POLYVANTIS

PRODUCT DATASHEET

LEXAN™ MARGARD™ HLG5 SHEET

DESCRIPTION

LEXAN™ MARGARD™ HLG5 sheet is a transparent 1-side hard coated UV protected lamination grade offering excellent optical properties for lamination with glass in mainly asymmetrical bullet resistant security glazing panels. It can be specified to match specific levels of threat and has excellent optical clarity.

TYPICAL PROPERTY VALUES♦

PROPERTY	TEST METHOD	UNITS	VALUE
PHYSICAL			
Density	ISO 1183	g/cm³	1.20
Water absorption, 50% RH, 23 °C	ISO 62	%	0.15
Water absorption, saturation, 23°C	ISO 62	%	0.35
MECHANICAL			
Yield stress 50 mm/min	ISO 527	MPa	>60
Yield strain 50 mm/min	ISO 527	%	6
Nominal strain at break 50 mm/min	ISO 527	%	>100
Tensile modulus 1 mm/min	ISO 527	MPa	2300
Flexural strength 2 mm/min	ISO 178	MPa	90
Flexural modulus 2 mm/min	ISO 178	MPa	2300
Taber haze [1]- 100 cycles, 500-gram, CS-10F	ASTM D1044	%	1 - 3
Taber haze [1] - 500 cycles, 500-gram, CS-10F	ASTM D1044	%	3-8
THERMAL			
Vicat softening temperature, B/120	ISO 306	°C	145
Temperature of deflection under load (type A), 1.8 MPa, flat	ISO 75-2	°C	127
Thermal conductivity	ISO 8302	W/m.°C	0.2
Coefficient of linear thermal expansion, 23-55°C	ISO 11359-2	1/°C	$7x10^{-5}$
Ball pressure test 125 ±2°C	IEC 60695-10-2	-	Pass
ELECTRICAL			
Volume resistivity	IEC 60093	Ohm.cm	$>10^{15}$
Dielectric strength, in oil, 3.2 mm	IEC 60243-1	kV/mm	18

♦ These property values have been derived from LEXAN™ resin data for the material used to produce this sheet product.

[1] Taber haze values are measured on sheet specimens.

PROPERTY*	TEST METHOD	UNITS	VALUE
OPTICAL - SHEET			
Light transmission 2 mm	ASTM D 1003	%	92
Light transmission 3 mm	ASTM D 1003	%	91
Light transmission 4 mm	ASTM D 1003	%	90
Light transmission 5 mm	ASTM D 1003	%	90
Light transmission 6 mm	ASTM D 1003	%	89
Light transmission 8 mm	ASTM D 1003	%	87
Light transmission 9.5 mm	ASTM D 1003	%	86
Light transmission 12 mm	ASTM D 1003	%	85
UL Lisitng - UL File# E539252			

*These are typical properties and are not intended for specification purposes. If minimum certifiable properties are required, please contact your local POLYVANTIS representative or the POLYVANTIS Quality Services Department.

OPTICAL PERFORMANCE

The optical qualities of LEXAN™ MARGARD™ HLG5 sheet are the result of constant research in order to help provide high values. This is ensured by in house testing of LEXAN sheets in 3-8 mm thickness according DIN 52305/-A-AZ which specifies optical requirements for glazing in vehicles. During the optical control phase, LEXAN MARGARD HLG5 sheets are examined against a special background, called image magnification, for proper identification of optical imperfections. Our internal manufacturing specifications are under constant supervision of our ISO 9002 approved Quality Management department.

PROCESSING

Glass/LEXAN security glazing panels can be produced using different systems for bonding purposes. The autoclaving process is the most common way of laminating glass and LEXAN sheets by means of a polyurethane based interlayer. The differences in thermal behavior between glass and polycarbonate require a sufficient thick interlayer in order to avoid a high stress level. The glass surface needs to be primed for better bond strength with the polyurethane film; contact between primer and LEXAN must be avoided. To avoid air-inclusions, it is recommended to place the construction in a vacuum bag with constantly measured negative pressure of .9 bar during the lamination process. A different way of bonding glass and LEXAN MARGARD HLG5 sheet is to cast a polymer between the different substrates. During the polymerization process, adhesion takes place between glass and LEXAN sheet.

FIRE TEST PERFORMANCE

LEXAN MARGARD HLG5 sheet has good fire performance against many national fire codes dependent on thickness and color; please check with the local sales office for details.

RIPPLE ORIENTATION

Ripple direction may play an important role in the application regarding the optical performance of the sheet. For this purpose, the ripple direction is indicated on the sheet masking.

CHEMICAL RESISTANCE

Although LEXAN™ MARGARD™ HLG5 sheet has resistance to most mineral oils, greases, aliphatic hydrocarbons, and acids under low or moderate stress levels, we strongly recommend testing in case of applications where the products will come into contact with these or other aggressive chemicals. For symmetrical configurations where both the LEXAN surfaces will be bonded to glass, we advise to apply our non-hard coated product LEXAN ULG1003.

FLAT APPLICATIONS ONLY

Due to its mar-resistant coating, LEXAN MARGARD HLG5 sheet cannot be used in curved applications. It is intended for flat applications only.

CLEANING

For cleaning instructions, consult guidelines. Do not use abrasive or highly alkaline cleaners, never scrape the sheet with squeegees, razor blades or other sharp instruments. Do not clean LEXAN MARGARD HLG5 sheet in hot sun or at elevated temperatures. For removal of paints, marking pen, inks, lipstick, labels, stickers etc. the use of kerosene, naphtha or white spirit is generally effective. Afterwards, a warm final wash should be made, using a mild soap solution, and ending with a thorough rinsing with cold water.

SAFETY

The processing guidance given in this documentation is given in good faith and the trust that in all cases you wear the correct Personal Protective Equipment (PPE), e.g. helmet, proper gloves, safety goggles etc. to safely fabricate, e.g. (but not limited to) sawing, cutting, forming our sheets and films. In all cases you should follow local and national regulations around the wear of PPE's prescribed or mandatory to perform these tasks in a safely manor.

PRODUCT AVAILABILITY

Product code:	**LEXAN™ MARGARD™ HLG5**
Standard gauges:	2.5-8mm (Other gauges upon request)
Standard size:	2000 x 2920mm
Color:	Clear 112

For HLG5 different colors and dimensions can be made available by prior arrangements. Such arrangement may affect prices and/or conditions of sale.

POLYVANTIS

Polycarbonate products are sold globally under the trademark LEXAN™ Film & Sheet, owned by SABIC or its subsidiaries or affiliates.

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