

Specialty Film & Sheet



When the going gets tough

Lexan Margard sheet can offer excellent optical clarity with a unique combination of properties, which can make it an excellent candidate for safety and security glazing to suit a wide range of applications. Available clear or bronze tinted, it can be used for both flat and curved glazing.

**Extremely high impact resistance**

Like all Lexan sheet products, Lexan Margard sheet may offer extremely high impact resistance, minimizing the risk of breakage - even when subjected to violent blows by heavy objects. This impact resistance does not vary significantly over a wide temperature range (-40°C to +120°C) or after prolonged outdoor exposure.

**High resistance to abrasion**

Lexan Margard sheet has a unique, hard surface coating which may provide a high level of protection against unsightly scratching, so it's ideal for use in applications where frequent contact is likely.

**High resistance to the effects of weathering**

The surface coating of Lexan Margard sheet enhances protection against performance losses and yellowing caused by exposure to UV radiation in sunlight.

**High resistance to chemicals**

Lexan Margard sheet has high resistance to many chemicals such as cleaning fluids, paints and adhesives. Its unique surface coating also resists graffiti, enabling easy restoration to a 'good as new' condition.

**Superior fire performance**

Unlike many thermoplastic materials used for glazing, Lexan Margard sheet has excellent flame resistance and heat stability.

**Safe and easy to handle and install**

Lexan Margard sheet is very light and can be cut to size on-site using conventional workshop tools, allowing reduced lead times for re-glazing.

**Comprehensive warranty**

Lexan Margard sheet is backed by a five years limited write warranty against loss of light transmission and coating failure - and by a ten years limited written warranty against breakage. See warranty for exact details.

**Anti-vandal glazing**

Glazing with Lexan Margard sheet can be an excellent candidate in areas where there may be a risk of vandalism. It minimises the risk of costly re-glazing and allows frequent cleaning or removal of graffiti without causing damage.

**Security glazing**

Lexan Margard sheet can prevent a burglar from forcing an entry. It will delay him to a point where he simply gives up the attempt, or is detected. Either way, the premises and property are protected and re-glazing costs are eliminated.

**Premises safety glazing**

Lexan Margard sheet will not shatter or splinter, so greatly reduces the risk of accidental injury in applications like internal partitions and doors.

**Safety screens and acoustic screens**

Lexan Margard sheet is an excellent candidate for safety screening in sports stadium and other outdoor applications like acoustic screens for deflection of traffic noise in built-up areas.

**Machine tool safety guarding and vehicle safety glazing**

Figure 1 Impact resistance

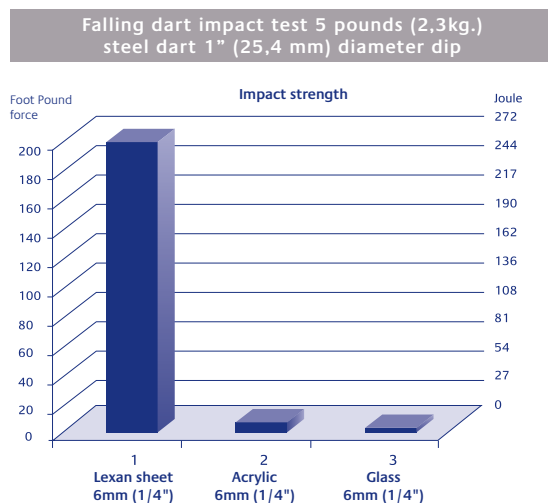


Figure 2 Weight

Thickness		Polycarbonate sheet kg/sq.meter. (lbs/sq.ft)	Glass kg/sq.meter (lbs/sq.ft)
mm	inch		
2	0.08	2.4 / 0.5	5.0 / 1.02
2.4	0.093	2.8 / 0.58	5.9 / 1.2
3	0.118	3.6 / 0.73	7.8 / 1.6
4.5	0.177	5.4 / 1.1	11.7 / 2.4
6	0.236	7.2 / 1.46	15.6 / 3.2
9.5	0.375	11.4 / 2.34	23.4 / 4.8



## Product selection

In addition to the inherent characteristics of a polycarbonate material, Lexan\* Margard\* sheet has a proprietary hard surface coating, on one or two sides, which provides a high level of resistance to abrasion and weathering. The products are backed by a 5 or 10-year limited warranty against loss of light transmission and coating failure and by a 10-year limited warranty against breakage.

The Lexan Margard sheet family can be grouped as follows

- Products for flat applications
- Products for formable applications
- Anti-fog products
- Flame retardant products



Graph 1 Lexan Margard sheet segments

Family Name	Grade	Segments & applications																
		General purpose	Visors	Appliance front panels	Aircraft windows	Train (interior) glazing	B&C glazing	Signs	Bus shelters	Laminated safety glazing	Ice Hockey visors	Motorcycle visors	Motorcycle windshields	Ski goggles	Specialty vehicle glazing	Automotive glazing	Soundwalls	Machine guards
Lexan Margard sheet	HLGA3			■			■		■									
Lexan Margard sheet	MRA3																	■
Lexan Margard sheet	FLG5									■								
Lexan Margard sheet	CTG-E	■								■	■		■					
Lexan Margard sheet	FMR5XT						■					■		■				
Lexan Margard sheet	CTG-AF	■											■					
Lexan Margard sheet	HLG5			■			■		■									
Lexan Margard sheet	MR5E	■				■	■								■	■		■
Lexan Margard sheet	MR5EFR				■	■												
Lexan Margard sheet	MRAC				■	■												
Lexan Margard sheet	MRX	■																■
Lexan Margard sheet	MR10	■				■	■		■									■
Lexan Margard sheet	MR10XL	■				■	■		■									■
Lexan Margard sheet	MR101								■									
Lexan Margard sheet	MRT					■								■				
Lexan Margard sheet	MRLG						■											
Lexan Margard sheet	FRA25C					■												
Lexan Margard sheet	FRA236C					■												
Lexan Margard sheet	FRA460					■												
Lexan Margard sheet	Soundglaze SC																■	
Lexan Margard sheet	MRA3FR				■													
Lexan Margard sheet	CTG		■							■	■		■					
Lexan Margard sheet	MRFAF2		■							■	■		■					
Lexan Margard sheet	CTGAF									■	■		■					
Lexan Margard sheet	FMR102/FMRT102											■		■				
Lexan Margard sheet	FMR604				■													

**Lexan\* Margard\* MRA3 sheet**

With its inherent high impact resistance, clarity and guaranteed durability, this grade helps to maintain safety and a clear view in indoor applications such as machine guards and glazing for operator windows. As well as helping to improve safety in the workplace, this unique material is very light and can be cut to size on site using conventional workshop tools.

**Lexan Margard MR5E sheet**

Abrasion and UV resistant Lexan Margard MR5E sheet is typically used in anti-vandal glazing, security glazing, safety screens and acoustic screens. It is guaranteed not to shatter or splinter and its unique surface coating resists graffiti and enables easy restoration. It is backed by a 10-year warranty against breakage and a 5-year limited warranty against yellowing, loss of light transmission and coating failure. Due to its mar-resistant coating, it is suited for flat applications only.

**Lexan Margard MR10/MR101/MR10XL sheet**

With exclusive abrasion-resistant Margard II surface on both sides. Offers 10-year limited written warranty against breakage, yellowing, loss of light transmission and coating delamination. Excellent for high traffic areas like architectural glazing for schools and for forced entry protection.

**Lexan Margard HLG5 sheet**

This one-side hard coated lamination grade is suited for flat glass-clad PC /glass PC laminates, PC laminates and fascias. In addition to its optical qualities, this grade provides exceptional abrasion resistance, excellent weatherability and outstanding impact resistance.

**Lexan Margard HLG3 sheet**

This “Best In Class” abrasion-resistant material is one-side anti-abrasion coated and non-UV protected. It is typically used in applications such as automotive glass/PC laminates, A-symmetrical glass/PC laminates and fascias.

**Lexan FRA25C/FRA236C sheet**

Offers abrasion and UV resistant surface on both sides. Designed for dual-glazed rail applications meeting US Federal Rail Authority Type I and II ratings. FRA25C/FRA236C is available for use in component systems only.

**Lexan FRA460 sheet**

Offers abrasion, UV resistant surface on both sides. Designed for single glazed rail applications meeting US Federal Rail Authority Type I and II ratings.

**Lexan Margard MRT sheet**

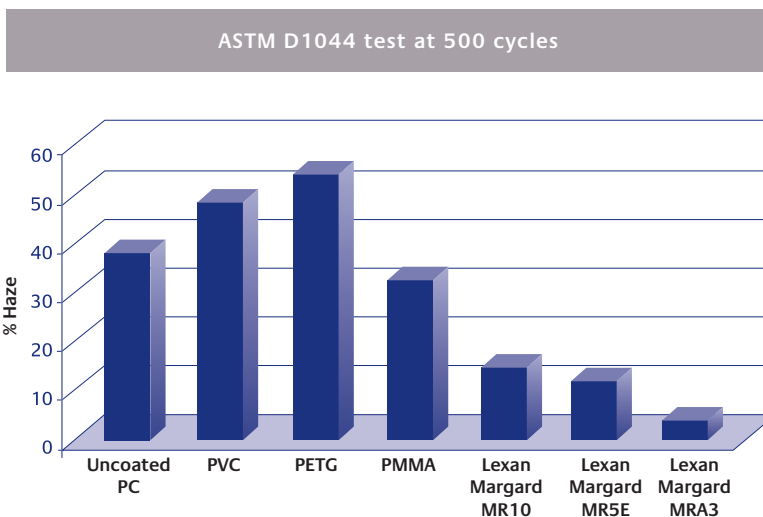
Offers exclusive abrasion resistant Margard surface on both sides. This is a transportation version of MR10grade where specific ripple orientation is required. Can be excellent candidate for window glazing for off-road vehicles and buses.

**Lexan Soundglaze\* SC sheet**

This extremely tough, UV-protected material provides excellent sound insulation properties for a range of demanding urban, road, rail and airport noise reduction barriers. Due to its proprietary hard coating, Lexan Soundglaze SC sheet provides exceptional abrasion resistance and resistance to substances such as oils, paints and aggressive cleaning products, which enables it to resist graffiti and allow repeated cleaning. Its proprietary UV protection is not affected if bent or curved. This material is backed by a ten-year limited warranty against breakage and a five-year limited warranty against yellowing and loss of light transmission.



Figure 3 Taber abrasion



### Lexan\* Margard\* CTG sheet family

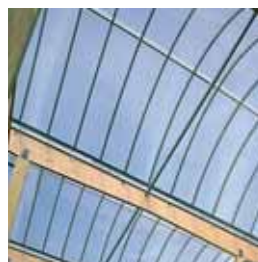
- Lexan Margard CTG-E sheet is a transparent, two side hard coated material offering good abrasion resistance, optical quality and impact resistance. This thin-gauge grade can be formed and an excellent candidate for visor and goggle applications.
- Lexan Margard CTG sheet is a two side formable hard coated visor grade
- Lexan Margard CTG-AF sheet (see anti-fog)



### Lexan Margard FMR5 XT sheet

This extremely tough, two side hard coated, formable glazing grade is typically used for revolving doors, partitions, skylights and barrel vaults.

Lexan Margard FMR5 XT sheet can be cold curved into radii of > 300 times the thickness and draped formed. Offers excellent clarity and transmission and high optical quality according DIN52305 A-AZ and passes ANSI/SAE 26.1 (1990 & 1996 valid as of September 2006) . After 100 cycles Taber test according ASTM D 1044 the haze is < 10% vs > 25% for uncoated polycarbonate sheet and acrylic.



### Lexan Margard FLG5 XT sheet

This is a one side, hard coated formable lamination grade. In addition to its good abrasion resistance and excellent optical quality, this Lexan Margard grade offers the important advantage of formability. It is and an excellent candidate for curved, A-symmetrical glass clad applications, which need to be abrasion resistant and formable.

### Also available

#### Lexan Margard FMRT102 sheet

One side, hard coated formable lamination sheet. Formable mar-resistant "T" version indicates higher shrinkage and optical tolerances.

#### Lexan Margard FMR604 sheet

This one side, hard coated formable lamination sheet offers flame retardant properties for aircraft interior applications such as dust covers, (See Flame retardant section)



**Lexan\* Margard\* MRFAF1 sheet**

This grade has a one side formable hard coat and one side anti-fog coating. This provides anti-fog properties and impact resistance.

**Lexan Margard MRFAF2 sheet**

This drape formable grade has anti-fog coating on both sides, combined with abrasion and impact resistance.

**Lexan Margard CTG-AF sheet**

This formable, thin gauge sheet offers anti-fog properties on one side and SABIC's proprietary formable coating on the other side. These products can be used for goggles, safety shields, gauges, appliances and windscreens.

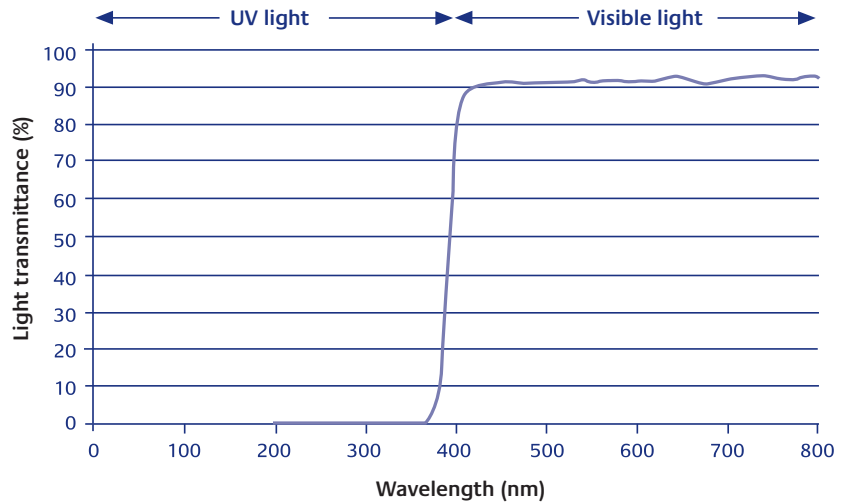
**Tough. Anti-scratch. UV resistant.**

Lexan sheet used for the visor industry, provides high impact resistance, optical clarity, UV protection and abrasion resistance.

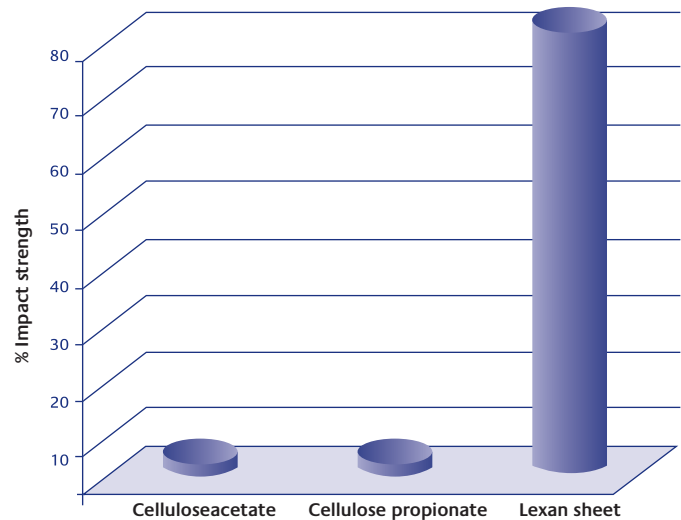
**Figure 5**

Lexan polycarbonate sheet is one of the toughest, transparent materials, which can withstand impact from many kinds of objects without shattering. Its proven energy absorption characteristics are maintained at sub-zero winter temperature down to -20°C. As seen in figure 5, Lexan sheet performs better than other non-polycarbonate materials with respect to brittleness, as measured under the ISO 6603 / 1 flex plate impact test at -20°C conducted by SABIC Innovative Plastics.

**Figure 4** The unique proprietary technology applied to Lexan sheet blocks the UV rays of sunlight.



**Figure 5**



## Hard coated flame resistant products

### Lexan\* Margard\* MR5EFR sheet

This material combines the properties of Lexan Margard MR5E sheet with flame retardancy.

### Lexan FMR604 sheet

This is a flame retardant, drape and cold-formable sheet with a two side scratch resistant coating. Its toughness, abrasion resistance and optical clarity make it particularly well suited to applications in the transportation, aerospace, and electrical/electronic industries. Complies with UL flame ratings.

### Lexan MRAC sheet

Margard coated flame retardant sheet offering excellent impact resistance and abrasion resistance. Complies with FAA FAR 25.853 A & B requirements. It should be used in flat, vertical applications and has been developed to provide superior abrasion and chemical resistance for aircraft window dust covers.



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