

Technical Information

PLEXIGLAS® Optical hard coated (HC)

PRODUCT

PLEXIGLAS® Optical hard coated (HC) is an extruded acrylic sheet material. The surface coating offers excellent resistance to wear and chemicals, and the material also has outstanding optical properties. The sheet, coated on one side, is particularly recommended for demanding applications where the material is subjected to heavy use and cleaning. PLEXIGLAS® Optical HC offers optimal protection even in heavily frequented public spaces: The coating helps ensure that the surface appearance of the material is preserved. The one-sided coating can be provided in various colors if required.

PROPERTIES

In addition to the known and proven properties of PLEXIGLAS® such as

- outstanding light transmission and brilliance
- easy processability
- high surface hardness
- low weight, half that of glass
- high impact resistance, 11 times that of glass

PLEXIGLAS® Optical HC also has the following special characteristics:

- excellent surface appearance
- outstanding resistance to wear and chemicals
- almost complete opacity to UV radiation

APPLICATIONS

Thanks to these properties PLEXIGLAS® Optical HC is particularly suitable for

- furniture, shopfitting, and trade-show booth construction
- large-area wall paneling
- marker boards
- picture glazing
- museum and store display cases
- electronic displays
- the aviation industry

- industrial glazing
- signage

PROCESSING

PLEXIGLAS® Optical HC can be processed like standard PLEXIGLAS®.

The following guidelines are available for processing of PLEXIGLAS®:

- Processing of PLEXIGLAS® (no. 311-1)
- Joining of PLEXIGLAS® (no. 311-3)
- Surface treatment of PLEXIGLAS® (no. 311-4)
- Tips for processing of PLEXIGLAS® solid sheets (no. 311-5)

The following specific features must be noted for processing of PLEXIGLAS® Optical HC.

Edge finishing

Scraping, wet grinding, and polishing are all highly suitable also for PLEXIGLAS® Optical HC. Flame polishing must be avoided: The flames may cause ruptures and cracks in the surface so that the characteristic wear resistance and chemical resistance may be lost in the affected area.

Bonding

The uncoated side of the sheet can be bonded in the same way as extruded PLEXIGLAS®. The surface of the coated surface must be prepared appropriately before bonding. For bonding of the coated side, the coating must first be wet ground or cut away. It must be ensured when removing the coating that the surface to be bonded is smooth, clean, and free from stress.

Forming

Line bending and thermoforming are not suitable for processing of PLEXIGLAS® Optical HC; these processes may lead to damage or detachment of the coating.

Cleaning

Liquid cleaning agents and water are very suitable for cleaning the chemical-resistant sheet. Mechanical cleaning methods using, for example, razor blades, knives, scrapers, or very hard scouring sponges must be avoided; these may cause scratches and damage the wear-resistant coating.

Weathering

PLEXIGLAS® Optical HC retains its very high light transmission even in outdoor applications. Detailed information on weathering behavior is available in the warranty for PLEXIGLAS® Optical HC (no. 111-105).

Printing

The uncoated side of the sheet can be printed as with extruded PLEXIGLAS®, for example by the screen printing process or digitally.

DELIVERY FORMS

PLEXIGLAS® Optical HC is available in the following sizes and thicknesses:

3050 x 2050 mm with thickness from 2 to 8 mm.

Further details are available in the PLEXIGLAS® Sales Handbook.

TYPICAL VALUES FOR PROPERTIES

Chemical resistance¹

	PLEXIGLAS® Optical hard coated (HC)	Uncoated acrylic sheet
Acetone	> 24 h	< 15 min
Petrol	> 24 h	< 24 h
Disinfectant	> 24 h	> 24 h
Ethanol (96%)	> 24 h	< 24 h
Ethyl acetate and butyl acetate (1:1)	> 24 h	< 15 min
Isopropanol	> 24 h	> 24 h
Methanol	> 24 h	> 24 h
Sodium carbonate (10%)	> 24 h	> 24 h
Sodium chloride (15%)	> 24 h	> 24 h
Sodium hydroxide (30%)	> 24 h	> 24 h
Hydrochloric acid (32%)	> 24 h	> 24 h
Sulfuric acid (30%)	> 24 h	> 24 h
Toluene	> 24 h	< 15 min
Citric acid (10%)	> 24 h	> 24 h

¹ Chemical resistance is tested as in DIN EN 12720. The intervals between visual inspection of the sheet surfaces are 15 minutes, 1 hour, and 24 hours. The surface shows no change even after the specified time. The test surface is indistinguishable from the area around it.

TECHNICAL DATA

Physical properties (clear, thickness 3 mm)	Test standard	Unit	PLEXIGLAS® Optical hard coated (HC)	Uncoated acrylic sheet
Mechanical properties				
Tensile strength	DIN EN ISO 527	MPa	67.5	72
Modulus of elasticity	DIN EN ISO 527	MPa	3450	3300
Charpy impact strength	DIN EN ISO 527	kJ / m ²	10	15
Optical properties				
Light transmission	DIN 5036	%	92	92
Yellowing	DIN 5036	%	< 0.5	< 0.5
Thermal properties				
Vicat softening point	ISO 306, Method B50	°C	106	103
Building material class	DIN 4102		B2	B2
	DIN EN 13501		E	E
Toxicity	AITM 3.0005		Requirements satisfied	Requirements satisfied
Smoke density	AITM 2.0007 / FAR 25.853		Requirements satisfied	Requirements satisfied
Abrasion resistance of coating				
Abrasion resistance by the abrasive wheel method (100 cycles, 4.9 N, CS-10F)	ISO 9352	% Haze	< 3	20 - 30
Falling sand test	DIN 52348	cd/(lx·m ²)	2.3	22
Pencil hardness	DIN EN 13523-4		5H	2H
Micro-scratch resistance	IHD-W-466		Class 1	-
Adhesion	DIN EN ISO 2409		GT 0	-

Other typical values are available in the Technical Information for PLEXIGLAS® GS/XT (211-1).

* = registered trademark PLEXIGLAS is a registered trademark of Evonik Röhm GmbH, Darmstadt, Germany.
Certified to DIN EN ISO 9001 (Quality) and DIN EN ISO 14001 (Environment)
Evonik is a worldwide manufacturer of PMMA products sold under the PLEXIGLAS® trademark on the European, Asian, African and Australian continents and under the ACRYLITE® trademark in the Americas.

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