0	42,5	32,7	29,5	27,6	26,0	24,8	24,4	22,0
133,9	39,4	32,7	29,5	27,6	26,0	24,8	24,4	22,0

## Curved Glazing sheet Thickness

Continued Table 21: Centre to centre distance (mm) curved glazing profiles

LT2UV103X20								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
68,9	82,7	76,0	60,2	52,0	44,9	39,4	35,4	31,5
74,8	82,7	66,1	54,3	45,7	40,2	34,6	31,5	28,3
78,7	78,7	63,0	50,4	42,5	36,6	32,7	29,5	26,8
82,7	74,8	57,9	47,2	39,8	34,3	30,3	27,6	23,6
86,6	71,7	54,7	44,1	37,4	32,3	30,7	25,6	22,0
90,6	66,9	51,2	41,7	35,0	30,7	27,2	24,4	22,0
94,5	63,0	48,4	39,4	33,1	29,1	24,8	24,4	22,0
98,4	60,2	45,3	37,4	31,5	27,6	24,8	24,4	22,0
102,4	57,1	42,1	35,4	29,5	26,0	24,8	24,4	22,0
106,3	54,3	38,6	33,9	27,6	26,0	24,8	24,4	22,0
110,2	50,4	36,6	32,3	27,6	26,0	24,8	24,4	22,0
114,2	48,0	35,4	31,1	27,6	26,0	24,8	24,4	22,0
118,1	45,7	34,6	29,5	27,6	26,0	24,8	24,4	22,0
126,0	42,5	32,7	29,5	27,6	26,0	24,8	24,4	22,0
133,9	39,4	32,7	29,5	27,6	26,0	24,8	24,4	22,0

LT2UV105RS175								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
68,9	82,7	76,0	60,2	52,0	44,9	39,4	35,4	31,5
74,8	82,7	66,1	54,3	45,7	40,2	34,6	31,5	28,3
78,7	78,7	63,0	50,4	42,5	36,6	32,7	29,5	26,8
82,7	74,8	57,9	47,2	39,8	34,3	30,3	27,6	23,6
86,6	71,7	54,7	44,1	37,4	32,3	30,7	25,6	22,0
90,6	66,9	51,2	41,7	35,0	30,7	27,2	24,4	22,0
94,5	63,0	48,4	39,4	33,1	29,1	24,8	24,4	22,0
98,4	60,2	45,3	37,4	31,5	27,6	24,8	24,4	22,0
102,4	57,1	42,1	35,4	29,5	26,0	24,8	24,4	22,0
106,3	54,3	38,6	33,9	27,6	26,0	24,8	24,4	22,0
110,2	50,4	36,6	32,3	27,6	26,0	24,8	24,4	22,0
114,2	48,0	35,4	31,1	27,6	26,0	24,8	24,4	22,0
118,1	45,7	34,6	29,5	27,6	26,0	24,8	24,4	22,0
126,0	42,5	32,7	29,5	27,6	26,0	24,8	24,4	22,0

LT2UV163TS28								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
110,2	82,7	75,6	62,2	52,4	45,3	40,2	36,2	32,7
118,1	82,7	70,1	57,1	47,6	41,7	37,0	33,1	29,9
126,0	80,7	63,8	52,0	43,7	38,2	33,9	29,9	27,2
133,9	75,6	58,3	47,6	40,6	35,0	30,7	27,6	24,4
141,7	70,1	55,1	44,1	37,4	32,7	27,6	26,2	24,4
149,6	65,7	51,2	40,9	35,0	29,5	27,6	26,2	24,4
157,5	61,4	47,2	37,8	31,9	29,5	27,6	26,2	24,4
165,4	57,5	44,1	34,6	31,9	29,5	27,6	26,2	24,4
173,2	53,5	40,9	34,6	31,9	29,5	27,6	26,2	24,4
181,1	51,2	38,6	34,6	31,9	29,5	27,6	26,2	24,4
189,0	47,2	38,6	34,6	31,9	29,5	27,6	26,2	24,4
196,9	43,3	38,6	34,6	31,9	29,5	27,6	26,2	24,4
204,7	43,3	38,6	34,6	31,9	29,5	27,6	26,2	24,4
212,6	43,3	38,6	34,6	31,9	29,5	27,6	26,2	24,4
220,5	43,3	38,6	34,6	31,9	29,5	27,6	26,2	24,4

## Curved Glazing sheet Thickness

Continued Table 21: Centre to centre distance (inch) curved glazing profiles

LT2UV163X29								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
126,0	82,7	82,7	82,7	72,8	61,0	55,1	49,2	43,3
133,9	80,3	78,7	74,8	65,0	57,1	51,2	47,2	41,3
141,7	78,0	74,8	72,8	61,0	53,1	47,2	43,3	37,4
149,6	75,6	70,9	66,9	57,1	49,2	44,1	39,4	37,4
157,5	72,8	66,9	63,0	53,1	47,2	41,3	37,4	37,4
165,4	70,5	63,0	59,1	50,2	45,3	39,4	37,4	37,4
173,2	68,5	59,1	55,1	47,2	43,3	37,4	37,4	37,4
181,1	66,9	55,1	51,2	44,9	41,3	37,4	37,4	37,4
189,0	65,0	51,2	47,2	43,3	39,4	37,4	37,4	37,4
196,9	63,0	47,2	45,3	41,3	37,4	37,4	37,4	37,4
204,7	61,0	43,3	3,9	37,4	37,4	37,4	37,4	37,4
212,6	55,1	41,3	37,4	37,4	37,4	37,4	37,4	37,4
220,5	51,2	39,4	37,4	37,4	37,4	37,4	37,4	37,4
228,3	47,2	37,4	37,4	37,4	37,4	37,4	37,4	37,4
236,2	47,2	37,4	37,4	37,4	37,4	37,4	37,4	37,4

LT2UV166RS29								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
110,2	82,7	82,7	76,8	65,4	55,1	50,0	45,3	41,3
118,1	82,7	82,7	70,9	59,1	52,0	45,3	41,3	37,4
126,0	82,7	78,7	65,0	53,1	47,2	41,7	37,4	35,4
133,9	82,7	72,8	59,1	50,4	43,3	39,4	35,4	35,4
141,7	78,7	67,7	55,1	46,1	40,2	37,4	35,4	35,4
149,6	76,8	63,0	51,2	43,3	37,4	35,4	35,4	35,4
157,5	70,9	59,1	47,2	39,4	35,4	35,4	35,4	35,4
165,4	66,9	55,1	43,3	37,4	35,4	35,4	35,4	35,4
173,2	63,0	51,2	39,4	35,4	35,4	35,4	35,4	35,4
181,1	59,1	47,2	35,4	35,4	35,4	35,4	35,4	35,4
189,0	55,1	43,3	35,4	35,4	35,4	35,4	35,4	35,4
196,9	49,2	39,4	35,4	35,4	35,4	35,4	35,4	35,4
204,7	43,3	35,4	35,4	35,4	35,4	35,4	35,4	35,4
212,6	43,3	35,4	35,4	35,4	35,4	35,4	35,4	35,4
220,5	43,3	35,4	35,4	35,4	35,4	35,4	35,4	35,4

LT2UV205RS33								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
141,7	72,8	59,1	51,2	47,2	43,3	39,4	35,4	33,5
145,7	70,9	57,1	49,2	45,3	41,3	37,4	33,7	31,9
149,6	68,9	55,1	47,2	43,3	39,4	35,4	31,9	30,3
153,5	67,3	53,5	46,3	42,3	38,4	34,6	31,9	30,3
157,5	65,9	52,2	45,3	41,3	37,4	33,9	31,9	30,3
161,4	64,6	51,2	43,7	44,1	36,2	33,9	31,9	30,3
165,4	63,0	50,2	42,3	38,6	36,2	33,9	31,9	30,3
169,3	61,0	48,4	40,7	38,6	36,2	33,9	31,9	30,3
173,2	59,1	47,2	39,4	38,6	36,2	33,9	31,9	30,3
177,2	57,1	46,5	37,4	38,6	36,2	33,9	31,9	30,3
181,1	55,1	45,7	37,4	38,6	36,2	33,9	31,9	30,3
185,0	53,1	44,5	37,4	38,6	36,2	33,9	31,9	30,3
189,0	51,2	41,3	37,4	38,6	36,2	33,9	31,9	30,3
192,9	49,2	38,6	37,4	38,6	36,2	33,9	31,9	30,3
196,9	47,2	38,6	37,4	38,6	36,2	33,9	31,9	30,3

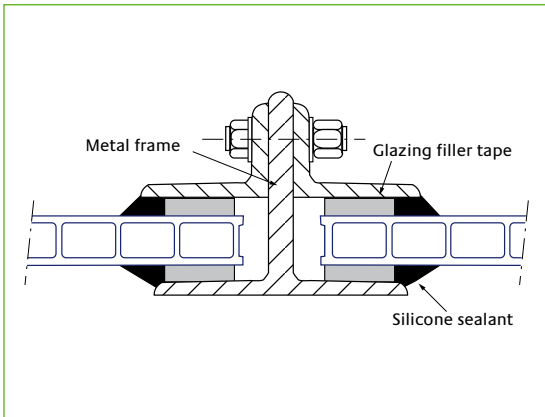
## Curved Glazing sheet Thickness

Continued Table 21: Centre to centre distance (mm) curved glazing profiles

LT2UV205X33								
Loading in lb/ft <sup>2</sup>	12,5	16,7	20,9	25,1	29,2	33,4	37,6	41,8
Radius "R" (in)	centre to centre distance (in) curved glazing profiles							
145,7	49,2	49,2	49,2	49,2	49,2	49,2	49,2	49,2
153,5	49,2	49,2	49,2	49,2	49,2	49,2	49,2	47,2
161,4	49,2	49,2	49,2	49,2	49,2	49,2	47,2	45,3
169,3	49,2	49,2	49,2	49,2	49,2	47,2	45,3	43,3
177,2	49,2	49,2	49,2	49,2	47,2	45,3	43,3	41,3
185,0	49,2	49,2	49,2	47,2	45,3	43,3	41,3	39,4
192,9	49,2	49,2	47,2	45,3	43,3	41,3	39,4	37,4
200,8	49,2	47,2	45,3	43,3	41,3	39,4	37,4	37,4
248,0	47,2	45,3	43,3	41,3	39,4	37,4	37,4	37,4
216,5	45,3	43,3	41,3	39,4	37,4	37,4	37,4	37,4
224,4	43,3	41,3	39,4	37,4	37,4	37,4	37,4	37,4
232,3	41,3	39,4	37,4	37,4	37,4	37,4	37,4	37,4
240,2	39,4	37,4	37,4	37,4	37,4	37,4	37,4	37,4
248,0	37,4	37,4	37,4	37,4	37,4	37,4	37,4	37,4



**Wet Glazing**

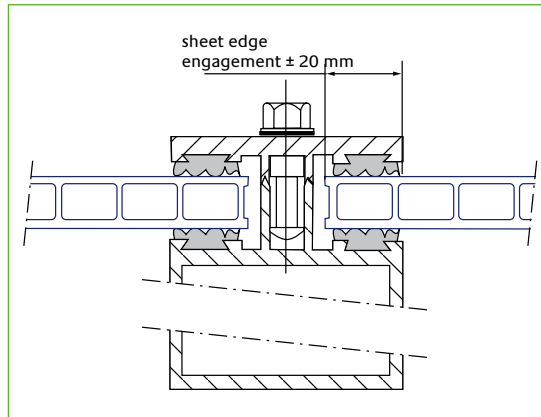


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**Do's**

- Clean the window frame. Remove old putty or broken glass, if necessary.
- Measure the sheet edge engagement area ( $\pm 20$  mm) and internal window frame dimensions, i.e. the space into which the Lexan Thermoclear sheet will be fitted.
- Calculate the sheet size, allowing clearance for thermal expansion (3 mm per linear metre).
- Select the right thickness to fulfil loading requirements, U-value, etc.
- Clamp the Lexan Thermoclear sheet to a support table to avoid vibration and rough cutting.
- Cut the sheet to the required size, using a standard electric circular or jig saw.
- Blow away saw dust build-up in the channels with dry compressed air.
- Remove any sharp edges and irregularities from the sheet.
- Peel back approximately 50 mm of the masking film from all edges of the cut sheet on both sides.
- Carefully select the sealing tape appropriate to the glazing application.
- Seal the top and the bottom sheet channels with impermeable and/or venting tape, f.i. Multifoil G3600 / AD 3400 / AD4500.  
Please refer to the processing instructions provided by the sealing tape supplier.
- In case of venting tape, and to allow condensation drainage, apply an alu closure profile with drainage possibilities or apply some single sided self adhesive glazing tape as distance holder between the venting holes.
- For wet glazing apply single sided self adhesive glazing tape or rubber profile to both window frame and bead.
- For dry glazing, snap-fit compatible neoprene rubber gaskets in place in the support profile as well as in the clamping cover profile.
- Insert the Lexan Thermoclear sheet into the window frame.
- Lexan Thermoclear sheet must always be installed with the ribs running vertically. The UV protected surface should always face outwards.
- Fix the window bead or the clamping cover profile in place.
- For wet glazing apply an approved silicone sealing compound, such as Silglaze/Silpruf between the sheet and the window frame/bead.
- Remove all masking film immediately after installation.
- Clean the window carefully with warm soapy water and with a soft cellulose sponge or woollen cloth.

**Dry Glazing**



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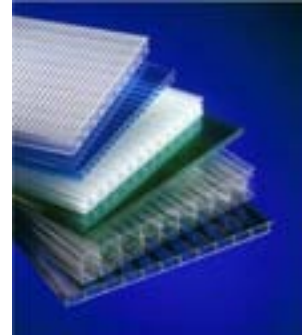
**Don'ts**

- Do not use plasticised soft PVC or incompatible rubber sealing tapes or gaskets.
- Do not use Amine, Benzamide or Methoxy based sealants.
- Do not use abrasive or highly alkaline cleaners.
- Never scrape Lexan Thermoclear sheet with squeegees, razor blades or other sharp instruments.
- Do not walk on Lexan Thermoclear sheet at any time.
- Do not install Lexan Thermoclear sheet with damaged tapes.
- Do not clean Lexan Thermoclear sheet in hot sun or at elevated temperatures.
- Benzene, gasoline, acetone, carbon tetrachloride or butyl cellosolve should never be used on Lexan Thermoclear sheet.

**AmeriLux** International, LLC, is a distributor and manufacturer of plastic products used in the greenhouse and architectural markets. Our polycarbonate products are used for a variety of applications including curtain walls, skylights, canopies, office dividers, windows, signage, pool enclosures, and greenhouses.

Included in **AmeriLux** product offerings are:

- Lexan Thermoclear\* multiwall, and corrugated polycarbonate products.
- Lexan Thermoclick, a unique tongue and groove product used for vertical glazing applications.
- Specialty glazing panels such as Lexan\* Solar Control IR, Lexan\* Easy Clean, Lexan\* Dripgard, and 3S Solar Block.
- UV resistant coatings providing unprecedented longevity and performance.
- Accessories for our product line including polycarbonate and aluminum profiles.



AmeriLux is committed to being an invaluable resource, capable of providing:

- Support to Architects, Designers, and Contractors in the North American market as well as abroad. Our goal is to promote Daylighting and Energy Efficiency through “Green” Polycarbonate solutions.
- Over 35 years of experience in the polycarbonate market, allowing us to provide expert consultation to match the most appropriate product with your requirements.
- Cut to size orders, crating and shipping throughout North America.

We are committed to maintaining our competitive position in the marketplace and offer our customers a wide range of products and services such as:

- Over 2 million square feet of inventory in various thicknesses, colors, and sizes to choose from
- Technical support 24/7
- Cut to size capabilities to meet customer specifications
- Full logistics capabilities to fulfill customer orders cost effectively
- Immediate shipment based on customer needs
- Supply customers with samples and brochures as needed
- Exclusive provider of Lumira aerogel filled polycarbonate panels in North America



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