IMPEX®

PRODUCT GUIDE

A virtually unbreakable plastic sheet with very high impact strength. Perfect for glazing.

COMPOSITES

IMPEX®

IMPEX® stands for a wide range of large-format, virtually unbreakable extruded polycarbonate sheets with very good optical and mechanical properties. The product range comprises a variety of different surfaces, variants and structures. The high quality sheets have an excellent impact strength and provide solutions for a large number of indoor and outdoor applications.

IMPEX® is available not only in standard thicknesses from 1 to 15 mm, but also in the special thicknesses 0.8 and 20 mm.

Moreover, the following different product variants are available:

- **IMPEX® UVP** with both sides co-extruded UV protection layer and very good weathering resistance, especially for outdoor applications
- **IMPEX® HC** with good impact resistance and enhanced surface abrasion resistance is suitable for flat applications both indoors and outdoors

Detailed information on the product availability can be found in the current valid version of the delivery programme. Please contact your customer service representative.

IMPEX® sheets are produced according to DIN EN ISO 11963 and do not contain any toxic materials or heavy metals, which may cause environmental damage or health risks.

All **IMPEX®** sheets meet the requirements of the REACH directive and contain in particular none of the substances which are listed in the current version of the ECHA candidate list of "Substances of Very High Concern" (SVHC).

IMPEX®

EXTRUDED POLYCARBONATE SHEETS WITH EXCELLENT IMPACT STRENGTH

CHARACTERISTICS

- Excellent optical properties
- Easy to fabricate
- Exceptional performance at both low and high temperatures (from -40°C to +135°C)
- Excellent mechanical, thermal and electrical properties
- Virtually unbreakable in normal use
- **IMPEX® UVP** with a both sides co-extruded UV protective layer, especially suitable for outdoor use
- Easy to vacuum form (pre-drying required) for **IMPEX®** standard grades
- Very good fire performance for thicknesses from 1.5 up to 6.0 mm according to EN 13501-1 (B-s1, d0) for **IMPEX®** standard grades as well as for **IMPEX® UVP**

APPLICATIONS

IMPEX®

- Moulded containers, bowls and tubs
- Machine safety guards, vending machine fascias
- Vehicle and boat construction, aircraft (only for internal use)
- Safety glazing (sports centres, penal establishments and other buildings)
- Street and traffic signs
- Industrial construction
- Partition walls
- Advertising panels

IMPEX® UVP

- Lighting covers
- Balcony glazing
- Glazed walkways
- Sound barrier walls
- Greenhouses and conservatories
- Doors and windows
- Canopy roofs and barrel vaults

PROCESSING

- Printing
- Laminating
- Sawing
- Drilling
- Thread cutting
- Milling
- Water jet cutting
- Polishing
- Stamping
- Bonding
- Welding
- Hot and cold bending
- Thermoforming
- Straight vacuum forming
- Drape forming
- Tempering

GENERAL			
Property	Method	Unit	IMPEX®
Density	DIN EN ISO 1183	g/cm³	1.2
Ball Indentation Hardness (H359/30``)	DIN EN ISO 2039-1	MPa	110
Water vapour permeability δ	EN ISO 12572	mg/m h Pa	3.8 x 10^{-5}
MECHANICAL			
Property	Method	Unit	IMPEX®
Flexural Modulus	DIN EN ISO 178	MPa	2000
Flexural Strength	DIN EN ISO 178	MPa	>90
Tensile Modulus	DIN EN ISO 527-2	MPa	2200
Tensile Strength	DIN EN ISO 527-2	MPa	60
Elongation	DIN EN ISO 527-2	%	80
Impact strength – Izod (notched)	DIN EN ISO 180	kJ/m²	>10
Impact strength – Charpy (notched)	DIN EN ISO 179 179-1/1eA	kJ/m²	>13
Impact strength – Charpy (unnotched)	DIN EN ISO 179-1	kJ/m²	NB (no break)
OPTICAL			
Property	Method	Unit	IMPEX®
Light transmission (3 mm clear transparent)	DIN 5036 / DIN EN ISO 13468-1	%	86
Refractive Index	DIN EN ISO 489	n^{D}_{20}	1.585
Solar energy transmittance (g-value)	DIN EN 410	%	3 mm 81.7 / 10 mm 78.5
THERMAL			
Property	Method	Unit	IMPEX®
VICAT-Temperature (method B 50)	DIN EN ISO 306	°C	145
Heat Deflection Temperature (HDT/A)	DIN EN ISO R 75	°C	135
Specific Heat Capacity	DIN EN ISO 11357-4	J/gK	1.17
Coefficient of linear thermal expansion	DIN 53328 / DIN EN ISO 11359-1, -2	mm/m °C	0.065
Thermal conductivity	DIN 52612 / DIN EN ISO 22007-1	W/mK	0.2
Degradation temperature		°C	>280
Temperature range		°C	-40 to +135
Max. service temperature continuous use		°C	115
Max. service temperature short term use		°C	135
Forming temperature		°C	180 – 210
ELECTRICAL			
Property	Method	Unit	IMPEX®
Dielectric constant (50 Hz)	IEC 250 / DIN 53483-2		3.0
Volume Resistivity	IEC 60093 / DIN 53482	Ω.cm	10^{15}
Surface Resistivity	IEC 60093 / DIN 53482	Ω	10^{15}
Dielectric strength	IEC 60243-1 / DIN 53481	kV/mm	>30
Dissipation Factor (50 Hz)	IEC 250 / DIN 53483		8 x 10^{-4}
Comparative tracking index	DIN EN 60112:2010-05	CTI - Value	CTI – 250 <1
OTHERS			
Property	Method	Unit	IMPEX®
Fire performance (building product) (1.5 mm – 6 mm)	BP – VO 305/2011 / DIN EN 13501-1	Classification	B-s1, d0
Biocompatibility (skin contact)	DIN EN 10993-5	Classification	Not cytotoxic
Resistance to manual attack (steel ball) (4 – 8 – 15 mm)	DIN EN 356	Class	EN 356 – P5A
Resistance to manual attack (ax) (8 – 15 mm)	DIN EN 356	Class	EN 356 – P8B

Note: These technical data of our products are typical ones; the actually measured values are subject to production variations.

IMPEX® HC

EXTRUDED POLYCARBONATE SHEETS WITH INCREASED ABRASION RESISTANCE

IMPEX® HC are UV-protected polycarbonate sheets with a one- or both sides abrasion resistant coating and a good impact resistance, which makes them especially suitable for flat indoor and outdoor applications. Thanks to this special hard coating, the sheets are less sensitive against scratches and have a high resistance to many chemicals and solvents.

IMPEX® HC is used for applications such as machine glazing or partition walls – wherever an enhanced abrasion- and chemical resistance is required.

In terms of processing, **IMPEX® HC** can be used mostly in the same way as IMPEX® in its standard version. Due to the special surface coating, however, **IMPEX® HC** is not suitable for hot and cold bending.

GENERAL			
Property	Method	Unit	IMPEX® HC
Density	DIN EN ISO 1183	g/cm³	1.2
MECHANICAL			
Property	Method	Unit	IMPEX® HC
Tensile Modulus (3 mm)	ISO 527-2	MPa	2400
Tensile Strength (3 mm)	ISO 527-2	MPa	65
Elongation (3 mm)	ISO 527-2	%	16
Impact strength – Izod (notched) (3 mm)	ISO 180/A:2013-08	kJ/m²	64 P*[1]
Impact strength – Charpy (notched) (3 mm)	ISO 179-1/1eA	kJ/m²	67 C*[2]
Impact strength – Charpy (unnotched) (3 mm)	ISO 179-1/1eA	kJ/m²	NB (no break)
OPTICAL			
Property	Method	Unit	IMPEX® HC
Light transmission (3 mm clear transparent)	DIN 5036-3 / EN 13468	%	86
Taber – Abrasion test 100 cycles	Taber Test: DIN 52347 / ASTM D1044 Haze measurement: ISO 14782 / ASTM D1003	%ΔHaze	2 – 4
Cross cut test	ISO 2409		0/0
Cross cut test after boiling (1h/95°C)	ISO 2409		0
THERMAL			
Property	Method	Unit	IMPEX® HC
VICAT-Temperature (VST/B 50)	DIN EN ISO 306	°C	145
Thermal conductivity	DIN 52612	W/mK	0.2
Max. service temperature (continuous use)		°C	115
ELECTRICAL			
Property	Method	Unit	IMPEX® HC
Volume Resistivity	DIN 53482	Ω.cm	10^{16}
Dielectric Strength	DIN 53481	Ω	>30
OTHERS			
Property	Method	Unit	IMPEX® HC
Fire performance (3 mm)	DIN EN 13501-1	Classification	B-s2, d0

[1] = Fracture behavior acc. Test standard: P* = partial break / [2] = Fracture behavior acc. Test standard: C*= complete break
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COMPOSITES

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