



PRODUCT GUIDE

A PORTFOLIO OF HIGH-QUALITY, LIGHTWEIGHT EXPANDED RIGID PVC SHEET MATERIALS FOR INDOOR AND OUTDOOR USE.





TABLE OF CONTENTS

FOREX®

■ At a glance	06
■ Technical Data Sheet	07
■ Sustainability	08 – 11

FOREX® PRODUCT RANGE

■ FOREX®classic	12 – 13
■ FOREX®print	14 – 15
■ FOREX®lite	16 – 17
■ FOREX®color	18 – 19

FOREX® APPLICATIONS

20 – 23



FOREX®

The FOREX® product family offers a wide choice of lightweight, high quality sheet materials with excellent surface properties. This makes FOREX® “the material of choice” for numerous indoor and outdoor applications.

FOREX®classic is the premium sheet in the FOREX® product family with the best mechanical and physical properties and appropriate surface quality.

FOREX®print is specially designed for the printing industry. It is a lightweight sheet with brilliant white, smooth surfaces which provide a perfect substrate for printing, particularly digital printing.

FOREX®lite is the best choice for high-volume printing campaigns. The expanded rigid PVC sheet focuses more on economic considerations as on the mechanical properties of the material. That’s why FOREX®lite should only be used flat.

FOREX®color rounds off the FOREX® product family with a selection of nine striking colours. The solid, vibrant colours of the rigid foam sheets offer optimum colour fidelity.

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 Sins, Switzerland is certified to DIN EN ISO 14001, the standard defining internationally recognised requirements for environmental management. In addition, one of our key aims is the strong linkage of the management systems for quality (DIN EN ISO 9001), health and safety (DIN ISO 45001) and energy management (DIN EN ISO 50001).

Ongoing efforts to reduce CO₂ emissions by scaling back energy and water consumption, increasing productivity and avoiding waste are being made at the FOREX® production site. By 2023, 100 % of the plant’s electricity will be created by hydropower. In the coming years, we will be investing more e.g. in solar plants which will provide approximately 10 % of the site’s energy needs.

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

FOREX® – A PORTFOLIO OF HIGH-QUALITY, LIGHTWEIGHT EXPANDED RIGID PVC SHEET MATERIALS FOR INDOOR AND OUTDOOR USE.

FOREX®

WIDE RANGE OF HIGH-QUALITY, LIGHTWEIGHT EXPANDED RIGID PVC SHEET MATERIALS FOR INDOOR AND OUTDOOR USE.

CHARACTERISTICS

- Excellent surface properties
- Suitable for both indoor and outdoor use
- Easy to handle
- Widest range of thicknesses, sheet sizes and colours

APPLICATION

- Displays (POS/POP)
- Signage | Lettering
- Corporate Identity
- Shop design | Shop window decoration
- Interior design | Furniture
- Partitions | Cladding
- Exhibition design and construction
- Model making
- Short term promotional campaigns
- Food contact approved
- Construction business

PROCESSING

- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Cutting | Die cutting | Plotting
- Contour milling | Water jet cutting
- Shearing | Sawing | Punching
- Gluing
- Drilling | Riveting | Screwing
- Hot-air welding
- Folding (V-groove) | Cold bending
- Hot bending
- Thermoforming
- Roll bending | Round bending



©Barolo Wall | Barolo, Piemonte | Bosch Elektrotensilien Professional

PRODUCT			FOREX®classic		FOREX®print			FOREX®lite		FOREX®color
Panel thickness (mm)			1 – 3	4 – 19	2 – 3	4 – 10	19	2 – 5	10	
Apparent density (nominal)	ISO 1183	kg/m ³	700	500	450	400	500	400	410	500 – 600
Tensile strength	ISO 527-2	MPa	16	8	10	7	8	8	7	–
E-Modulus (in tension)	ISO 527-2	MPa	800	500	600	400	500	600	400	–
Flexural strength	ISO 178	MPa	22	18	18	16	18	15	16	–
E-Modulus (in flexure)	ISO 178	MPa	1100	650	750	500	650	700	600	–
Compressive strength	ISO 844	MPa	–	4	–	–	–	–	–	–
Surface hardness	ISO 7619	Shore D	44	40	>32	>32	>40	26	32	37
Max. service temperature		°C	55		55			55		55
Coefficient of linear expansion	ISO 11359	mm/(m·K)	0,07		0,07			0,07		0,07
Water absorption (23°C – 24 h)	ISO 62	%	<1		<1			<1		<1
Behaviour in fire	EN 13501		C-s3, d0 (1–19 mm)		C-s2,d0 (2–5mm) C-s3,d0 (6–10mm)		–	C-s3, d0 (2–10 mm)		C-s3, d0 (3–10 mm)
	NFP 92-501		M1 (1–19 mm)		M1 (2–10 mm)			M1 (2–10 mm)		M1 (3–10 mm)
	BS 476, Part 7		Class 1 (3–19 mm)		Class 1 (10 mm)			–		–
	UNI 9177		Classe Uno (1–19 mm)		Classe Uno (2–10 mm)			–		–

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

Some product versions may have special processing options which we specify on the following pages. Moreover our experienced team of engineers at the Technical Department is available to offer help and answer any questions.

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.

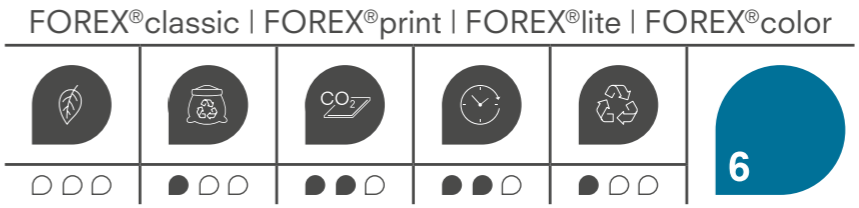
Join us on our sustainable mission!



SUSTAINABILITY

FOREX® FIVE-DOT-MISSION

FOREX®, the lightweight expanded rigid PVC sheet material, has been assessed in line with the criteria described above. The product family currently achieves a FIVE-DOT classification with a total of 6 points.



RECYCLED CONTENT
 We are already recovering and reusing our own production waste to create new material in the manufacture of FOREX® sheets, and we aim to continue increasing the proportion of recycled content in the future. What is more, all raw materials used in our FOREX® products comply with the requirements in the current version of the European Union's Chemicals Regulation (REACH). In particular, FOREX® 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).

FOSSIL CO₂ BOUND IN THE MATERIAL
 FOREX® sheets offer advantages in terms of weight and, at the same time, a high degree of stability due to their unique foamed structure. As fewer resources are required for its manufacture, the material has a lower carbon footprint.

PRODUCT LIFE CYCLE
 Our FOREX® sheets are made of PVC, a very robust and durable synthetic material with excellent long-term properties. The material is also known for its "difficult to ignite" rating, its strong resistance to chemicals and outstanding resistance to weathering.

FOREX®classic is used, in particular, for very long-term applications in the visual communication, building and industrial sectors. FOREX®print and FOREX®lite are high quality printing sheets for medium-term indoor and outdoor purposes. FOREX®color offers a wide variety of colours and is a real eye-catcher for medium-term shop and design uses.

RECYCLABILITY
 The whole FOREX® product family can be sorted into individual types for recycling and reuse. We are committed to processing our production waste within the company and using it again to manufacture new products.

Draw inspiration from our wide variety of FOREX® sheets shown on the following pages.



FOREX[®]classic

THE CLASSIC AMONGST THE DISPLAY SHEETS.

FOREX[®]classic is the No. 1 sheet in the FOREX[®] product family with the best mechanical and physical properties and an appropriate surface quality. The fine, closed, homogenous cell structure and the smooth, silky mat surfaces make FOREX[®]classic an ideal material for high quality and longer-term interior and exterior applications. Mechanical processing using standard tools and machines and three-dimensional forming using cold/hot bending is possible. Due to the homogeneous cell structure, thermoforming is also successfully feasible with unusually short cycle times.

FOREX[®]classic offers the widest range of thicknesses (1 – 19 mm) and sheet sizes. The fire behavior is according to: DIN EN 13501-1: C-s3, d0 (1 – 19 mm) > BS 476-7, Class 1 (3 – 19 mm).

FOREX[®]classic can be applied in all the areas of visual communication:
 Signage and display panels | POS/POP displays | Screen printed panels | Digitally printed displays | Exhibition stands | Shop fitting | Wall cladding & partitioning | Interior design

CHARACTERISTICS

- Universal sheet for all display applications
- Optimum mechanical properties and surface quality
- Hard-wearing surface
- Robust sheet suitable for longer-term interior and exterior applications
- Three-dimensional forming using cold/hot bending and thermoforming
- Widest range of thicknesses and sheet sizes

PROCESSING

- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Cutting | Die cutting | Plotting
- Contour milling | Water jet cutting
- Shearing | Sawing | Punching
- Gluing
- Drilling | Riveting | Screwing
- Hot-air welding
- Folding (V-groove) | Cold bending
- Hot bending
- Thermoforming
- Roll bending | Round bending

APPLICATION

- Displays (POS/POP)
- Signage | Lettering
- Corporate Identity
- Shop design | Shop window decoration
- Interior design | Furniture
- Partitions | Cladding
- Exhibition design and construction
- Model making
- Short term promotional campaigns
- Food contact approved
- Construction business



White



FOREX[®]print

THE ECONOMIC SOLUTION FOR PRINTING.

FOREX[®]print sheet material is specially designed to meet the requirements in the field of printing. The extremely lightweight sheet is outstanding due to its brilliant white, smooth, even surface which forms the basis for a perfect printing result, particularly for direct digital printing.

Due to its surface structure, FOREX[®]print attains optimum ink adhesion for printing and shows high colour fidelity. The sheet material is suitable for flat applications in such fields as sign-making and advertising for medium-term use. FOREX[®]print enables economic solutions in the field of printing applications.

„Ready to use“ – FOREX[®]print can be printed on directly without any pre-treatment required. The sheets are provided with protective film, means no impairment of the print result due to contamination of the sheet prior to printing. The fire behavior is according to: DIN EN 13501-1: C-s2, d0 (2 – 5mm) / C-s3, d0 (6 – 10mm); BS 476-7, Class 1 (10 mm).

CHARACTERISTICS

- Brilliant white, smooth, even surface for good printability, especially for direct digital printing
- Optimum ink adhesion and colour fastness
- Good dimensional accuracy of the sheets
- Suitable for flat applications
- „Ready to use“ – can be printed on directly

APPLICATION

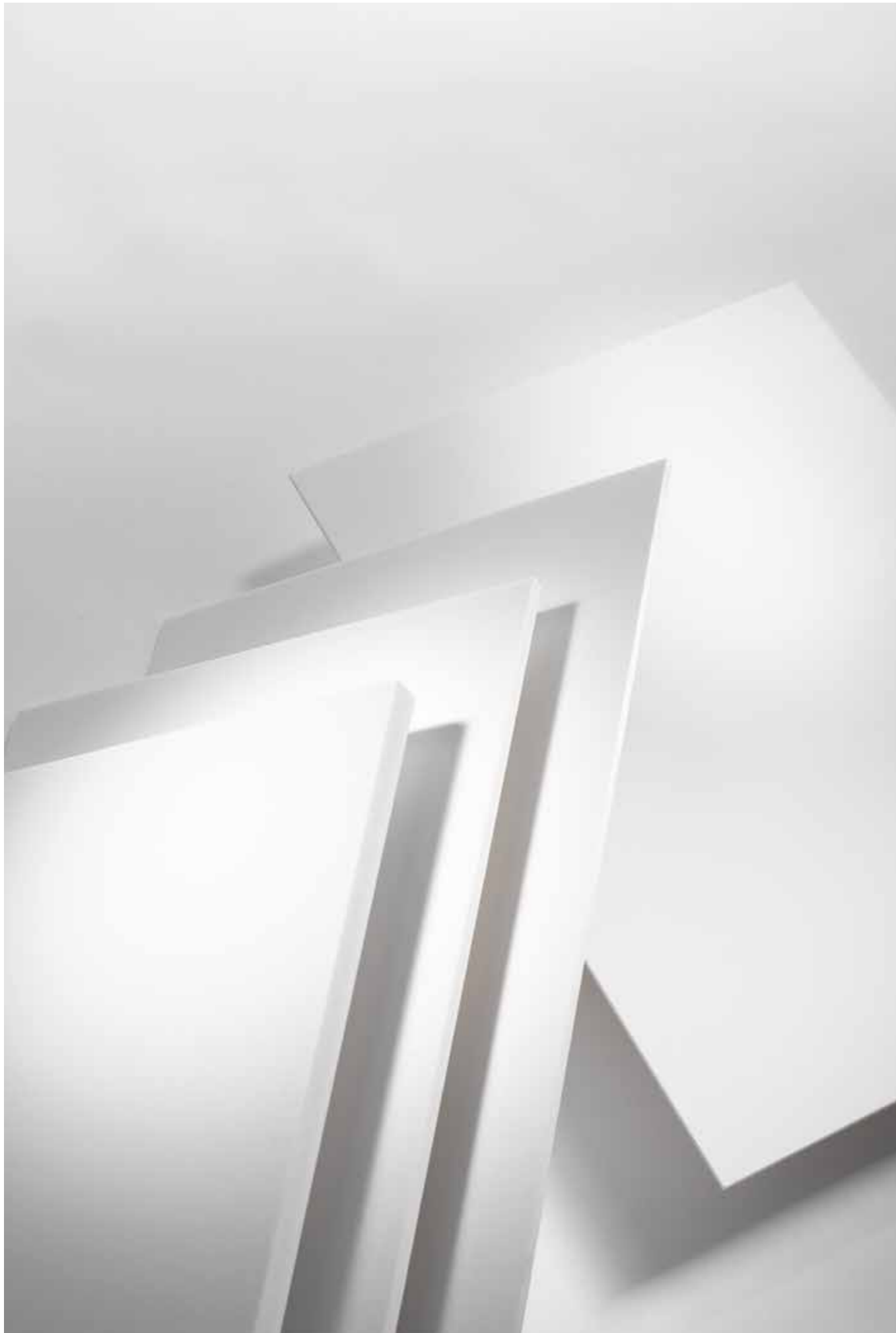
- Displays (POS/POP)
- Signage | Lettering
- Corporate Identity
- Exhibition design and construction
- Model making
- Short term promotional campaigns

PROCESSING

- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Cutting | Die cutting | Plotting
- Contour milling
- Sawing
- Gluing
- Drilling
- Screwing



White



FOREX®lite

THE ECONOMIC EXPANDED RIGID PVC SHEET.

FOREX®lite is the best choice for high-volume printing campaigns. The expanded rigid PVC sheet focuses more on economic considerations as on the mechanical properties of the material. That's why FOREX®lite should only be used flat.

The expanded rigid PVC sheet FOREX®lite was specially developed for the printing industry. The high quality, very flat surface appears in a shiny light white tone and can be printed both-sides. The fire behavior is according to: DIN EN 13501-1: C-s3, d0 (2 – 10 mm).

CHARACTERISTICS

- For high-volume printing campaigns
- Shiny light white tone of the sheet
- High quality, very flat surfaces
- Suitable only for flat applications
- Developed for the printing industry

APPLICATION

- Signage | Lettering
- Exhibition design and construction
- Model making
- Short term promotional campaigns

PROCESSING

- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Cutting | Die cutting | Plotting
- Contour milling
- Sawing
- Gluing
- Drilling
- Screwing



White



FOREX[®]color

THE CREATIVE PLAY OF COLOURS.

FOREX[®]color rounds off the FOREX[®] product family with a selection of nine striking colours. The solid, vibrant colours of the rigid foam sheets offer optimum colour fidelity and a high degree of rigidity. FOREX[®]color sheets are suitable for both indoor and seasonal outdoor use.

FOREX[®]color offers designers the best possible basis for giving colour to the most varying solutions in the field of visual communication:

Signage and display panels | Merchandising display | POS/POP applications | Shop fitting | Exhibition stands | Decorative wall cladding

A simple, mechanical processing using standard tools for processing wood and plastics is possible. The fire behavior is according to: DIN EN 13501-1: C-s3, d0 (3 – 10 mm)

CHARACTERISTICS

- 9 colour shades with a striking colour effect
- Uniform solid-coloured material
- Maximum colour consistency throughout the entire sheet

PROCESSING

- Digital printing | Screen printing
- Laminating
- Painting | Spray painting | Lacquering
- Cutting | Die cutting | Plotting | Contour milling
- Sawing | Punching | Gluing | Drilling | Screwing
- Folding (V-groove)
- Hot bending
- Roll bending | Round bending

APPLICATION

- Displays (POS/POP)
- Signage | Lettering
- Corporate Identity
- Shop design | Shop window decoration
- Partitions | Cladding
- Exhibition design and construction
- Model making
- Short term promotional campaigns



Light yellow



Red



Green



Dark yellow



Light blue



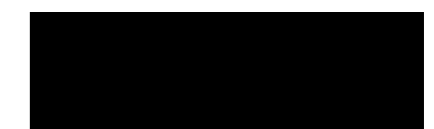
Grey



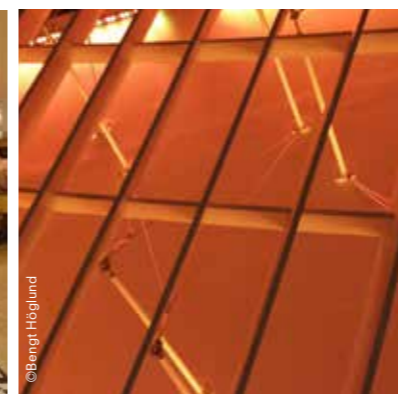
Orange

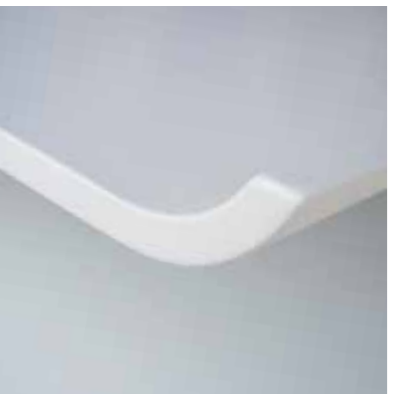


Dark blue



Black





GET INSPIRED:
WWW.DISPLAY.
3ACOMPOSITES.COM
/INSPIRATION



3A Composites GmbH
Alusingenplatz 1
78224 Singen, Germany
www.display.3AComposites.com