

Specialty Film & Sheet



Lexan* optical quality (OQ) sheet for lamination applications

The outstanding performance, quality and optics

SABIC Innovative Plastics serves the global lamination industry with a broad portfolio of engineered materials that are excellent candidates for both interior and exterior use, representing a total solutions approach for this industry's rapidly expanding need for proven materials technologies.

Virtually unbreakable, high optical quality Lexan polycarbonate (PC) sheet materials from SABIC Innovative Plastics are often a top choice. Lexan polycarbonate sheet combines crystal clear transparency with value-added performance that features light weight, the outstanding ripple, distortion and optical defect characteristics. Extruded Lexan sheet has one of the tightest measurable specifications with regard to black specks, inclusions, bubbles, lints & fibers, distortion and ripple. This high-tech optical quality sheet product, with highly specialized properties, is an excellent candidate to help answer the specific needs of a variety of structures.

Laminates made from Lexan Margard* sheet can offer

- High optical quality in combination with coating – excellent vision, abrasion resistance, no coating failure and structural delamination.
- Bullet resistance - can absorb ballistic impact without penetration. Will not shatter or splinter, so greatly reduces the risk of accidental injury.
- Multi-shot capability – can stop even close-grouped shots, maximizing full vision.
- High impact, stress free lamination – will not spider, crack or white-out on impact, providing vision after ballistic or physical attack. Eliminates costly replacement of broken glass.
- Abrasion-resistance surface – easy to maintain while enhancing long-term appearance. Even graffiti can be easily removed without causing damage.
- Lightweight, easily fabricated – the light weight (1/2 of the weight of glass) requires no added support to walls.

Figure 1 Impact resistance

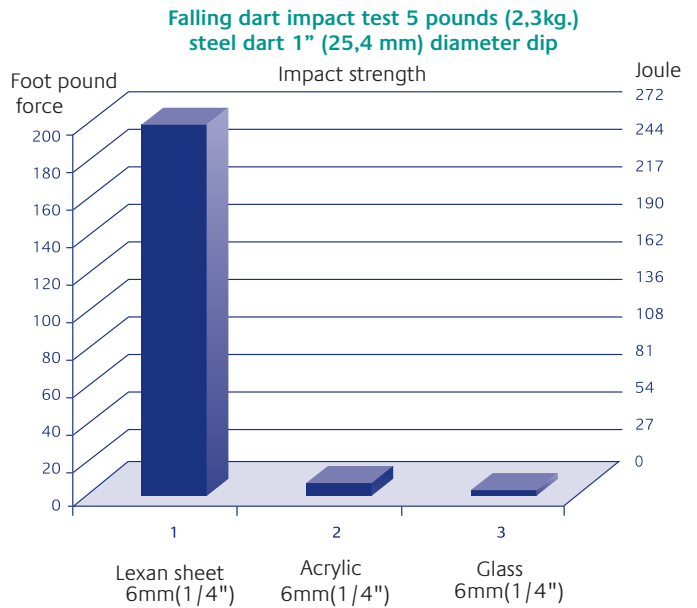


Figure 2 Weight

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

Table 1 Taber abrasion

Material	% Haze (100 cycles)	% Haze (500 cycles)
Glass	2%	2%
Lexan Margard HLG A3 sheet	3%	4%
Lexan Margard HLG 5 sheet	3%	9%
Lexan Margard FLG 5 XT sheet	9%	25%
Lexan 9030/Exell* D sheet	25%	35%
Acrylic	25%	35%
PVC	30%	36%

Potential applications

Lexan* polycarbonate sheet is an excellent candidate for lamination with acrylic and glass sheets. A polyurethane interlayer for bonding may be preferable rather than a PVB interlayer due to chemical attack risk.

Various security glazing materials are made from laminated polycarbonate or glass-clad polycarbonate. Glass-clad polycarbonate contains glass layers to the exterior and one or more polycarbonate layers on the inside, in other words sheets of polycarbonate sandwiched between sheets of glass. This material combines the scratch, chemical and heat resistance of glass with the break and penetration resistance of polycarbonate. This laminates can also be asymmetrical, where polycarbonate sheet is exposed to the interior.

SABIC Innovative Plastics' Lexan sheet products are used in several safety & security applications such as

- Bullet proof laminates
- Armored vehicle glazing
- Anti-burglary glazing
- High security (correctional institutions, prisons) glazing
- High security/ anti-blast glazing
- High speed train glazing
- Anti-ballistic glazing e.g. for VIP cars

In addition, there is significant increase in usages of laminates in automotive, transportation as well as decorative, architectural applications for both interiors and exteriors.

Potential customer benefits also include increased yield and reduction of defects as well as incorporation of the coating technologies that maximize scratch resistance.



Made from high optical quality Lexan resin, Lexan Margard* MR5E sheet is UV- and mar-resistant, and virtually unbreakable. It is an excellent option for windcreens and glazing used in recreational and off-road vehicles.



Available products

The products for lamination applications from SABIC Innovative Plastics include

- The highest optical quality – Lexan* Margard* ULG1003 sheet
- A polycarbonate for “core” lamination application
- Weathering, high optics and abrasion resistance – Lexan Margard HLG5 sheet
- A polycarbonate for “cap” lamination for outdoor applications
- High abrasion resistance and high optics – Lexan Margard HLG3 sheet
- A polycarbonate for “cap” lamination, sheet should be exposed to the interior, indoor applications.
- Formable and high optics – Lexan Margard FLG5 XT sheet
- A polycarbonate for “cap” lamination of formable glazing

Coated sheet materials for lamination

Lexan Margard HLG5 sheet	1-side hard coated, UV protected, for flat applications. 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	1-side hard coated, non-UV protected, for flat applications. 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 Margard FLG5 XT sheet	1-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, A-symmetrical glass clad applications, which need to be abrasion resistant and formable.
Lexan Margard MR 10/101 sheet	2-side hard coated, UV protected. Mar-, weathering- and abrasion resistance. 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 MR5E sheet	2-side hard coated, highest optical certification and abrasion resistance. Suitable as anti-glazing, safety screens and rail applications. 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.

Un-coated sheet materials for lamination

Lexan ULG1003 sheet	The highest optical quality in the solid sheet range, with light transmission values, depending on the thickness of the sheet. This uncoated material can be used in flat or curved applications.
Lexan 9030HO sheet	The improved optical quality sheet grade of standard Lexan sheet offering excellent clarity, high impact resistance, and formability.

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