AKRYLON®

PRODUCT GUIDE

SPARKLING CLARITY AND EASY FORMABILITY.

COMPOSITES

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AKRYLON®

AKRYLON® stands for large-format, extruded polymethyl methacrylate (PMMA) sheets in brilliant clarity, featuring excellent optical properties and in different levels of transparency. AKRYLON® is easy to form and ideally suited for indoor and outdoor applications.

AKRYLON® provides sparkling clarity and formability, making it an extremely popular material for shop design, window display and signage of all kinds.

A wide spectrum of colours is available in opaque, matt, transparent and translucent versions. AKRYLON® is available in thicknesses from 1 to 15 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 Žilina, Slovakia, is certified according to DIN EN ISO 9001, the standard defining internationally recognised requirements for quality management. 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.

Ongoing efforts to scale back natural gas, electricity and water consumption are being made at the AKRYLON® production site. Numerous different investments have already been made to lessen the impact of production on the environment. A new plant was built in 2021 and our aim is to significantly increase efficiency, quality and ecologically beneficial aspects in the production of our sheets.

AKRYLON® sheets are subject to the highest quality standards and stringent monitoring. Our top priority is to ensure that AKRYLON® sheets do not contain any hazardous substances. None of the raw materials used to produce AKRYLON® sheets contain any heavy metals.

Read more about our commitment to sustainability starting on page 10.

AKRYLON® – SPARKLING CLARITY AND EASY FORMABILITY.

AKRYLON®

SPARKLING CLARITY AND EASY FORMABILITY.

CHARACTERISTICS

- Good optical properties
- Brilliant transparency showing excellent colour
- High-quality surfaces
- Very good weathering and ageing resistance
- High surface stability/resistance
- Can be used in contact with foodstuff – meets all current European food control legislations
- Easy to recycle
- Easy to fabricate
- Does not contain any toxic materials or heavy metals
- Fire classification according to EN 13501-1 and UL94 HB for AKRYLON® standard grades
- AKRYLON® sheets are provided with a 10-year warranty

APPLICATION

- Displays (POS/POP)
- Signage | Lettering
- Corporate identity
- Shop design | Shop window decoration
- Interior design | Furniture
- Partitions | Cladding
- Lighting | Light boxes
- Glazing
- Food contact approved

PROCESSING

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

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

CLEAR TRANSPARENT

Clear
LT 92 %

WHITE OPAL/OPAQUE

White WO 075
OPAL
LT 75 %

White WO 047
OPAL
LT 47 %

White WO 035
OPAL
LT 35 %

White WO 025
OPAL
LT 25 %

White WO 026
OPAL
LT 26 %

White WS 025
OPAL
LT 25 %

White WO 004
OPAQUE
LT 4 %

White WL 053 LED
OPAL
LT 53 %

COLOURS

Yellow 2450
LT 15 %

Yellow 2470
LT 17 %

Orange 2350
LT 5 %

Red 2220
LT 4 %

Red 2240
LT 3 %

Blue 2650
LT 10 %

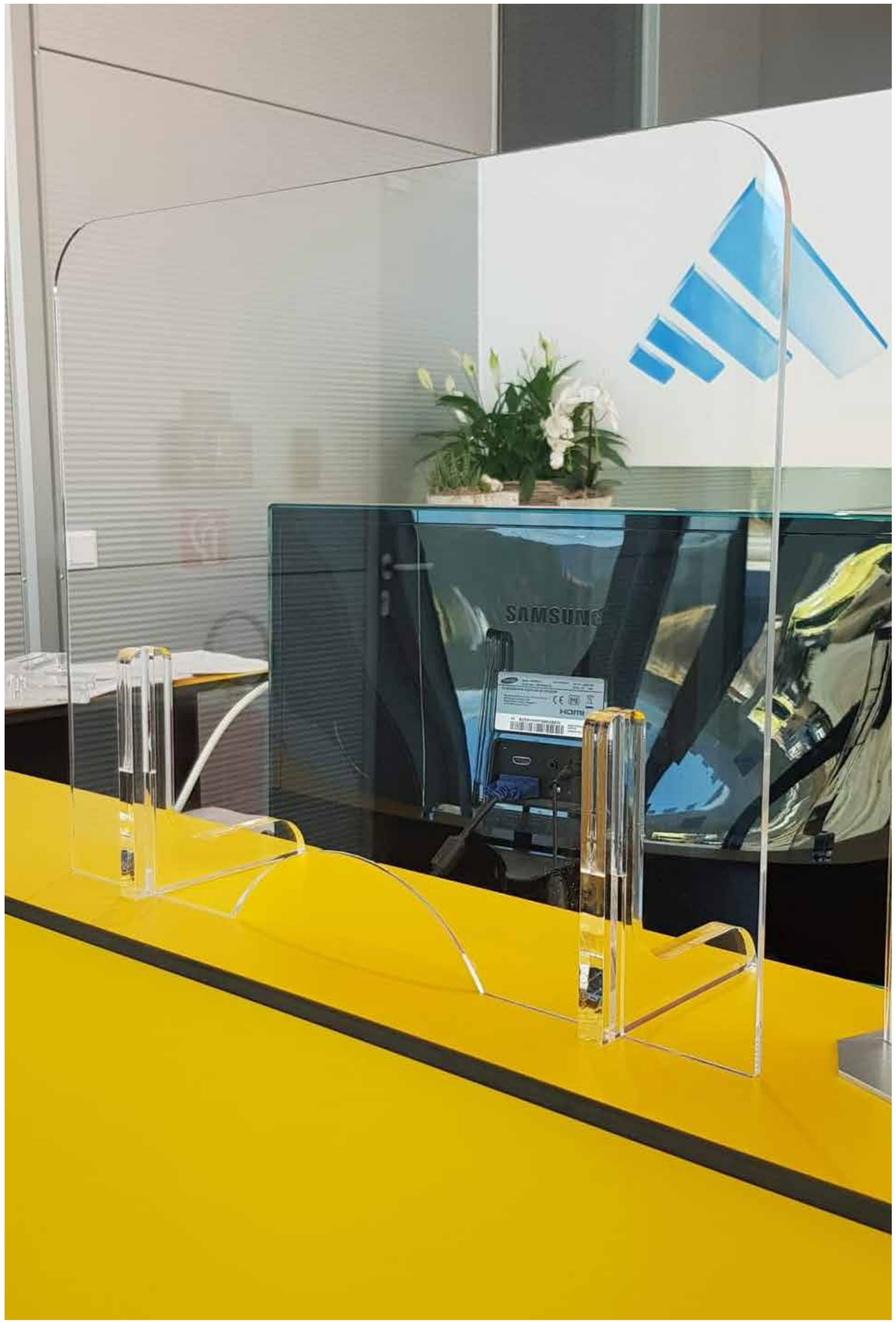
Black 2020
LT 0 %

UVT

AKRYLON® UVT is perfectly suitable for solariums and sunbeds. The sheets have high transmittance in the UV-A/UV-B spectral range and very good resistance to degradation following exposure to these rays.

Clear UVT
LT 92 %

OPAQUE = non-transparent , OPAL = semi-transparent, UVT = transparent to UV light
LT = Light transmission (Figures apply to 3 mm sheet thickness only. For the colour White WS 025 , the light transmission is constant over the entire thickness range 2 – 6 mm.)
The colours printed may vary from the original. To ensure exact colour matching please ask for a colour sample.



PRODUCTS			AKRYLON®	AKRYLON® SOFT TONE
GENERAL				
Density	ISO 1183	kg/m³	1190	1190
Water absorption against dry state (24h/23°C – 50x50x4 mm³)	ISO 62-1	%	0.2	0.2
Moulding shrinkage	ISO 294-4	%	0.5 – 0.8	0.5 – 0.8
Food contact – GHP	EU 10/2011	–	conform	–
Biocompatibility	ISO 10993-5	Classification	no cytotoxic	–
MECHANICAL				
Tensile modulus	ISO 527-2	MPa	3200	3100
Tensile strength	ISO 527-2	MPa	70	70
Elongation at break	ISO 527-2	%	4	4
Flexural modulus	ISO 178	MPa	3300	3000
Flexural strength	ISO 178	MPa	115	110
Impact strength Charpy, unnotched	ISO 179-1/1eU	kJ/m²	17	15
Impact strength Charpy, notched	ISO 179-1/1eA	kJ/m²	2	2
Ball indentation hardness	ISO 2039-1	MPa	235	–
OPTICAL				
Light transmission (3 mm)	ISO 13468-2	%	92	88
Refractive index n_D^{20}	ISO 489	–	1.492	1.492
Total solar energy transmission, g value (3 mm)	EN 410	%	86	–
Gloss value	DIN 67530	%	> 100	< 35
THERMAL				
VICAT temperature (Method B 50)	ISO 306	°C	105	105
Coefficient of linear thermal expansion	ISO 11359-2	mm/m x °C	0.07	0.07
Service temperature continuous use	–	°C	70	70
Service temperature at short term use	–	°C	90	90
Degradation temperature	–	°C	> 280	> 280
Forming temperature – air pressure – vacuum	–	°C	 140 – 160 160 – 190	 140 – 160 160 – 190
Specific heat capacity	ISO 11357-4	J/gK	1.47	1.47
Thermal conductivity	ISO 22007-1	W/mK	0.18	0.19
Fire resistance	EN 13501-1	Classification	E no burning droplets	–
	UL94	Classification	HB	HB
ELECTRICAL				
Dielectric strength	IEC 60243-1	kV/mm	30	30
Electrical strength	IEC 60243-1	kV/mm	10	10
Volume resistivity	IEC 62631-3-1	Ω m	10^{13}	10^{13}
Surface resistivity	IEC 62631-3-2	Ω	10^{15}	10^{15}
Relative permittivity (1 MHz)	IEC 60250	–	2.7	2.7
Dielectric dissipation factor (1 MHz)	IEC 60250	–	0.02	0.02

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

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 CO_2 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 CO_2 BOUND IN THE MATERIAL

This category shows the weight of fossil CO_2 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.

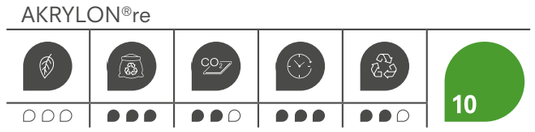
Join us on our sustainable mission!

mission™
TOGETHER. RESPONSIBLE.

SUSTAINABILITY

AKRYLON® FIVE-DOT-MISSION

AKRYLON® extruded acrylic glass sheets, offering brilliant clarity, have been assessed in line with the criteria described above. The products currently achieve a FIVE-DOT classification with a total of 7 respectively 10 points.



RECYCLED CONTENT

The current production of our AKRYLON® acrylic sheets already contains a proportion of recycled PMMA material. The majority of this material is waste from the manufacturing process which, after being sorted into individual types, can be fed back into the production process as regrind to produce new AKRYLON® sheets. We aim to continue increasing the proportion of recycled regrind in the product in the future. The recent introduction of AKRYLON®re means we are now able to offer a product comprising at least 95% recycled material from PMMA sheet waste.

All raw materials used in our AKRYLON® sheets comply with the requirements in the current version of the European Union's Chemicals Regulation (REACH). In particular, AKRYLON® 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). PMMA does not contain any toxic substances or heavy metals which may cause environmental damage or pose risks to health.

FOSSIL CO_2 BOUND IN THE MATERIAL

Owing to the MMA used as a raw material in the manufacturing process, AKRYLON® contains fossil carbon. However, thanks to its lower density, AKRYLON® contains less fossil carbon per m^2 than other transparent plastics. As well as the lower density, another factor to note is that, compared with other plastics, the polymer molecule contains a lower percentage of carbon atoms. By using recycled PMMA in the production of AKRYLON®re, the amount of new materials required can be significantly reduced. This makes a valuable contribution to lowering CO_2 emissions and avoiding waste.

PRODUCT LIFE CYCLE

Our AKRYLON® acrylic glass sheets are made of extruded PMMA, a very robust, highly transparent and extremely durable material featuring excellent UV stability and resistance to weathering and ageing. We guarantee a service life of ten years for the AKRYLON® product family. The sheets are protected against the harmful effects of ultra violet rays and there are no significant changes with regard to optical or mechanical properties. When processed, used, and cared for in an appropriate manner, the life cycle of our sheets can be considerably longer than ten years. An extended service life also leads to saving resources as fewer replacements are required. Our AKRYLON® sheets are used in a wide variety of interior and exterior applications where priorities include durability, UV stability and, above all, transparency (92 % light transparency for colourless sheets). AKRYLON® is a product offering sustainable, long-term use and excellent product performance.

RECYCLABILITY

AKRYLON® sheets can be converted back into their original raw material, methyl methacrylate (MMA), using various recycling processes. Most modern recycling processes for extruded acrylic glass sheets use mechanical processes which, after sorting the material by type and grinding the PMMA sheets or waste material, feed the regrind back into manufacturing processes to produce new sheets. This is already being implemented in the production of our AKRYLON®re sheets. In addition to mechanical recycling, the PMMA waste material can also be converted into an MMA liquid monomer using chemical recycling (through depolymerisation). The MMA recovered can then be reused to create, among other things, new PMMA sheets which comply with the highest quality standards. Renowned chemical companies are currently undertaking intensive research into improved depolymerisation technologies to achieve a more efficient and sustainable means of recovering the precious raw material MMA.

AKRYLON®re

EXTRUDED ACRYLIC SHEETS MADE FROM RECYCLED PMMA.

AKRYLON®re are extruded acrylic sheets comprising at least 95% recycled material from PMMA sheet waste. Available in clear transparent as well as in black and white opaque versions, AKRYLON®re comes in a range of different thicknesses and offers the same outstanding properties as extruded acrylic sheets manufactured conventionally. AKRYLON®re features brilliant clarity with very good optical properties and excellent colour rendering. It is easy to process and its resistance to weathering and ageing is very good. AKRYLON®re is the sustainable solution for a wide range of indoor and outdoor applications. The sheets are used, for instance, in high-class POS/POP displays, trade fair construction and also for shop counters and display cases.

CHARACTERISTICS

- Made from at least 95% recycled material from PMMA sheet waste
- Lighter than glass
- Good optical properties
- Very good resistance to weathering and ageing
- Easy to process
- For a wide range of interior and exterior applications

APPLICATION

- Displays (POS/POP)
- Signage | Lettering
- Corporate Identity
- Shop design | Shop window decoration
- Interior Design | Furniture
- Partitions | Cladding
- Lighting | Light boxes
- Glazing

PROCESSING

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

Clear R000
LT 92 %

White RWO 004
OPAQUE
LT 4 %

Black R910
LT <1 %

LT = Light transmission (Figures apply to 3 mm sheet thickness only.)

AKRYLON® SOFT TONE

DOUBLE-SIDED MATT SURFACE.

AKRYLON® Soft Tone is an extruded acrylic sheet with the appearance and feel of traditional frosted glass.

Due to its outstanding properties, AKRYLON® Soft Tone provides a wide range of application possibilities for building and industrial glazing, decoration, lighting and advertising. Thanks to the double-sided matt surface of the material, images and text are to be seen clearly in all lighting conditions without distracting reflections.

Moreover, the relatively insensitive, easy to clean surface offers protection from scuffs, scratches and fingerprints.

CHARACTERISTICS

- Double-sided matt surface (single-sided matt on request)
- Improves light scatter
- Good optical properties
- Avoids reflective effects
- Stylish, trendy look
- Easy to maintain
- Very good weathering and ageing resistance
- Provided with a 10-year warranty
- Easy to handle, fabricate and form
- Does not contain any toxic materials or heavy metals
- Fire classification according to UL94 HB
- Stable thickness tolerances
- Overlengths available

APPLICATION

- Signage | Lettering
- Shop design | Shop window decoration
- Partitions | Cladding
- Lighting | Light boxes
- Glazing

PROCESSING

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

Clear

DOUBLE-SIDED MATT
LT 88 %

White WO 075

DOUBLE-SIDED MATT
LT 75 %

LT = Light transmission
(Figures apply to 3 mm sheet thickness only.)

AKRYLON® EN 10/2023

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