

# Lexan\*Exell\*D FR Sheet

## Product Datasheet

### Description

Lexan\* Exell\*D FR sheet is a transparent polycarbonate sheet with proprietary UV protection on both sides offering excellent weathering properties. With its excellent impact resistance it is an excellent candidate for a wide variety of building and construction applications. Lexan ExellD FR sheet can be easily cold formed into gentle curves which makes it a good material choice for skylights, covered walkways, barrel vaults etc. Lexan Exell DFR sheet is thermoformable and can be thermoformed into the desired geometry whilst retaining the UV resistant coating specially developed for weather resistant applications.

### Product Availability

Lexan Exell D FR sheet is normally manufactured in the standard sizes listed below. Deliveries from stock or cut to size can be ordered via our customer service organisation.

**Standard gauge in mm:** 2 - 3 - 4 - 5 - 8  
**Standard sizes:** 1250 x 2050 mm, 2050 x 3050 mm, 2050 x 6050 mm  
**Masking:** Top side: Coex. opal white PE/purple print, Bottom side: Coex. transparent foil  
**Standard color:** clear code 112

### Light Transmission

Transparent Lexan Exell D FR sheet have excellent light transmission, between 84 and 87%. However for buildings in hot climates or with south facing aspects, Lexan Exell D FR is available in translucent bronze, grey and opal white. Lexan Exell D FR is essential opaque to all wave lengths below 385 nanometers. This useful shielding property can help prevent discoloration of sensitive materials placed under or behind Lexan Exell D FR sheet.

### UV Protection

Lexan Exell D FR sheet has proprietary UV protected surfaces, giving excellent durability to outdoor weathering. This superior UV resistance and toughness of Lexan Exell D FR sheet is backed by a 10 years limited written warranty against yellowing, loss of light transmission and breakage.

Lexan Exell D FR sheet Color number	light transmission #%	solar reflection %	solar absorption %	direct solar transmission %	total solar transmission %	shading coefficient
Transparent 112	87	9	9	82	84	0.97

#) Typical values only. Light transmission values may vary by plus or minus 5%.

### Sound Reduction

Installing Lexan Exell D FR sheet into single or in overglazing with glass meets the acoustic requirements for today's glazing.

Acoustic insulation DIN 52210-75 Rw (dB)		Double glazing with glass		
Thickness (mm)	Lexan Exell D FR sheet Rw in dB	Air Space in mm	Glass (mm)	Rw in dB of combination
4	27	85	6	39
5	28	85	6	40
6	29	85	6	42
8	31	85	6	44

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## Thermal Insulation

When using Lexan\* Exell D FR sheet as single or in combination with glass considerable energy cost savings may be achieved by preventing excessive heat loss. Lexan Exell D FR sheet as internal or external glazing can improve the burglary resistance. Lexan Exell D FR sheet as external installations can help protect against vandalism.

### K-values W/M2•K

Thickness (mm)	Lexan Exell D sheet W/m2•K
4	5.33
5	5.21
6	5.09
8	4.84

### Double Glazing with glass

Air Space in mm	Thickness glass in mm	K-values combination W/m2•K
20-60	4	2.77
20-60	4	2.73
20-60	5	2.72
20-60	4	2.70

## Fire Performance

French Norm NF P92-505 M2 Classification are available for ExellD FR sheet transparent grades with thickness 2, 3, 4, 5, 8mm .

## Chemical Resistance

Lexan Exell D FR sheet generally displays good resistance to most chemical substances encountered in normal building materials. Most common building materials such as sealants, gaskets and the various cleaning media. Silicone sealants and neoprene or EPDM gaskets are generally recommended for use with Lexan Exell D FR sheet. It is strongly advised that when using glazing compounds or cleaning media to check compatibility before use.

## Steel Ball Impact test Norm prEN356

Lexan Exell D FR sheet meets the highest impact performance required by the European Norm prEN356 for security glazing. A steel ball of 4.11 kg with a diameter of 100 mm is dropped freely from different heights onto the glazing specimen. The steel ball must impact the specimen 3 times. Lexan Exell D FR sheet reached the highest standard required by the test at a thickness of 5 mm and above.

Category of resistance	Drop Height in mm	Total number of strikes	Code designation for category of resistance	Impact energy per stroke
P1A	1500	3 in a triangle	EN 356 P1A	62 Joule
P2A	3000	3 in a triangle	EN 356 P2A	123 Joule
P3A	6000	3 in a triangle	EN 356 P3A	247 Joule
P4A	9000	3 in a triangle	EN 356 P4A	370 Joule
P5A	9000	3x3 in a triangle	EN 356 P5A	370 Joule

## Cutting and Sawing

Lexan Exell D FR sheet can be cut and sawn easily and accurately using standard workshop equipment. The sheet must always be securely clamped to avoid undesirable vibration and rough cut edges. The protective masking should be left on the sheet to prevent scratching and other surface damage.

## Design Freedom

Lexan Exell D FR sheet can be easily cold formed into gentle curves of 175 times the sheet thickness. It can also be cold line bent under an angle of a maximum of 90 using hydraulic workshop equipment. Lexan Exell D FR sheet is a thermoformed sheet which can be thermoformed into the desired geometry whilst retaining the UV resistance.

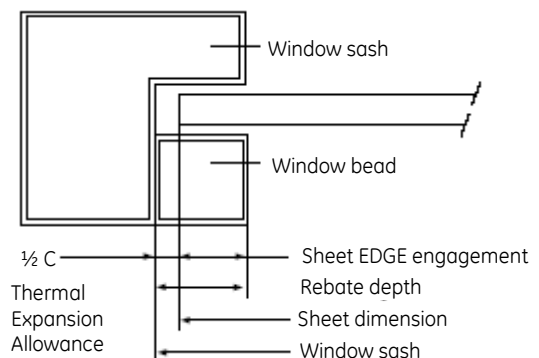
## Thermal Expansion Allowance

Since Lexan Exell D FR sheet has a larger linear thermal coefficient of expansion than of the glazing profiles commonly used, care should be taken to allow free expansion of the sheet to avoid bowing. In general: Thermal expansion of the sheet is approximately 3 mm per linear meter.

### Thermal Expansion/Sheet edge engagement

Sash Dimensions (A+B) (mm)	Trim Sheet by C (mm)	Sheet edge engagement (mm)
300	1	6
300	1	6
300 - 600	1 - 2	6 - 9
600 - 900	2 - 3	9 - 12
900 - 1200	3 - 4	12 - 15
1200 - 1500	4 - 5	15 - 18
1500 - 1800	5 - 6	18 - 20
1800 - 2100	6 - 7	20

For window sizes exceeding 2000 mm, sheet edge engagement of around 20 mm is sufficient.



## Wet glazing

Lexan Exell D FR sheet can be glazed using normal standard metal or wooden window frames in combination with glazing tapes and elastomeric glazing compounds e.g. silicone sealant.

## Dry glazing

The advantage of dry glazing is that the rubber gaskets snap fit into the glazing bars which allows free movement of the sheet during expansion and contraction.

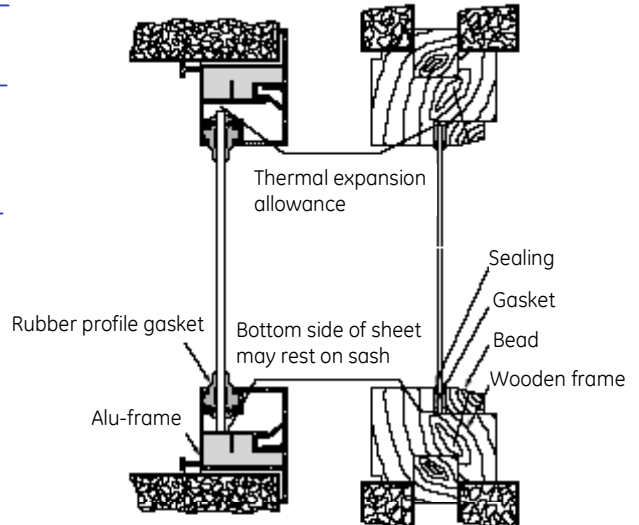
## Sheet thickness selection

Lexan Exell D FR Shortest sheet side (Ratio sheet width/sheet length 1:>2)  
Thickness Center to center distance glazing profiles in mm.

Thickness in mm	Center to center distance glazing profiles in mm.							
3	400	375						
4	550	490	450	425	400			
5	675	625	575	550	510	490	470	
6	800	725	680	650	600	575	550	
8	1150	1000	925	860	810	775	750	
Loading in n/m <sup>2</sup>	600	800	1000	1200	1400	1600	1800	

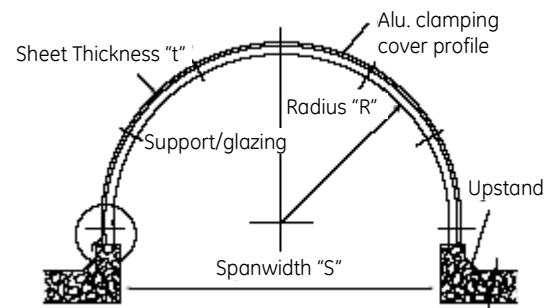
Dry glazing installation

Wet glazing installation



## Curved glazing

Lexan Exell D FR Sheet thickness in mm	Minimum allowable Radius in mm
3	525
4	700
5	875
6	1050
8	1400



## Lexan Sheet curved glazing using standard metal profiles

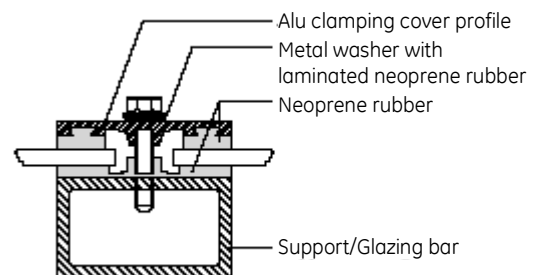
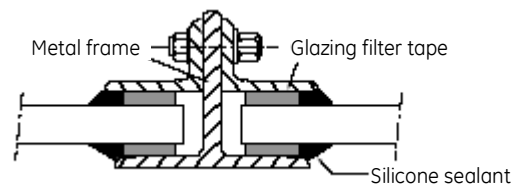
This type of installation system is mainly used in small domestic type applications, car ports, warehouses, conservatories and other glass replacement situations.

## Lexan Sheet curved glazing using patented glazing systems

There are many patented glazing systems commercially available. Many of these systems have already proved to be suitable for curved constructions in combination with Lexan sheet.

## Cleaning

For small areas wash sheet with a solution of mild soap and lukewarm water, using a soft cloth or sponge. For larger areas clean surface with a high pressure water and/or steam cleaner. Do not use abrasive cleaners or detergents or sharp instruments which may scratch.



**Radius in meters**

		2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	
<b>Lexan Sheet thickness in mm</b>	3	0.48	0.40										<b>600</b>
	4	0.97	0.85	0.75	0.68	0.6	0.55						
	5	1.68	1.45	1.3	1.15	1.03	0.95	0.88	0.8	0.74	0.68	0.63	
	6		2.05	2.0	1.8	1.6	1.46	1.34	1.24	1.14	1.05	1.0	
	8										2.05	1.9	
	3												<b>800</b>
	4	0.75	0.65	0.58	0.53								
	5	1.26	1.1	0.98	0.88	0.8	0.73	0.67	0.6	0.56			
	6	1.95	1.72	1.52	1.36	1.22	1.12	1.02	0.95	0.87	0.8	0.75	
	8					2.05	2.0	1.85	1.72	1.6	1.5	1.4	
	3												<b>1000</b>
	4	0.6	0.53										
	5	1.02	0.9	0.8	0.72	0.65	0.6						
	6	1.58	1.37	1.22	1.1	1.0	0.9	0.8	0.77	0.7			
	8				2.05	1.95	1.8	1.63	1.5	1.4	1.3	1.2	
	3												<b>1200</b>
	4	0.5											
	5	0.86	0.76	0.67	0.6								
	6	1.32	1.16	1.03	0.93	0.85	0.77	0.7					
	8			2.05	1.85	1.66	1.5	1.38	1.28	1.17	1.1	1.02	

**Loadings N/m<sup>2</sup>**

**Distance between curved profiles in meters**

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