



PRODUCT GUIDE

EXTRUDED POLYCARBONATE SHEETS WITH EXCELLENT IMPACT STRENGTH.





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IMPEX®

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IMPEX®

IMPEX® stands for a wide range of large format, extruded, virtually unbreakable polycarbonate sheets with excellent optical and mechanical properties. The product range comprises an array of different surfaces, versions and patterns. The high quality sheets are extremely impact resistant, which means they can provide comprehensive solutions for both indoor and outdoor use.

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

Sustainable involvement and environmental protection have always been amongst the essential corporate objectives at 3A Composites. The minimisation of risks for man and environment as well as the reduction of environmental pollution through careful and efficient utilisation of resources is part of the corporate philosophy.

Our production site in Nischwitz, Germany, is certified according to the management systems for Quality (DIN EN ISO 9001) and for Energy (DIN EN ISO 50001). The site is also participating in the programme Operation Clean Sweep® (OCS), which is dedicated to preventing plastic resin loss and to ensuring that this material does not end up in the environment.

A number of energy reduction projects have been initiated since 2012. A 22 % reduction in electricity consumption was achieved by changing the lighting in production to LED lights and by implementing a more energy-efficient process cooling system. Updating heating controls and making better and more efficient use of waste heat has led to an 84 % reduction in gas consumption since 2018.

Read more about our commitment to sustainability starting on page 8.

IMPEX® – EXTRUDED POLYCARBONATE SHEETS WITH EXCELLENT IMPACT STRENGTH.

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 co-extruded UV protection layer on both sides, has an excellent weathering resistance and is especially suitable for outdoor use.
- Easy to vacuum form (pre-drying required) for IMPEX® standard grades
- Very good fire behavior for thicknesses from 1.5 up to 6.0 mm according to EN 13501-1 (B-s1, d0) for IMPEX® and IMPEX® UVP in the clear-transparent variant

APPLICATIONS

- IMPEX®**
- Displays (POS/POP)
 - Signage | Lettering
 - Partitions | Cladding
 - Machine safety guards, vending machine fascias
 - Glazing/safety glazing (sports centres, penal establishments and other buildings)

- IMPEX® UVP**
- Lighting covers
 - Balcony glazing
 - Glazed walkways
 - Greenhouses and conservatories
 - Doors and windows
 - Canopy roofs and barrel vaults

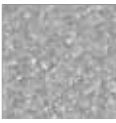
COLOURS



Clear transparent
Opal J866
Opal J850
Opaque



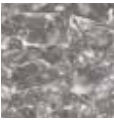
Smoke-grey
D876



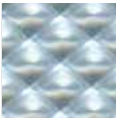
Impala



Bronze
B851



Haircell



Prismatic



PROCESSING

- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Contour milling | Water jet cutting
- Sawing | Punching | Gluing
- Drilling | Screwing
- Thread cutting
- Folding (V-groove) | Cold bending
- Hot bending | Thermoforming
- Engraving

PRODUCTS			IMPEX®	IMPEX® HC
GENERAL				
Density	ISO 1183	kg/m³	1200	1200
Moisture absorption (23°C saturation in water)	ISO 62-1	%	0.12	–
Biocompatibility (skin contact)	ISO 10993-5	Classification	Not cytotoxic	–
MECHANICAL				
Tensile Modulus	ISO 527-2	MPa	2200	2400 (3mm)
Tensile Strength	ISO 527-2	MPa	60	65
Elongation	ISO 527-2	%	80	16 (3 mm)
Flexural Modulus	ISO 178	MPa	2000	–
Flexural Strength	ISO 178	MPa	> 90	–
Impact strength – Charpy (unnotched)	ISO 179-1/1eU	kJ/m²	NB	NB (3 mm)
Impact strength – Charpy (notched)	ISO 179-1/1eA	kJ/m²	> 13	67 C°² (3 mm)
Impact strength – Izod (notched)	ISO 180	kJ/m²	> 10	64 P°¹ (3 mm)
Ball Indentation Hardness H 358/30	ISO 2039-1	MPa	110	–
OPTICAL				
Light transmission (3 mm)	ISO 13468-1	%	86	86
Refractive Index	ISO 489	n _D ²⁰	1.585	–
Solar energy transmittance, g value (3 mm)	EN 410	%	81	–
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				
Heat Deflection Temperature (method A)	ISO 75-2	°C	135	–
Vicat Temperature (method B 50)	ISO 306	°C	145	145
Coefficient of linear thermal expansion	ISO 11359-1, -2	mm/m*K	0.065	–
Max. service temperature continuous use	–	°C	115	115
Max service temperature short term use	–	°C	135	–
Degradation temperature	–	°C	> 280	–
Forming temperature	–	°C	180 – 210	–
Specific Heat Capacity	ISO 11357-4	J/gK	1.17	–
Thermal conductivity	ISO 22007-1	W/mK	0.2	0.2
Fire performance (1.5 – 6 mm, clear transparent)	EN 13501-1	Classification	B-s1, d0	B-s2, d0 (3 mm)
ELECTRICAL				
Dielectric strength	IEC 60243-1	kV/mm	> 30	> 30
Volume Resistivity	IEC 62631-3-1	Ω.m	10 ¹⁵	10 ¹⁶
Surface Resistivity	IEC 62631-3-2	Ω	10 ¹⁵	–
Dielectric constant (50 Hz)	IEC 60250	–	3.0	–
Dissipation Factor (50 Hz)	IEC 60250	–	8 x 10 ⁻⁴	–

Note: These technical data of our products are typical ones for IMPEX®. The actually measured values are subject to production variations.

For more details on the processing of IMPEX®, please contact our technical team.

SUSTAINABILITY

MISSION: TOGETHER. RESPONSIBLE.

Sustainability is at the core of everything we do. Our corporate ecological commitment is summed up by the **MISSION: TOGETHER. RESPONSIBLE.** As we also apply and comply with this mission in regard to our products, we have created a classification system. The five different categories in our **FIVE-DOT-MISSION** system indicate the factors with the greatest impact on sustainability. Our intention is to offer our partners guidance with their purchasing decision-making and to provide a transparent system. A system which focuses on the use of materials, the CO₂ content, the product life cycle and, of course, recycling, a topic of particular relevance for our products. Our FIVE-DOT-MISSION makes an assessment of a product on the basis of five categories and awards points per category, the product is then assigned to one of the five coloured DOTs. By this means we achieve a transparent, quick valuation logic which we can also use to gauge product innovation and improvement at 3A Composites.

THE FIVE-DOT CATEGORIES ARE:



1. BIOBASED CONTENT

Depending on the product, different raw materials are used to manufacture our panels. In this case, we look at the percentage of renewable raw materials used in our products. Our aim is to increase the percentage whenever possible and appropriate.



2. RECYCLED CONTENT

The industry selects recycled raw materials for use in the manufacture of new products which also fulfil requirements such as fire ratings, processing prerequisites and customer expectations in terms of functionality and appearance. This category is where we gauge the proportion of high quality recycled raw material in our products' total material input.



3. FOSSIL CO₂ BOUND IN THE MATERIAL

This category shows the weight of fossil CO₂ embedded in our panels. Differences here are principally due to the raw material type and origin, the density, the composition and the proportion of recycled content.



4. PRODUCT LIFE CYCLE

The plastic sheets and composite panels we produce are used by our customers for a longer period of time. In contrast to products used in the short term, these longer-term alternatives make an active contribution to saving resources. In this category we show our panels' average service life. Material properties result in disparities, so life cycles range from <1 year to even >30 years.



5. RECYCLABILITY

One of the most important aspects of sustainability is contributing to environmental protection by saving valuable raw materials and avoiding waste. Unlike the second category "recycled content", in this assessment category, we show options for recycling the panels after they have been in use. There are already, for instance, established recycling loops for paper and metals. At some production sites, the material can already be returned, so that material for new panels can be created from it. As a company, we came to the conclusion that thermal recycling does not seem sustainable enough, so it is not included in our FIVE-DOT classification. Instead, we are actively working with partner companies to establish a closed-loop, sustainable and future-oriented recycling economy.

As many as 3 points can be achieved in each of the categories presented, totalling a maximum of 15 points. According to the total number of points achieved (1-15), the FIVE-DOT classification is conducted using the following colour gradation.



Transparency is important to us! We will review the product assessment annually to see in which areas the product can be improved. We have set ourselves the goal of achieving the majority of our sales with products which achieve a rating of ≥ 7 points in the FIVE-DOT classification by 2030.

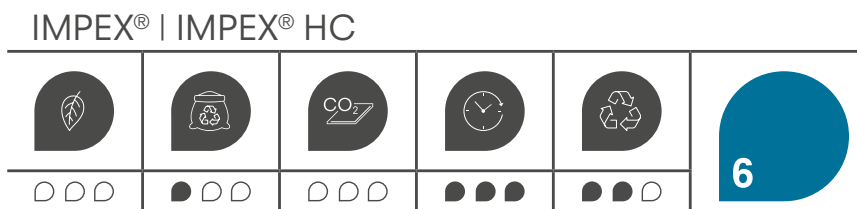
Join us on our sustainable mission!



SUSTAINABILITY

IMPEX® FIVE-DOT-MISSION

IMPEX®, extruded, virtually unbreakable polycarbonate sheets with excellent optical and mechanical properties, have been assessed in line with the criteria described above. The product family currently achieves a FIVE-DOT classification of 6 points in total.



RECYCLED CONTENT

We are already recovering and reusing our own production waste to create new material in the manufacture of IMPEX® sheets, and we aim to continue increasing the proportion of recycled regrind content in the future.

All raw materials used in our IMPEX® sheets comply with the requirements in the current version of the European Union's Chemicals Regulation (REACH). In particular, IMPEX® sheets are free of any of the substances listed in the current version of the ECHA Candidate List of Substances of Very High Concern (SVHC).



PRODUCT LIFE CYCLE

Our IMPEX® sheets are made of polycarbonate, a durable thermoplastic material, which has excellent optical and mechanical properties. Polycarbonate sheets are extremely impact resistant and are virtually unbreakable under normal conditions of use. In addition, the sheets have an excellent resistance to weathering; even at very low or very high temperatures (-40°C to +135°C) they are extremely hard-wearing and resilient. These qualities make IMPEX® sheets ideal for long-term applications both indoors and (in the version featuring UV protection) outdoors.



RECYCLABILITY

IMPEX® sheets can be sorted for recycling and reuse. As a thermoplastic, polycarbonate in its pure form is ideal for mechanical recycling.



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.

CHARACTERISTICS

- Good impact resistance
- Especially for flat indoor and outdoor applications
- Less sensitive against scratches; high resistance to many chemicals and solvents
- Fire behavior IMPEX® HC 3 mm according to EN 13501-1 (B-s2, d0)

PROCESSING

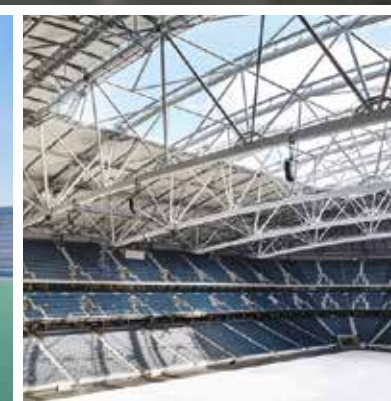
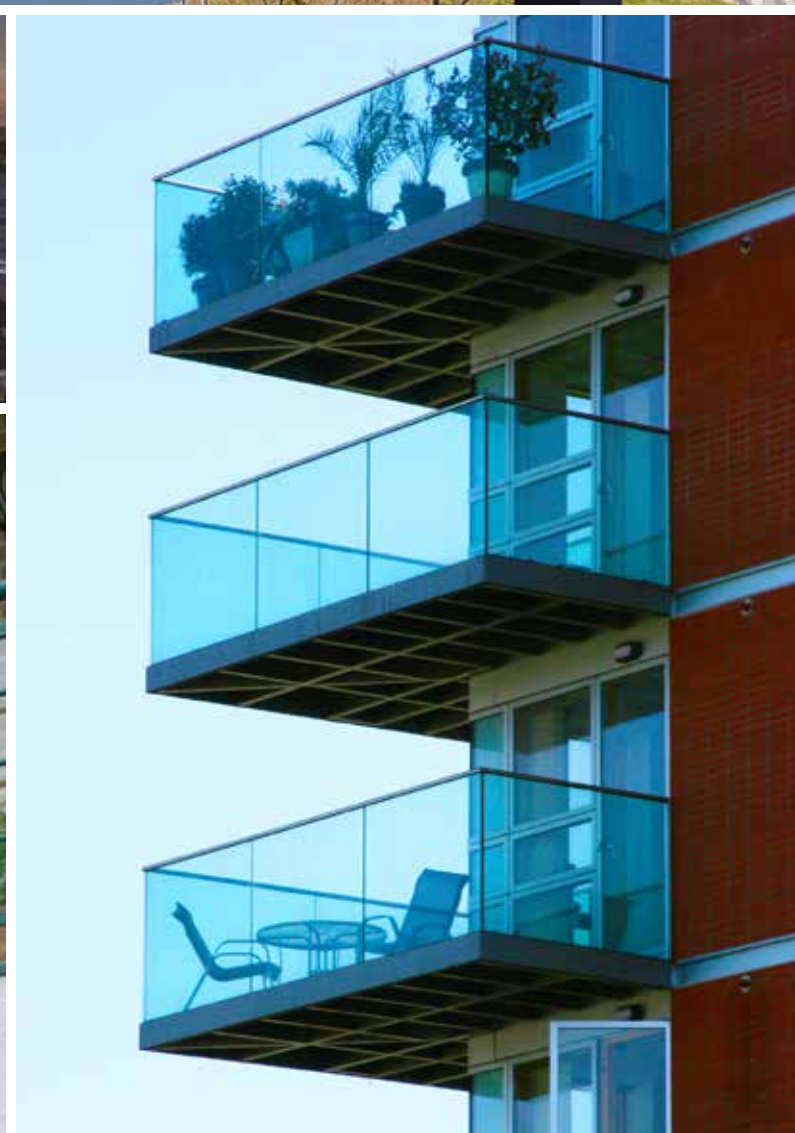
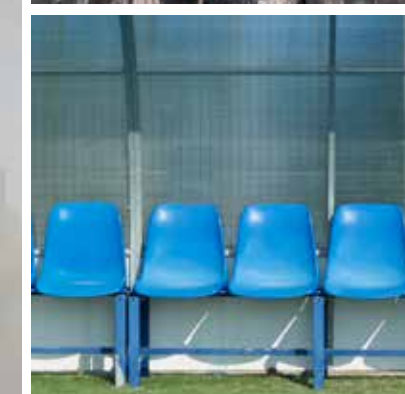
- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Contour milling
- Water jet cutting
- Sawing | Punching
- Gluing
- Drilling | Screwing
- Thread cutting
- Engraving

APPLICATION

- Partitions | Cladding
- Construction business



Clear transparent



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