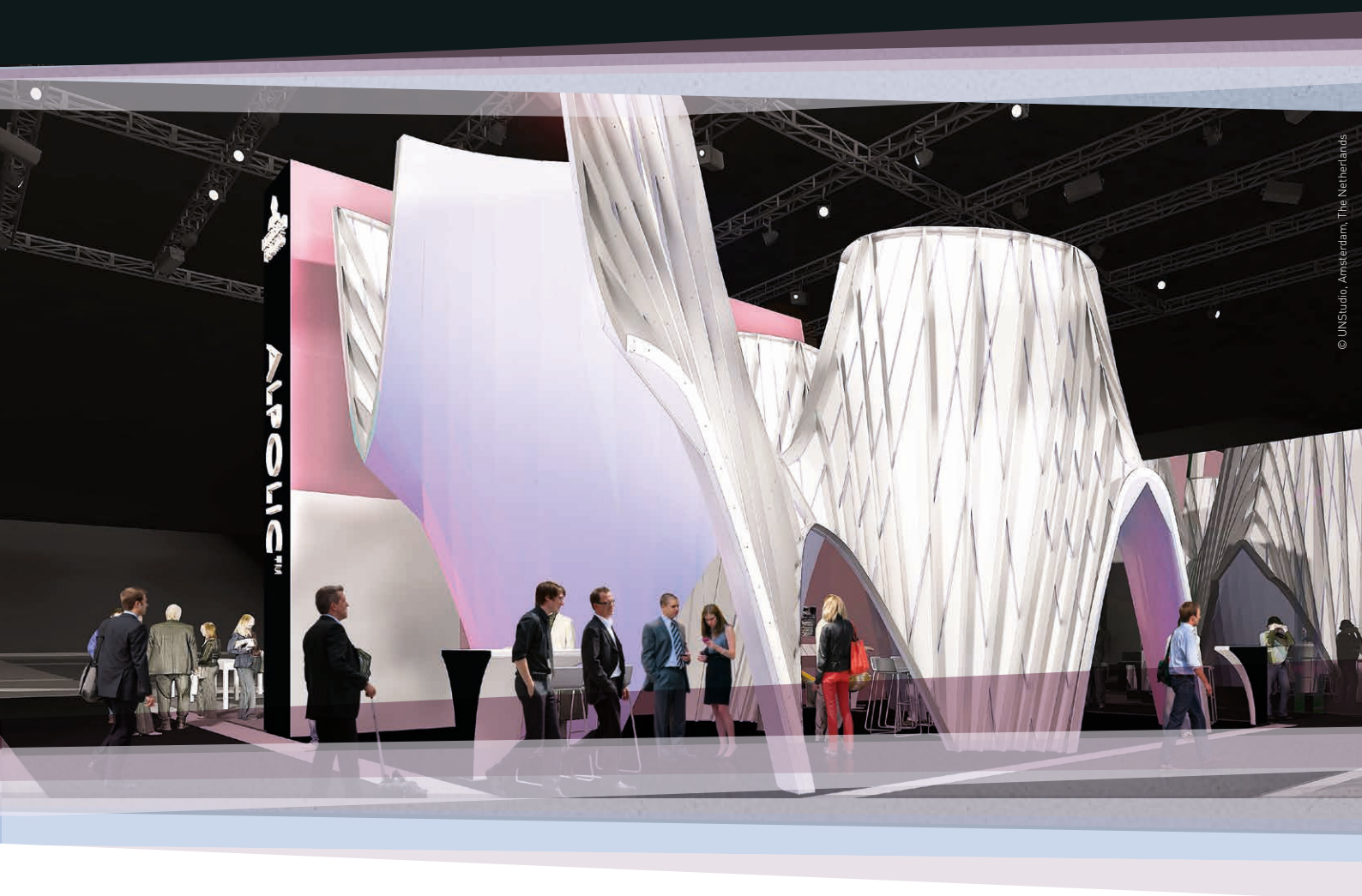


ALPOLIC™ A2



© UNStudio, Amsterdam, The Netherlands

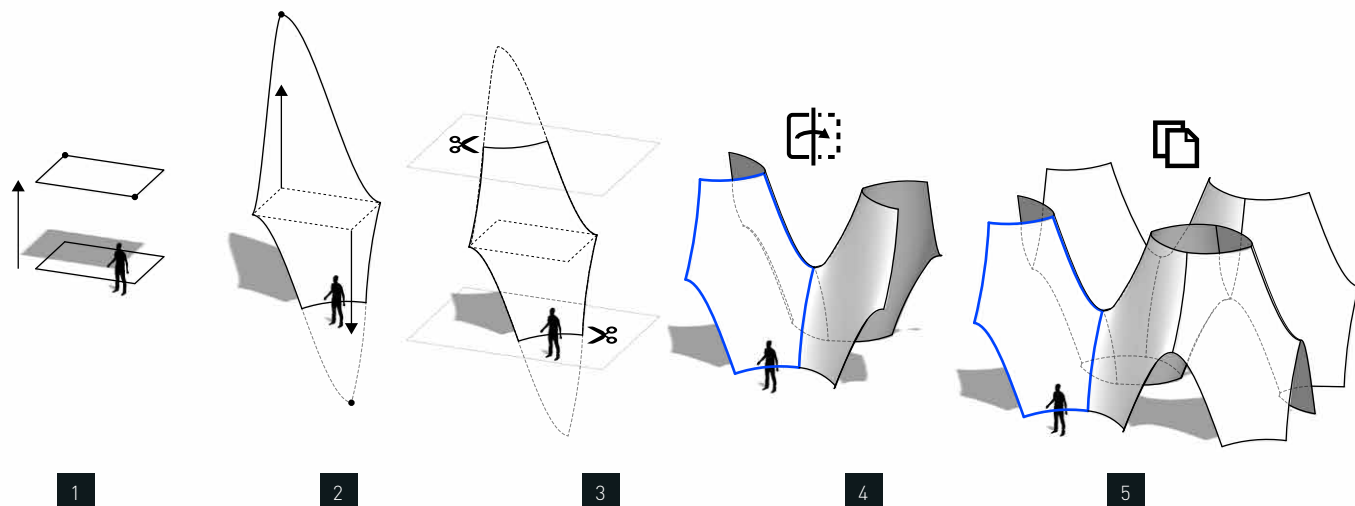
INNOVATIONS 2017



MAKING- OF: FROM SURFACE TO SPACE

by UNStudio





Monocoque reinforcement

Surface infill

Flat components

Twisted & folded components

Principal section

6

From surface to space

- 1 | Explore the potential of a flat ALPOLIC™ sheet; Elevate surface
- 2 | Pull the surface to introduce double curvature
- 3 | Remove parts with a high degree of curvature
- 4 | Provide structural stability by mirroring elements in 2 directions
- 5 | Create multitude of spaces and experiences; Create continuity between front and back face of the surface

6 | Understanding natural performance

7 | Applying natural behavior



Structural ring

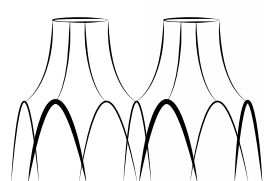
Secondary links

Catenary arches

Secondary links

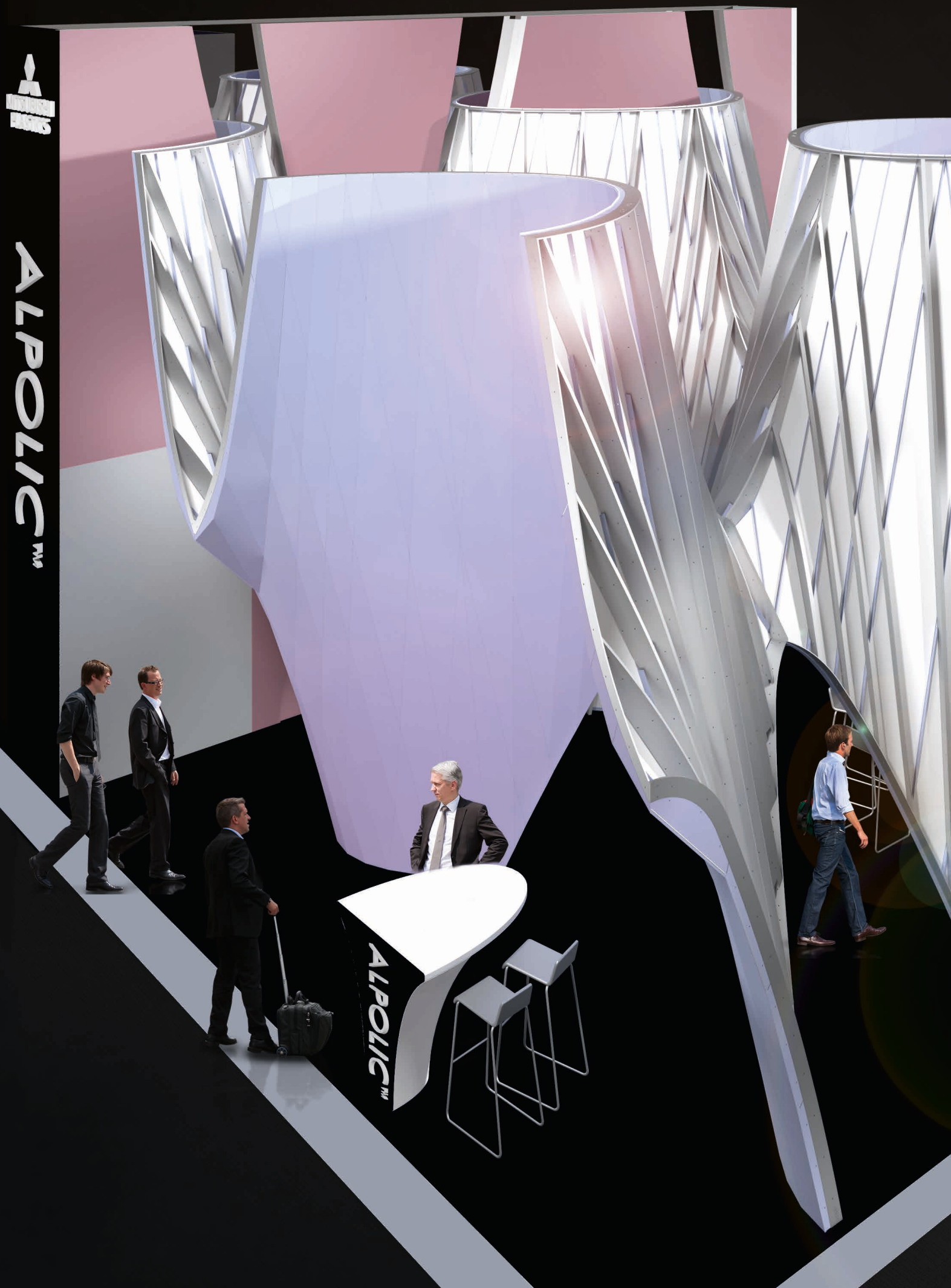
Fixed elements

7





ALPOLIC™



ALPOLIC™

ALPOLIC™ IS ONE OF THE WORLD'S LEADING MANUFACTURERS OF ALUMINUM COMPOSITE PANELS FOR ARCHITECTURE



ALPOLIC™

A STRONG BRAND FOR STRONG PARTNERS AND LARGE PROJECTS

ALPOLIC™ is a trademark of Mitsubishi Chemicals, Inc.

For more than 45 years, architects worldwide have been relying on our high-quality products for building facades. In addition to our innovative strength, we offer the world's largest selection of finishes with products that are extremely environmentally friendly and of excellent quality.



We are

TRENDSETTERS IN MANY AREAS

With numerous innovations ALPOLIC™ has influenced the market trends in recent years:

- First supplier of composite panels with decorative surfaces, natural metals and genuine anodized aluminum in the coil-coating process
- First supplier of A2 up to 2-meter width
- Maximum fire protection: All aluminum composite panels are available as standard in ALPOLIC™/fr (flame retardant) and ALPOLIC™ A2 (non-flammable) grades
- Largest selection of colors and finishes worldwide



We offer

THE WIDEST VARIETY OF DESIGNS

The surface finish of ALPOLIC™ offers almost „limitless freedom“ for the design of the building envelope. Thanks to the variety of colors and shapes, as well as numerous processing advantages - low weight, high flatness, good formability and long-lasting coating quality - ALPOLIC™ is installed worldwide in numerous projects. When it comes to design, safety and efficiency, particularly in cases of large construction projects, the combination of design and the size of our composite panels (A2 up to 2 m width) play a decisive role.



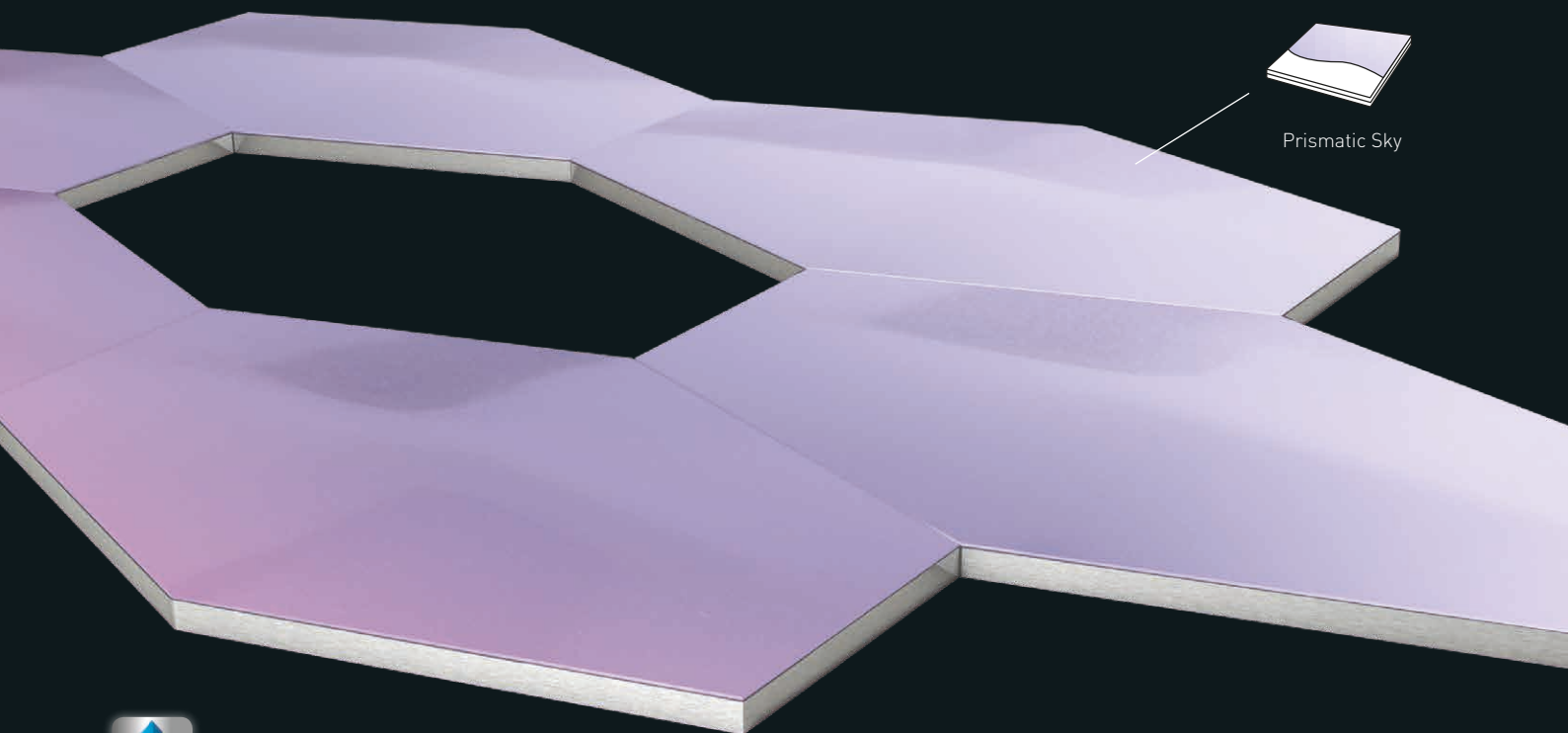
Our promise

UP TO 20 YEAR GUARANTEE THANKS TO LUMIFLON™

For its color coatings, ALPOLIC™ exclusively uses LUMIFLON™, based on a fluoropolymer coating (FEVE).

Advantages:

- Good color stability and scratch resistance
- Outstanding UV, light and weather resistance as well as dirt resistance
- Protection against moisture, corrosion, oxidation and acid
- The only coating that is suitable both for coil-coating processes and spray painting, guaranteeing consistently high color stability for both processes
- No other technology allows so many shades and gloss levels – from matte to high gloss
- For finish repairs, LUMIFLON™ is also available in spray cans
- Up to 20 years' warranty



We breathe

ENVIRONMENTAL PROTECTION AS A PROGRAM

All ALPOLIC™ aluminum composite panels are manufactured in our newly built plant in Wiesbaden using the most stringent safety and environmental requirements. Our aluminum composite panels are the only ones that are almost 100 % recyclable. The residues obtained in the production process are also collected and recycled. Above and beyond the legal requirements, Mitsubishi Chemicals, Inc. is dedicated to continually improving its commitment to environmental protection. As one of the world's leading companies, we continually strive to be a leading player in this field.

NEW

Up to 2 m
width!

ALPOLIC™ A2 UP TO 2 M WIDTH – NEW DIMENSIONS IN FACADE DESIGN

ALPOLIC™ A2 is the only non-combustible aluminium composite panel available up to 2 m width. It can be used in both exterior and interior linings, roofs and coverings for new buildings and building renovations. Additionally ALPOLIC™ A2 offers numerous processing advantages: low weight, high flatness, good formability and long lasting coating quality.

A2 up to 2m



Composition of ALPOLIC™ A2

(Thickness: 4 mm)

LUMIFLON™-based FEVE paint (ACM), Anodic oxid layer (ACM reAL anodised)

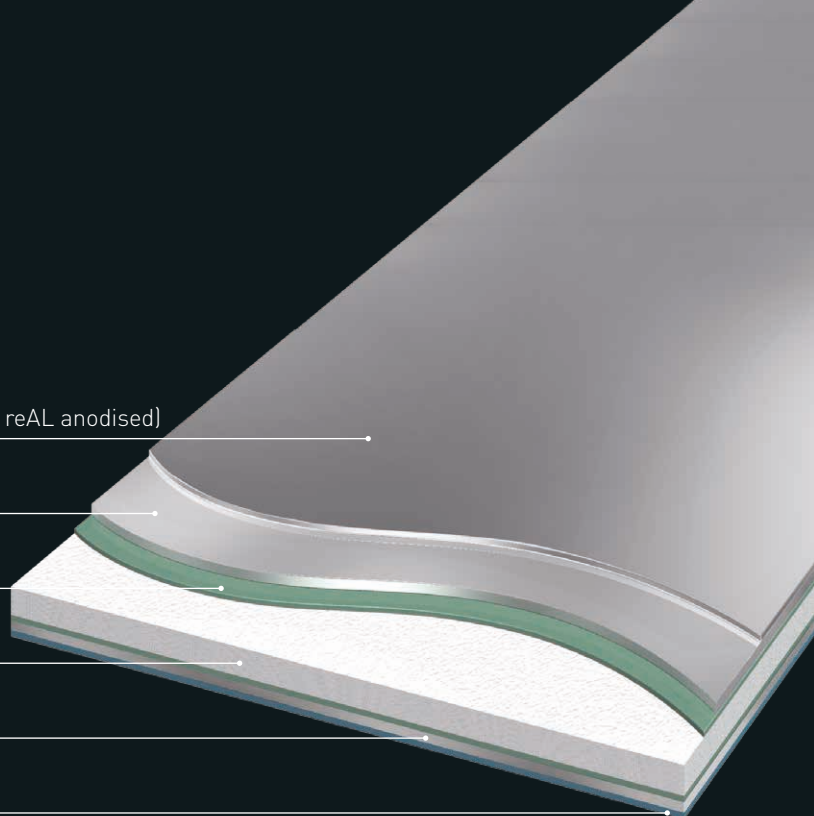
Aluminium (ACM), stainless steel (SCM), Titanium (TCM)

Rust preventing paint

High mineral filled core (A2)

Aluminium (ACM), stainless steel (SCM), Titanium (TCM)

Service coating (ACM)



90 %



The core material of ALPOLIC™ A2 consists of approx. 90 % of non-combustible materials

Characteristics (4 mm thick)

(4 mm)	Method	Unit	ALPOLIC™ A2 ACM
Physical properties			
Thickness	–	–	4 mm
Specific gravity	–	–	2.03
Weight	–	kg/m²	8.4
Thermal expansion	ASTM D696	x 10 ⁻⁶ /°C	19
Thermal conductivity	Calculated value	W/(m.K)	0.45
Deflection temperature	ISO 75-2	°C	110
Mechanical properties of composite material			
Tensile strength	ASTM E8	MPa, N/mm²	43
0.2 % proof stress	ASTM E8	MPa, N/mm²	41
Elongation	ASTM E8	%	3.8
Flexural elasticity, E	ASTM C393	GPa, kN/mm²	38.5
Sound transmission loss			
–	ASTM E413	STC	27
Metal thickness with equivalent rigidity			
–	–	–	Aluminium 3.3 mm

Fire performance of ACM series

Core Material	PE	ALPOLIC™ /fr	ALPOLIC™ A2
Approx. portion of combustible ingredients within the core material	100 %	< 30 %	< 10 %
Heat potential of the core material	> 45 MJ/kg	< 15 MJ/kg	< 3 MJ/kg
Reference fire classification	Euroclass C–D (EN 13501–01:2007)	Euroclass B (EN 13501–01:2007)	Euroclass A2 (EN 13501–01:2007)

Dimension (Standard)

Thickness (tolerance ± 0.2 mm)	Standard width (tolerance ± 2 mm)	Bow tolerance
4 mm	1,250, 1,500 mm	± 0.5 % of the length and/or width
Skin thickness	Length (tolerance ± 4,0 mm)	Squareness tolerance
0.5 mm	1,800, 7,300 mm	Max. 5.0 mm

NEW

Reflective
finish!

ALPOLIC™/fr reAL ANODISED – ELEGANT, MODERN LOOKS THANKS TO GENUINE ANODISING

ALPOLIC™/fr reAL anodised the trend towards natural surface finishes in the architecture. The surface is finished with an anodic oxide layer by continuous process on an aluminium coil. Continuous anodising builds and enhances the surface oxidation using an electro-chemical process under precisely controlled conditions. Anodised finish has a long history and a quite normal finish in the architectural application. Generally, the thickness of anodised layer from 18 to 25 µm is required for the exterior application when the batch anodising process is applied. ALPOLIC™/fr reAL anodised is applied with very unique continuous anodising process for thinner aluminum web, and only 8 micron anodised layer can achieve the good quality for the exterior application. This method improved the color consistency against batch process.

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Chicago, Illinois, United States of America

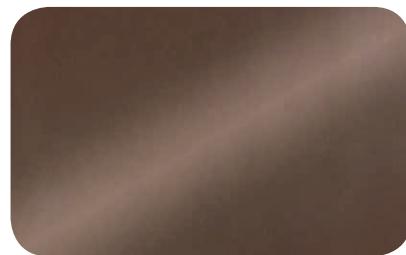
reAL ANODISED COLORS



DE-AR0101
Reflective Natural



DE-AR0220
Reflective Gold 20



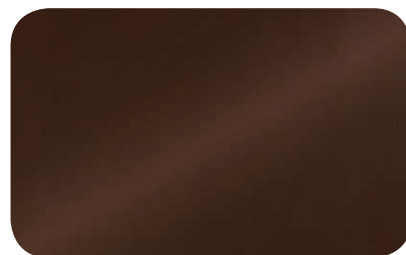
DE-AR0320
Reflective Copper 20



DE-AM0102
Mill Natural



DE-AM0240
Mill Gold 40



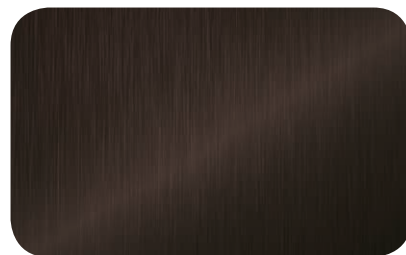
DE-AM0350
Mill Copper 50



DE-AB0103
Brushed Natural



DE-AB0410
Brushed Bronze 10



DE-AB0480
Brushed Bronze 80

Key benefits continuous anodised layer of 8 µm*

- | | |
|---|---|
| ✓ Enhanced anodic layer for ALPOLIC™ panels | ✓ Wide range of colors |
| ✓ No filiform corrosion | ✓ Excellent adhesion properties |
| ✓ No peeling/blistering | ✓ Flexible anodic layer for sharp bending |
| ✓ No chalking | ✓ Excellent corrosion resistance |
| ✓ Long-term guarantee | ✓ Color and gloss stability |

* ALPOLIC™ A2 reAL anodised will also be available upon request

Comparison continuous 8 µm vs. batch 25 µm

Continuous anodised 8 µm for ALPOLIC™ /fr reAL anodised	Batch anodised 25 µm
Special sealing quality: < 15mg/dm²	Sealing quality: < 30mg/dm²
Enhanced anodic layer with special sealing	Standard anodic layer 25µm
Excellent color and gloss stability	Color and gloss uniformity more difficult to manage
Open porous cell structure -> easier to color	Dense porous cell structure
Flexible and hard anodic layer	Hard anodic layer with soft top layer
Easy to bend, fold, perforate	Cracking of anodic layer with bending, folding
No reduction of anodic layer	Fading of anodic layer within time (1µm/year)

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Quality
made in
Germany



Recycling

Our materials are almost 100 % recyclable. Even waste from ALPOLIC™ plants is collected and recycled.



ISO 9001:2015
ISO 50001:2011
ISO 14001:2015

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