



INNOVATIVE PLASTICS

# PROTECTION+ PERFORMANCE

SPECIALTY FILM & SHEET

LEXAN™ MARGARD™ Sheet



CHEMISTRY THAT MATTERS™

# A SABIC COMPANY

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Innovative Plastics is a strategic business unit of SABIC. Founded in 1976, SABIC is today the first public, global multinational enterprise headquartered in the Middle East. Its products range from bulk commodity chemicals to highly engineered plastics for demanding applications. It is a leading producer of polyethylene, polypropylene, glycols, methanol and fertilizers and the fourth largest polyolefin producer.

SABIC's businesses are grouped into Chemicals, Performance Chemicals, Polymers, Innovative Plastics, Fertilizers and Metals. It has significant research resources with dedicated Technology & Innovation centers in Saudi Arabia, the Netherlands, Spain, the USA, India, China and Japan.

## INNOVATING FOR CUSTOMER SUCCESS

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We believe that SABIC customers deserve the full benefit of every advantage our enterprise can offer. After all, our success is defined by our customers' success. And with more than 80 years of experience pioneering advanced engineering thermoplastics, SABIC's Innovative Plastics business is positioned to help create new opportunities for growth and breakthrough applications.

We offer expertise and experience to our customers in a variety of ways:

- Material solutions to help drive innovation and market leadership.
- Design, logistics and processing expertise to spark new ideas and better efficiencies.
- Unwavering commitment to build long-term relationships with ingenuity, trust and continuous improvement.

It's what we strive for and work to deliver... a mutual benefit.

Excellence and nothing less.

# LEXAN MARGARD SHEET

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.

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# LEXAN MARGARD SHEET

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## 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, therefore, enables easy restoration to 'good as new' condition.

## SUPERIOR FIRE PERFORMANCE

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

## 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.

## COMPREHENSIVE WARRANTY

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



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.

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

ANTI-VANDAL GLAZING

Glazing with LEXAN MARGARD sheet can be an excellent candidate in areas where there may be a risk of vandalism. It minimizes 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 by delaying 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, which greatly reduces the risk of accidental injury in applications like internal partitions and doors.

FIGURE 1 IMPACT RESISTANCE

Falling dart impact test 5 pounds (2.3 kg.) steel dart 1" (25.4 mm) diameter dip

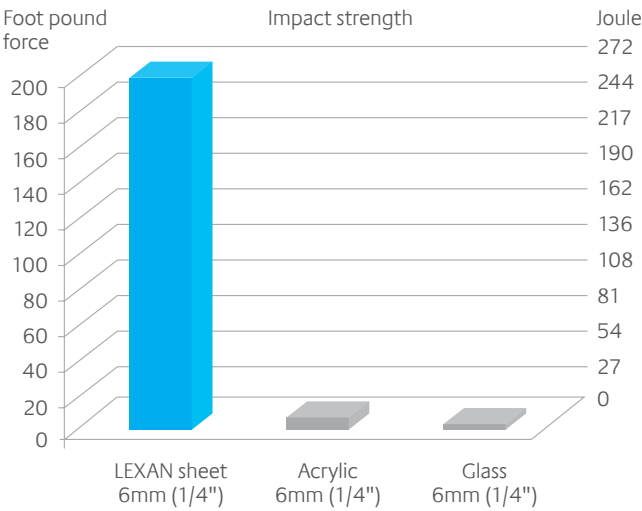


FIGURE 2 WEIGHT

THICKNESS		POLYCARBONATE SHEET	GLASS
mm	inch	kg/sq.meter. (Lbs/sq.ft)	kg/sq.meter (Lbs/sq.ft)
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 formable applications
- Products for flat applications
- Flame retardant products
- Anti-fog 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				●													

# PRODUCTS FOR FORMABLE APPLICATIONS

## 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 an excellent candidate for visor and goggle applications.
- LEXAN MARGARD CTG sheet is a two-side hard coated, formable 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 an excellent candidate for curved, asymmetrical glass clad applications which need to be abrasion resistant and formable.

ALSO AVAILABLE

## LEXAN MARGARD FMRT102 SHEET

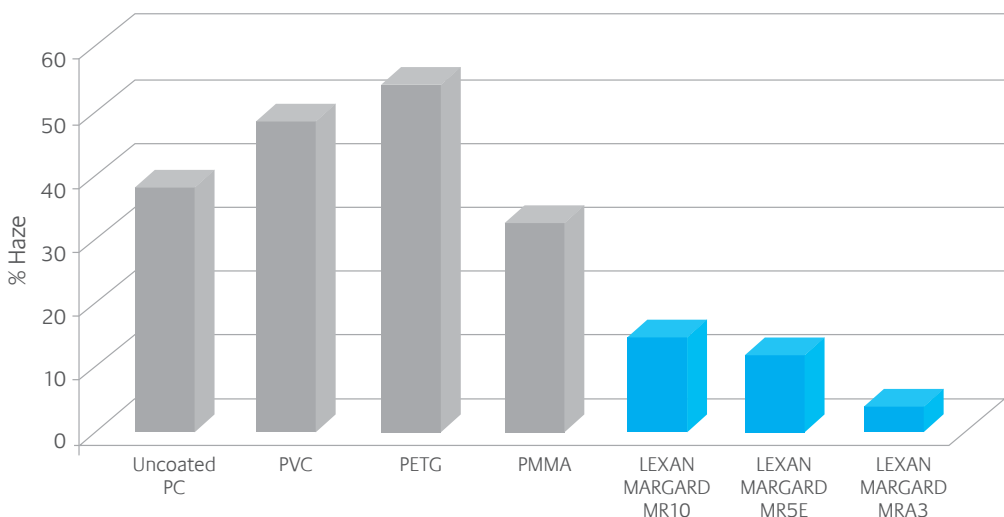
One-side hard coated, formable lamination sheet. Formable mar-resistant “T” version indicates higher shrinkage and optical tolerances.

## 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 resistant products section).

FIGURE 3 TABER ABRASION

ASTM D1044 test at 500 cycles



# PRODUCTS FOR FLAT APPLICATIONS

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## 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 HLGA3 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, asymmetrical glass/PC laminates and fascias.

## 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 in 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 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.





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#### LEXAN FRA460 SHEET

Offers abrasion and 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

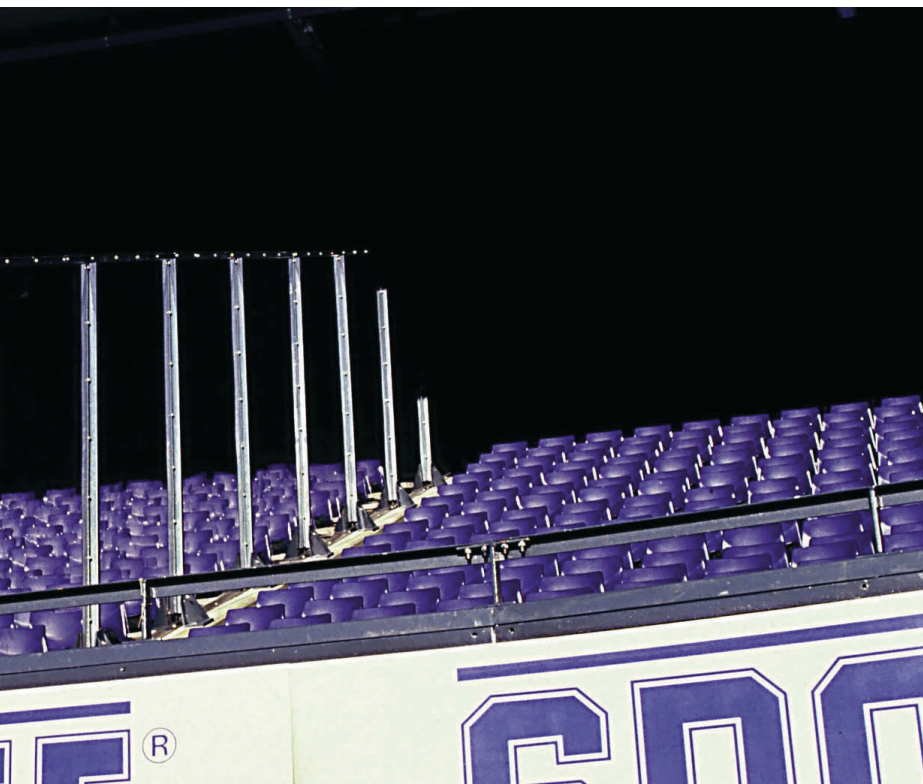
Offers exclusive abrasion resistant MARGARD surface on both sides. This is a transportation version of MR10 grade where specific ripple orientation is required. Can be excellent candidate for window glazing for off-road vehicles and buses.

#### 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.



# ANTI-FOG PRODUCTS

## 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 as well as 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.

## IMPACT RESISTANT LEXAN SHEET

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  $-20^{\circ}\text{C}$ . 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  $-20^{\circ}\text{C}$  conducted by SABIC.

FIGURE 4 THE UNIQUE PROPRIETARY TECHNOLOGY APPLIED TO LEXAN SHEET BLOCKS THE UV RAYS OF SUNLIGHT

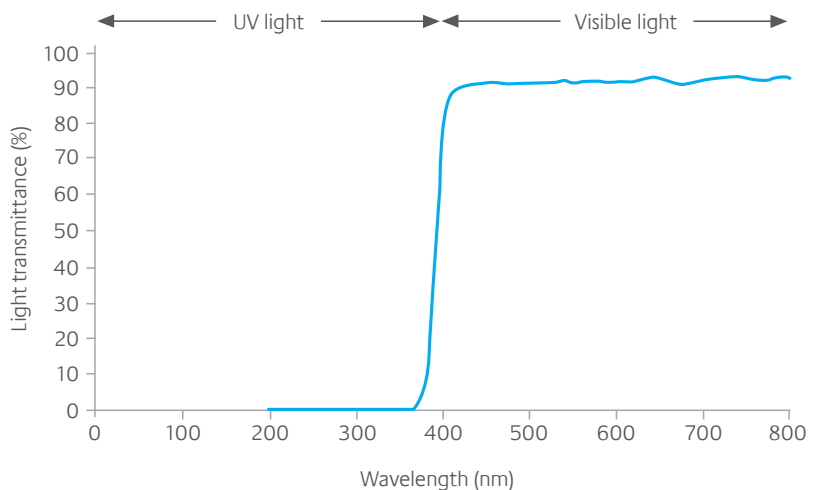
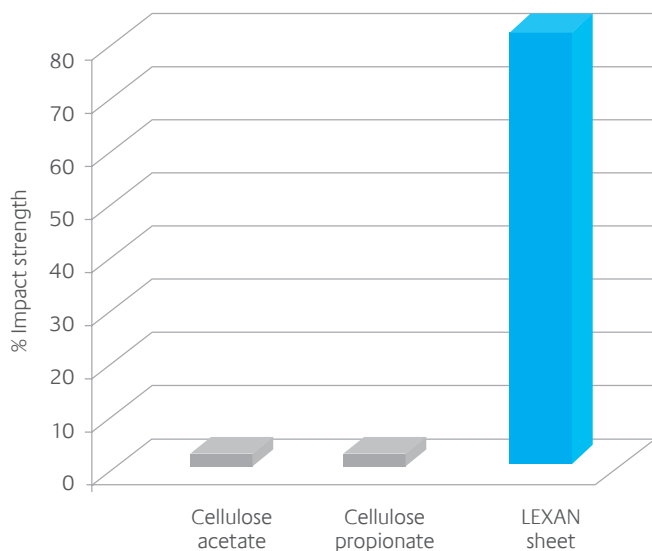


FIGURE 5 LEXAN'S HIGH IMPACT RESISTANCE



# HARD COATED FLAME RESISTANT PRODUCTS

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## LEXAN MARGARD MR5EFR SHEET

This material combines the properties of LEXAN MARGARD MR5E sheet with flame retardancy.

## LEXAN MARGARD 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. LEXAN MARGARD FMR604 sheet complies with UL flame ratings.

## LEXAN MRAC SHEET

This MARGARD coated flame retardant sheet offers excellent impact resistance and abrasion resistance. LEXAN MRAC sheet 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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