



PLEXIGLAS® GS/PLEXIGLAS® XT
Product Description

Survey of PLEXIGLAS® Grades and Relevant Product Groups

PLEXIGLAS® GS

PLEXIGLAS® GS 209 (0Z09)

UV-absorbing special grade with increased heat deflection temperature and better chemical resistance

PLEXIGLAS® GS 218 (0Z18)

UV-transmitting special grade for exacting demands (e.g. for optical waveguides).

PLEXIGLAS® GS 221 (0F00)

Standard grade for blocks from 90 mm thickness, UV-absorbing

PLEXIGLAS® GS 222 (0F00)

Standard grade for blocks from 30–80 mm thickness, UV-absorbing

PLEXIGLAS® GS 231 (0A31)

UV-absorbing special grade for applications requiring high UV protection, as well as for areas with strong sunlight

PLEXIGLAS® GS 232 (0F32)

Standard grade for tubes, UV-absorbing

PLEXIGLAS® GS 233 (0F00)

Standard solid sheet grade from 2 to 25 mm thickness, largely UV-absorbing

PLEXIGLAS® GS 235

Clear special grade with increased heat deflection temperature, yet more easy to form (e.g. for sanitaryware)

PLEXIGLAS® GS 241, 245, 249

Special grades approved for aircraft glazing, UV-absorbing, of high optical quality

PLEXIGLAS® GS Colors

Transparent, translucent, opaque or fluorescent standard and special grades

PLEXIGLAS RESIST® HP

Special solid sheet grade with greater impact strength and lower rigidity, with high-gloss or satin surfaces, UV-absorbing, for windshields on two-wheeled vehicles, tradeshow booth construction and store fixtures, protective glazing etc.

PLEXIGLAS SATINICE® SC and DC

Clear and colored standard grades with one (SC) and two (DC) satin surfaces for furniture, displays, illuminated signs and light objects

PLEXIGLAS SOUNDSTOP® GS

UV-absorbing special solid sheet grade, complies with ZTV-Lsw 06, EN 1793 and EN 1794 for noise barriers

PLEXIGLAS SOUNDSTOP® GS CC

UV-absorbing special solid sheet grade with integrated PA threads, complies with ZTV-Lsw 06, EN 1793 and EN 1794 for noise barriers

PLEXIGLAS SUNACTIVE® GS ¹⁾

UV-transmitting, highly UV-resistant clear and transparent-colored special grades for tanning beds

PLEXIGLAS® GS SW and PLEXIGLAS FREE FLOW® GS SW

Clear and colored special grades offering ease/particular ease (FREE FLOW) of forming, with better chemical resistance and higher heat deflection temperature; for sanitaryware

PLEXIGLAS truLED®

UV-absorbing special grades in specific colors for illuminated signs with LEDs or colored neon tubing

PLEXIGLAS® MULTICOLOR

Special solid sheet grades from 9 mm thickness, consisting of two or three transparent, translucent, opaque or fluorescent colored layers, with high-gloss, satin or textured surfaces; for applications with cutouts or decorative edge effects.

Textured PLEXIGLAS®

Trend Line

Standard grades of clear and transparent-colored solid sheets with a textured surface for balcony parapets, decorative glazing and promotional items

Our group of cast acrylic products furthermore comprises:

PLEXICOR®

Special grades of solid sheets and formed products made from mineral-filled, opaquely colored acrylic material with surface décors; for countertops and items of furniture, tradeshow booths and store fixtures

PARAPAN®

High-gloss solid acrylic sheets in 18 mm main thickness with special opaque standard and special colors for furniture fronts

¹⁾ Europ. Patent EP 1 164 633

PLEXIGLAS® XT

PLEXIGLAS® XT 20070 (0A000)

Standard solid sheet grade; largely UV-absorbing

PLEXIGLAS® XT 20070 HQ (0A000)

High-quality special grade of solid sheets, suitable for mirror coating, largely UV-absorbing

PLEXIGLAS® XT 24370 (0A370)

UV-transmitting and highly UV-resistant clear standard grade of solid sheet (for conservatories, patios, etc).

PLEXIGLAS® XT 29070 (0A070) bzw. 29080

Standard grades of PLEXIGLAS ALLTOP® SDP 16 double-skin sheets, and of tubes and round rods; UV-transmitting

PLEXIGLAS ALLTOP® SP ³⁾

Group of multi-skin sheets (The "Noble" Sheet) with a water-dispersing coating on both surfaces and inside the cavities

PLEXIGLAS® EndLighten

UV-absorbing, „forward-diffusing“ special grade for edge-lit, energy-saving and ultraslim illuminated signs

PLEXIGLAS® XT Colors

Transparent, translucent or opaque standard and special grades

PLEXIGLAS Gallery®

Family of UV-absorbing and UV-protecting standard grades for glazing of pictures and exhibits

PLEXIGLAS HEATSTOP® XT / SP / WP ¹⁾

IR-reflecting standard grades that greatly reduce incident solar radiation of solid sheets, multi-skin sheets with a water-dispersing NO DROP ²⁾ coating on one side, and corrugated sheets; for domed and continuous rooflights, patio and conservatory roofs etc.; UV-absorbing

PLEXIGLAS RESIST® ⁴⁾ 45, -65, -75, -100

Standard grades of solid sheets with higher, graded impact strength and reduced rigidity, UV-absorbing

PLEXIGLAS® Satin Ice

Sheets, rods and tubes uniformly matte through and through, for light objects and illuminated signs.

PLEXIGLAS RESIST® SP / WP ⁵⁾

Groups of multi-skin sheets (The "Tough" Sheet) with higher impact strength, with a water-dispersing NO DROP ²⁾ coating on one side, and corrugated sheets (The "Tough" Sheet); UV-absorbing

PLEXIGLAS® XT RP

Satin, gray-transparent colored special grade made of special molding compound, with specific lighting-engineering performance for rear projection (RP)

PLEXIGLAS® Crystal Ice

Clear and colored standard grades with one (SC) and two (DC) satin surfaces for picture glazing, furniture, displays, illuminated signs and light objects

PLEXIGLAS SOUNDSTOP® XT ⁶⁾

UV-absorbing special grades of solid sheet, in accordance with ZTV-Lsw 06, EN 1793 and EN 1794 for noise barriers

PLEXIGLAS® MIRROR XT

Various colored sheets of PLEXIGLAS® XT with one mirror surface, back-painted

Textured PLEXIGLAS®

Classic Line

Standard grades of clear and transparent-colored solid sheets with a textured surface for balcony parapets, decorative glazing and promotional items

PLEXIGLAS SUNACTIVE® XT 24770 (0A770)

UV-transmitting, highly UV-resistant clear special grade for tanning bed canopies; thickness max. 3 mm

¹⁾ Europ. Patent EP 548 822

²⁾ Europ. Patent EP 149 182

³⁾ Europ. Patent EP 530 617

⁴⁾ Europ. Patent EP 776 931

⁵⁾ Europ. Patent EP 733 754

⁶⁾ Europ. Patent EP 600 332

Application Characteristics of PLEXIGLAS®

PLEXIGLAS® GS	PLEXIGLAS® XT
cast	extruded
absolutely colorless and clear	
break-resistant to impact-resistant (PLEXIGLAS RESIST® HP)	break-resistant to impact-resistant (PLEXIGLAS RESIST® 45 ... 100)
unequaled resistance to weathering and aging	
high-quality surface and planarity; high-gloss, textured or satin (PLEXIGLAS SATINICE® DC/SC)	very good surface; high-gloss, textured or satin (PLEXIGLAS® Crystal Ice)
solid sheets, blocks, tubes, round and square rods	solid sheets, tubes, round rods, multi-skin sheets, corrugated sheets, mirror sheets
2 mm to 160 mm solid sheet/block thickness	1.5 to 25 mm solid sheet thickness, multi-skin sheets 8, 16 and 32 mm thick
tandard sizes up to 3050 x 2030 mm	standard size 3050 x 2050 mm, extra lengths and special sizes on request
over 50 standard color	over 25 standard colors
good resistance to dilute acids and to alkalis limited resistance to organic solvents	
very easy to work, similar to hardwood	easy to work, similar to hardwood
easy to thermoform over a wide range of conditions	very easy to thermoform under optimal, constant conditions
easily and firmly bonded, e.g. with reaction adhesives (e.g. ACRIFIX® 1R 0190, 1R 0192)	very easily bonded, also with solvent adhesives (e.g. ACRIFIX® 1S 0116, 1S 0117)
burns more or less like hardwood; very little smoke generation; combustion gases are non-toxic and non-corrosive	
max. service temperature approx. 80 °C	max. service temperature approx. 70 °C

Typical Property Values (at 23°C and 50% relative humidity)

Mechanical properties

	PLEXIGLAS® GS 233; 222; 209; (0F00; 0F00; 0Z09)	PLEXIGLAS® XT 20070; 29070 (0A000; 0A070)	PLEXIGLAS RESIST® 45; 65; 75; 100	Unit	Teststandard
Density ρ	1,19	1,19	1,19	g/cm ³	ISO 1183
Impact strength a_{CU} (Charpy)	15	15	45; 65; 75; no break	kJ/m ²	ISO 179/1fu
Notched impact strength a_{IN} (Izod)	1,6	1,6	2,5; 4,5; 6,0; 6,5	kJ/m ²	ISO 180/1 A
Notched impact strength a_{cN} (Charpy)	–	–	3,5; 6,5; 7,5; 8,0	kJ/m ²	ISO 179/1eA
Tensile strength σ_M a) -40 °C b) 23 °C c) 70 °C	110 80 40	100 72 35	– 60; 50; 45; 40 –	MPa	ISO 527-2/1B/5
Elongation at break ϵ_B	5,5	4,5	–	%	ISO 527-2/1B/5
Nominal elongation at break ϵ_{iB}	–	–	10; 15; 20; 25	%	ISO 527-2/1B/50
Flexural strength σ_{ob} , Standard test specimen (80 x 10 x 4 mm ³)	115	105	95; 85; 77; 69	MPa	ISO 178
Compressive yield stress σ_{df}	110	103	–	MPa	ISO 604
Max. safety stress σ_{max} (up to 40 °C)	5–10	5–10	5–10	MPa	–
Modulus of elasticity E_t (short-term value)	3300	3300	2700; 2200; 2000; 1800	MPa	ISO 527-2/1B/1
Min. cold bending radius	330 x thickness	330 x thickness	270 x thickness; 210 x thickness; 180 x thickness; 150 x thickness	–	–
Dynamic shear modulus G at approx. 10 Hz	1700	1700	–	MPa	ISO 537
Indentation hardness $H_{961/30}$	175	175	145; 130; 120; 100	MPa	ISO 2039-1
Abrasion resistance in Taber abrader test (100 rev.; 5,4 N; CS -10F)	20–30	20–30	20–30; 30–40; 30–40; 30–40;	% haze	ISO 9352
Coefficient of friction μ a) plastic / plastic b) plastic / steel c) steel / plastic	0,8 0,5 0,45	0,8 0,5 0,45	– – –	–	–
Poisson's ratio μ_b (dilatation speed of 5% per min; up to 2% dilatation; at 23 °C)	0,37	0,37	0,41; 0,42, 0,41; 0,43	–	ISO 527-1
Resistance to puck impact from thickness (Test Certificate No. from FMFA Stuttgart)	–	12 mm (46/900 549)	–; 6 ¹⁾ ; (6); 6 ²⁾ mm (¹⁾ 46/901 869/Sm/C; ²⁾ 46/901 870/Sm/C)	–	similar to DIN 18 032, Part 3

Acoustical properties

	PLEXIGLAS® GS 233; 222; 209; (0F00; 0F00; 0Z09)	PLEXIGLAS® XT 20070; 29070 (0A000; 0A070)	PLEXIGLAS RESIST® 45; 65; 75; 100	Unit	Teststandard
Sound velocity (at room temperature)	2700–2800	2700–2800	–	m/s	–
Weight sounded reduction index R_w at thickness:					
4 mm	26	26	–		
6 mm	30	30	–		
10 mm	32	32	–	dB	–

Optical properties (of clear grades, at 3 mm thickness)

	PLEXIGLAS® GS 233; 222; 209; (0F00; 0F00; 0Z09)	PLEXIGLAS® XT 20070; 29070 (0A000; 0A070)	PLEXIGLAS RESIST® 45; 65; 75; 100	Unit	Teststandard
Transmittance τ_{D65}	~ 92	~ 92	~ 91	%	DIN 5036, Part 3
UV transmission	no; no; no	no; yes	no; no; no; no	–	–
Reflection loss the visible range (for each surface)	4	4	4	%	–
Total energy transmittance g	85	85	85	%	DIN EN 410
Adsorption in the visible range	< 0,05	< 0,05	< 0,05	%	–
Refractive index n_D^{20}	1,491	1,491	1,491	–	ISO 489

Electrical properties

	PLEXIGLAS® GS 233; 222; 209; (0F00; 0F00; 0Z09)	PLEXIGLAS® XT 20070; 29070 (0A000; 0A070)	PLEXIGLAS RESIST® 45; 65; 75; 100	Unit	Teststandard
Volume resistivity ρ_D	> 10^{15}	> 10^{15}	> 10^{14}	Ohm · cm	DIN VDE 0303, Part 3
Surface resistivity σR_{OA}	$5 \cdot 10^{13}$	$5 \cdot 10^{13}$	> 10^{14}	Ohm	DIN VDE 0303, Part 3
Dielectric strength E_d (1 mm specimen thickness)	~ 30	~ 30	–	kV/mm	DIN VDE 0303, Part 2
Dielectric constant ϵ at 50 Hz at 0,1 MHz	3,6 2,7	3,7 2,8	– –	– –	DIN VDE 0303, Part 4
Dissipation factor $\tan \delta$ at 50 H at 0,1 MHz	0,06 0,02	0,06 0,03	– –	– –	DIN VDE 0303, Part 4
Tracking, CTI-Value	600	600	–	–	DIN VDE 0303, Part 1

Behavior towards water

	PLEXIGLAS® GS 233; 222; 209; (0F00; 0F00; 0Z09)	PLEXIGLAS® XT 20070; 29070 (0A000; 0A070)	PLEXIGLAS RESIST® 45; 65; 75; 100	Unit	Teststandard
Water absorption (24 hrs, 23 °C) from dry state; specimen 60 x 60 x 2 mm ³	41	38	41; 45; 46; 49	mg	ISO 62, Method 1
Max. weight gain during immersion	2,1	2,1	2,1	%	ISO 62, Method 1
Permeability to water vapour N ₂ O ₂ CO ₂ air	$2,3 \cdot 10^{-10}$ $4,5 \cdot 10^{-15}$ $2,0 \cdot 10^{-14}$ $1,1 \cdot 10^{-13}$ $8,3 \cdot 10^{-15}$	$2,3 \cdot 10^{-10}$ $4,5 \cdot 10^{-15}$ $2,0 \cdot 10^{-14}$ $1,1 \cdot 10^{-13}$ $8,3 \cdot 10^{-15}$	– – – – –	$\frac{\text{g cm}}{\text{cm}^2 \text{ h Pa}}$	–

Thermal properties

	PLEXIGLAS® GS 233; 222; 209; (0F00; 0F00; 0Z09)	PLEXIGLAS® XT 20070; 29070 (0A000; 0A070)	PLEXIGLAS RESIST® 45; 65; 75; 100	Unit	Teststandard
Coefficient of linear thermal expansion α for 0–50 °C	$7 \cdot 10^{-5}$ (=0,07)	$7 \cdot 10^{-5}$ (=0,07)	$7 \cdot 10^{-5}$; $8 \cdot 10^{-5}$; $9 \cdot 10^{-5}$; $11 \cdot 10^{-5}$ (0,07; 0,08; 0,09; 0,11)	1/K (mm/m °C)	DIN 53752-A
Possible expansion due to heat and moisture	5	5	5; 6; 6; 8	mm/m	–
Thermal conductivity λ	0,19	0,19	–	W/mK	DIN 52612
U-value, for thickness:					
1 mm	5,8	5,8	5,8		
3 mm	5,6	5,6	5,6		
5 mm	5,3	5,3	5,3		
10 mm	4,4	4,4	4,4	W/m ² K	DIN 4701
Specific heat c	1,47	1,47	1,47	J/gK	–
Forming temperature	160–175	150–160	150–160; 140–150; 140–150; 140–150	°C	–
Max. surface temperature (IR radiator)	200	180	–	°C	–
Max. permanent service temperature	80	70	70; 70; 70; 65	°C	–
Reverse forming temperature	> 80; > 80; > 90	> 80; > 80	> 80; > 80; > 75; > 70	°C	–
Ignition temperature	425	430	–	°C	DIN 51794
Smoke gas volume	very little	very little	very little	–	DIN 4102
Smoke gas toxicity	non	non	non	–	DIN 53436
Smoke gas corrosiveness	non	non	non	–	–
Class	B2, Class 3 TP (b)	B2 Class 3 TP (b)	B2 – –	– – –	DIN 4102 BS 476, Part 7 + 6 BS 2782, Method 508 A
Fire rating	E	E	E	–	DIN EN 13501
German building inspectorate test report	P-K017 / 11.06	P-K018 / 02.07	P-K019 / 05.07	–	–
Vicat softening temperature	115	103	102; 100; 100; 97	°C	ISO 306, Method B 50
Heat deflection temperature under load (HDT)					
a) deflection 1,8 MPa	105; 105; 107	95	94; 93; 92; 90		
b) deflection 0,45 MPa	113; 113; 115	100	99; 98; 96; 93	°C	ISO 75

Global Availability

We sell our PLEXIGLAS® products both directly to fabricators and via a closely meshed network of distributors. The extensive and efficient distribution system ensures that products are rapidly available throughout Europe, Asia, Australia and Africa. In the Americas, the business unit has its own production facilities and distribution system. Our range is sold in that part of the world under the ACRYLITE® trademark.

® = registered trademark

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Certified to DIN EN ISO 9001 (Quality) and DIN EN ISO 14001 (Environment)

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