



FAÇADE GUIDE
RIVETED & SCREWED



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! Detailed information on processing can be found on our website in our planning and processing manual: www.alpolic.eu/en/service-and-downloads

ALPOLIC™ COMPOSITE PANELS & SUBSTRUCTURE

ALPOLIC™ composite panels



ALPOLIC™ /fr

Width: 1,035 | **1,285** | **1,535** | 1,785 | 2,050mm (± 2mm)

Length: max. 7,300 (±1mm/m)

Weight: 7.6kg/m²

Fire-retardant core

Fire Class B - s1, d0*

ALPOLIC™ A2

Width: 1,000 | **1,250** | **1,500** | 1,750 | 2,015mm (± 2mm)

Length: max. 7,300 (±1mm/m)

Weight: 8.4kg/m²

Non-combustable core (Limited-combustable in UK)

Fire Class A2 - s1, d0*

ALPOLIC™ NC/A1

Width: **1,250** | **1,500mm (± 2mm)**

Length: max. 7,300 (±1mm/m)

Weight: 8.6kg/m²

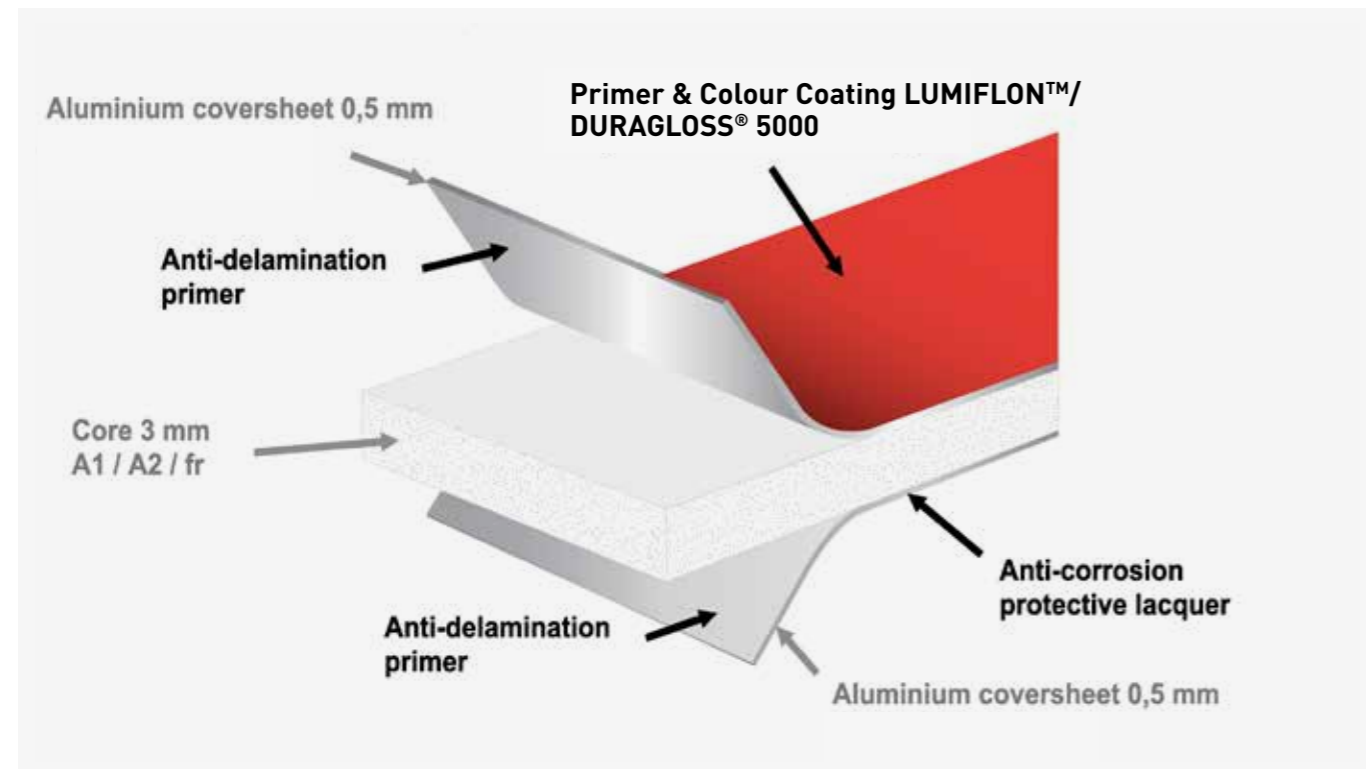
Non-combustable core

Fire Class A1*

*according Euronorm EN13501-1

Panel performance

ALPOLIC™ panels have marine quality as a standard, due to the protection coatings and primers.



Substructure

ALPOLIC™ panels can be used with bigger span between substructures, due to the panel strength.



Standard solution

ALPOLIC™ solution

Benefit using ALPOLIC™ panels:

- Up to 20% less insulation material necessary to get the same U-value
- Up to 50% less substructure required for the same panel size
- Up to 50% less installation time
- Up to 50% less CO₂ emission due to the material savings
- Up to 23% energy saving on the building in service, less energy consumption in summer and winter

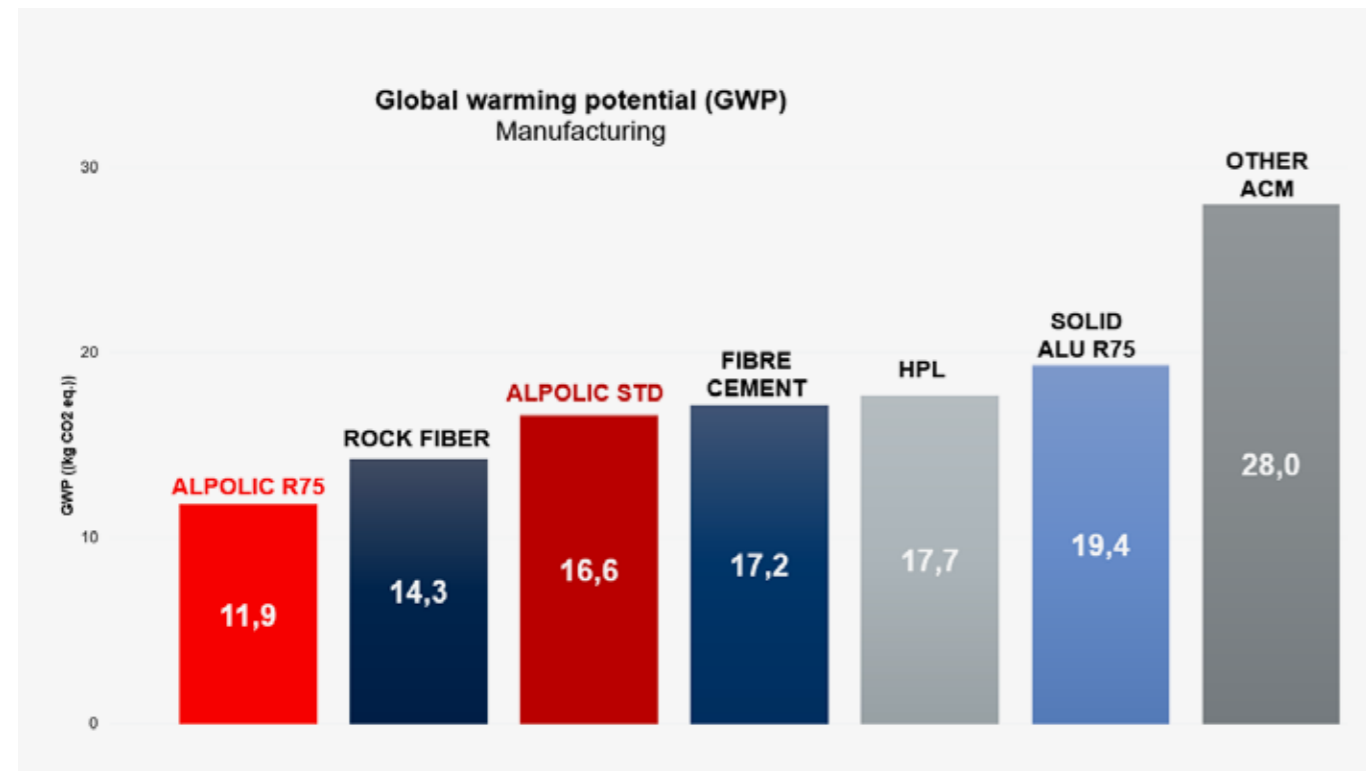


SUSTAINABILITY & RECYCLING

Sustainability performance

- Durability: Up to 70 years service life
- Low maintenance
- Reusable or almost 100% recyclable
- Up to 75% recycled aluminium content

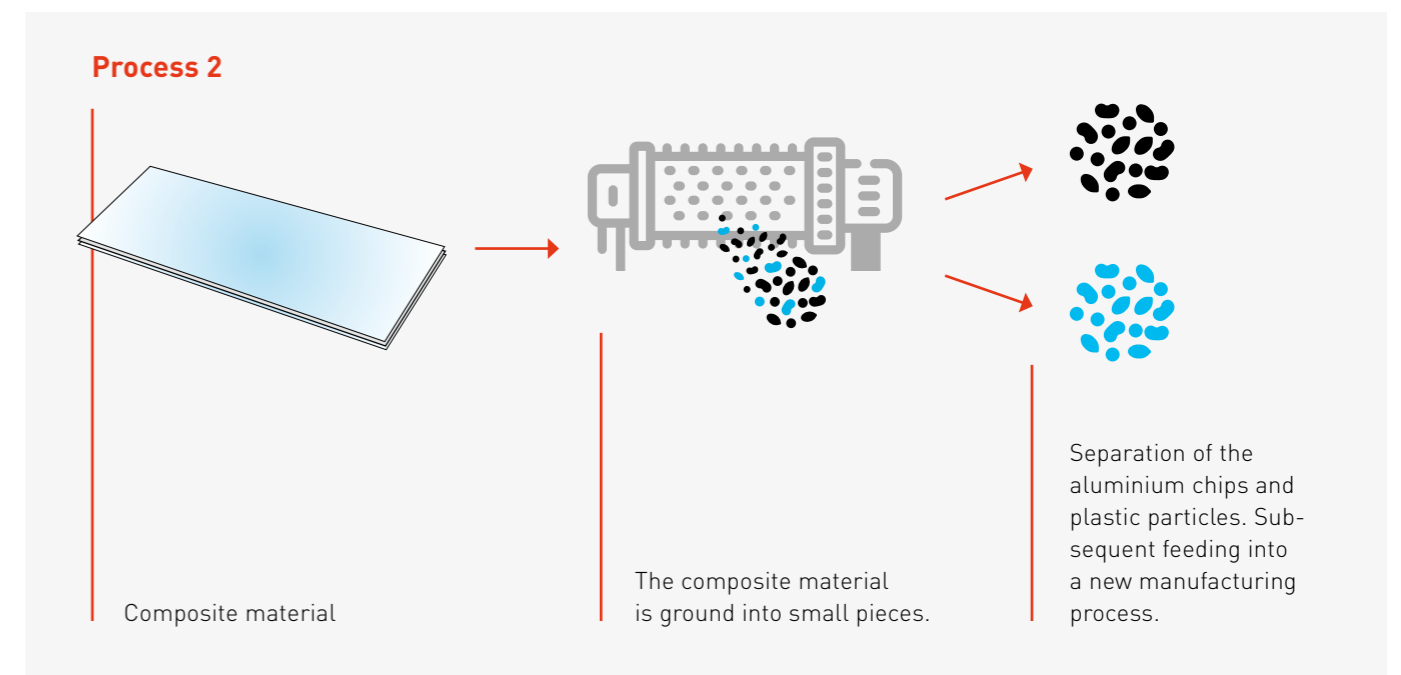
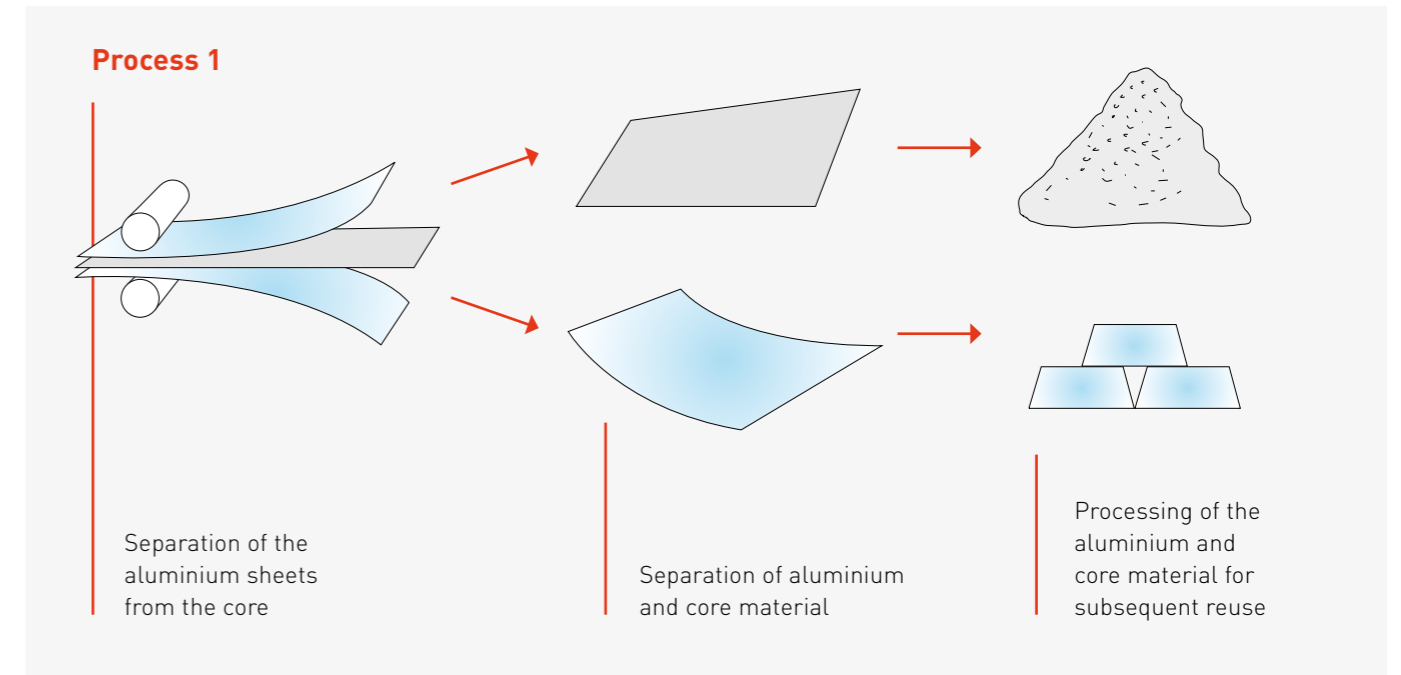
Comparison of the carbon footprint:



Recycling process

These are 2 ways to recycle panels:

- **Process 1:** recycling the panels on building site at the end of life (big parts)
- **Process 2:** recycling the waste from fabrication (small parts)



Link to Recycling Centers:
<http://www.wert-recycling.de>
<http://www.grafenberg-metall.com/>
<http://darmetall.de/>

CUTTING & MILLING

Cutting and Milling tools

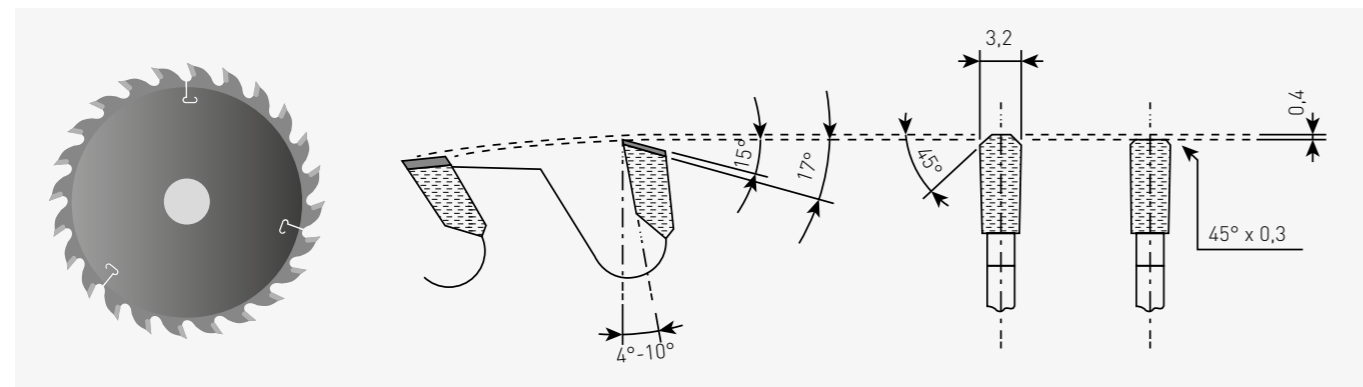
ALPOLIC™/fr: can be processed using a variety of tools, such as a hand router, sheet milling machine, panel saw or CNC machine.

ALPOLIC™ A2 & A1: CNC machines are suitable for cutting and milling.

	CNC		Vertical panel saw		milling machine	Router	
Router/Cutter							
ALPOLIC™/fr	✓	✓	✓	✓	✓	✓	
ALPOLIC™ A2	✓	✓	✗	✗	✗	✗	
ALPOLIC™ A1	✓	✓	✗	✗	✗	✗	
Rotation speed (rpm)	18,000 – 20,000	2,000 – 4,000	2,500 – 5,000	2,000 – 4,000	2,500 – 5,000	5,000 – 9,000	20,000 – 30,000
Feed speed (m/min)	5 – 8 (fr) 3 – 4 (A2 & A1)	30	30	30	30	5 – 20	3 – 5
Number of teeth	1	80 – 100	8 – 12	80 – 100	8	4 – 6	2 – 4

Panel cutting

Carbide or diamond saw blade for **ALPOLIC™/fr & A2** / diamond for **ALPOLIC™ A1**, trapezoidal/flat teeth, positive rake angle (+4° à +10°).

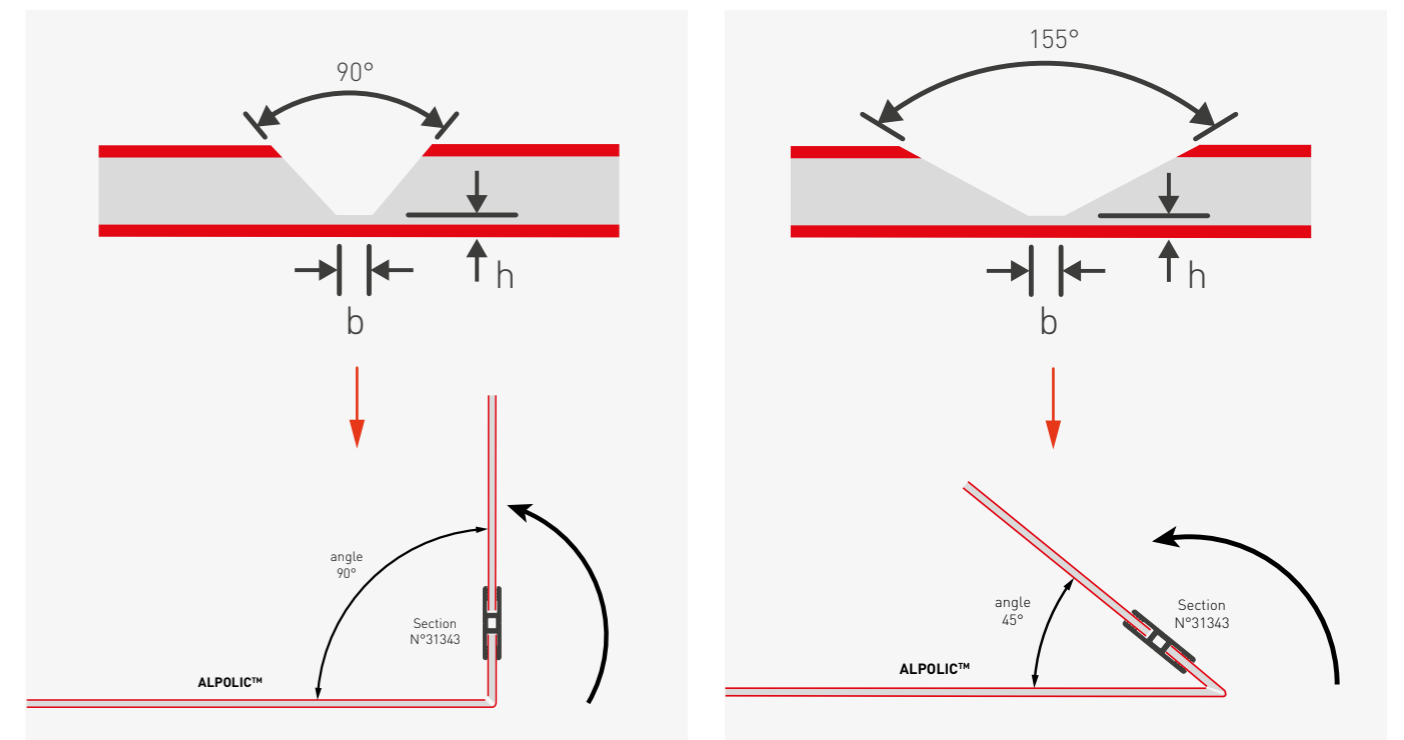


Suppliers: AKE, Bayerwald, Leuco

Milling parameters

Each type of ALPOLIC™ panel has a different milling geometry.

Panel	b (mm)	h (mm)	Core left (mm)	Bending radius r (mm)	Milling tool
ALPOLIC™/fr	3	0.7 – 0.9	0.2 – 0.4	2 – 3	Carbide/Diamond
ALPOLIC™ A2	3 – 4	0.65 – 0.75	0.15 – 0.25	1.5 – 2	Diamond
ALPOLIC™ A1	3 – 4	0.55 – 0.65	0.05 – 0.15	1.5 – 2	Diamond



Check the bending radius after folding with a radius gauge (respect the r values above)



If the bend is made in the opposite direction (e.g. inside corner), it is not possible to use the panel with the realAnodised finish.



CUTTING & MILLING

Finger cutters

Carbide or Diamond for **ALPOLIC™/fr & A2** / diamond for **ALPOLIC™ A1**

V-90° - Ø6-12mm
V-155° - Ø6-12mm

Single flute cutter with right-hand twist, upcut, polished - Ø4-8mm

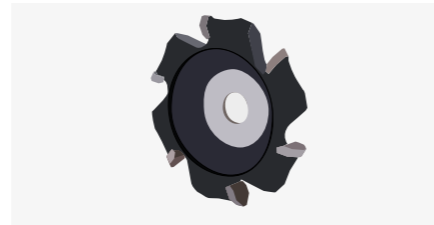
Suppliers: AKE, Crown Norge, Gis-Tec, Leitz, Affutage du Xaintois, GOLD Werkzeugfabrik GmbH



Saw blades for milling and folding technique

Carbide for **ALPOLIC™/fr**, diamond for **ALPOLIC™ A2 & A1**

Suppliers: AKE, Leuco, Leitz, Affutage du Xaintois, Festool, Mafell, Makita



Hand machines for milling and folding technique

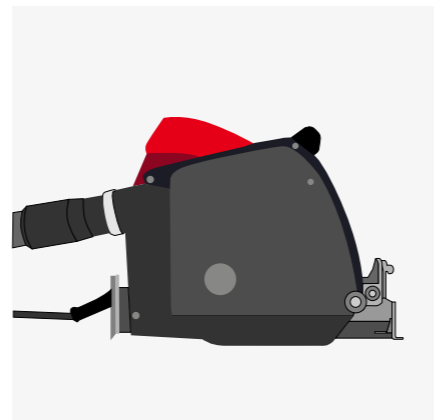
Sheet milling machine with minimum rating 800 W.

ALPOLIC™ panels can be easily grooved using an edge milling machine. Use wooden or plastic spacers to avoid clamping marks on the cover plates.

Sheet milling machine PF 1200 E-Plus from Festool with removable distance roller (automatic depth setting)

Sheet milling machine MF 26 cc from Mafell with adjusting screw (manual depth setting)

Sheet milling machine CA5000XJ from Makita with adjusting screw (manual depth setting)



Dust extractor

Mobile dust extractors, types CTM approved for dust class M for dust with MAK values > 0.1 mg/m³ for sheet milling machines, hand routers and hand-held circular saws.

DRILLING

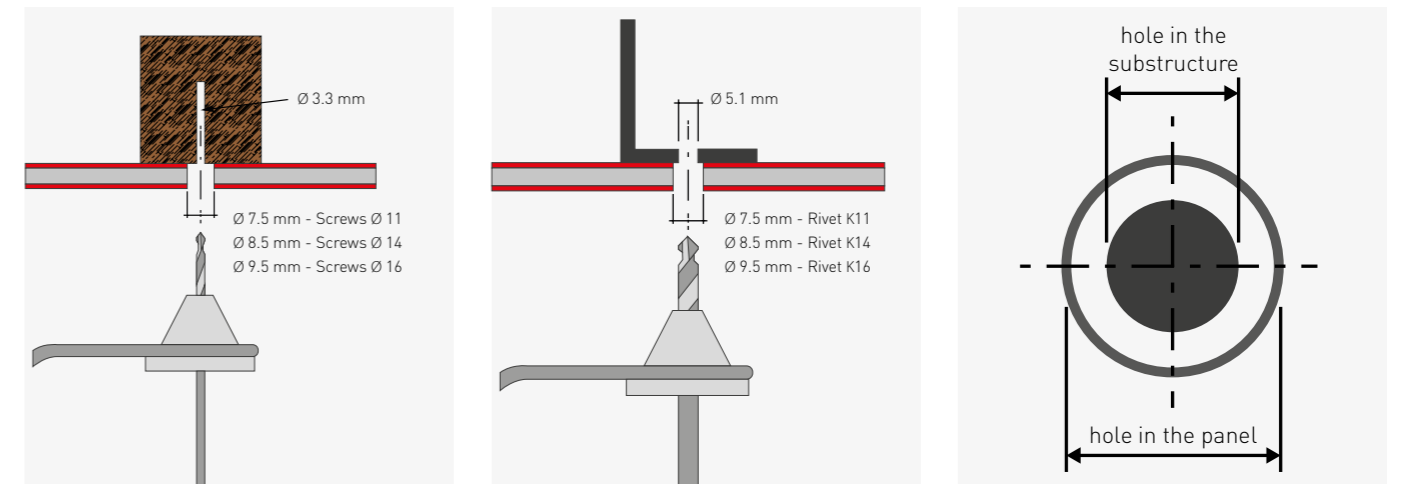
Pre-drilling of the substructure

For the rivets or screws to be centered in the panel hole, the use of a drill with a center point or a drilling jig is recommended.

Pre-drilling of the substructure:

- Screwed on wood : Ø3.3mm
- Riveted on aluminium substructure: Ø5.1mm
- Screwed on aluminium substructure: no need

The local regulations for the substructure must be checked before installation near the sea.



Drilling bits

The following drills are particularly suitable:

- Drilling bit DEWALT with centring tip, Extreme 2TM
- Drilling bit DEWALT HSS Cobalt DIN 338
- Drilling bit HSS with centring tip Ø5.1mm (to drill substructure)
- Drilling bit HSS with centring tip Ø7.5mm, Ø8.5mm, Ø9.5 mm & Ø10mm (to drill **ALPOLIC™** panel)
- Drilling bit Hilti HSS

Drilling jigs

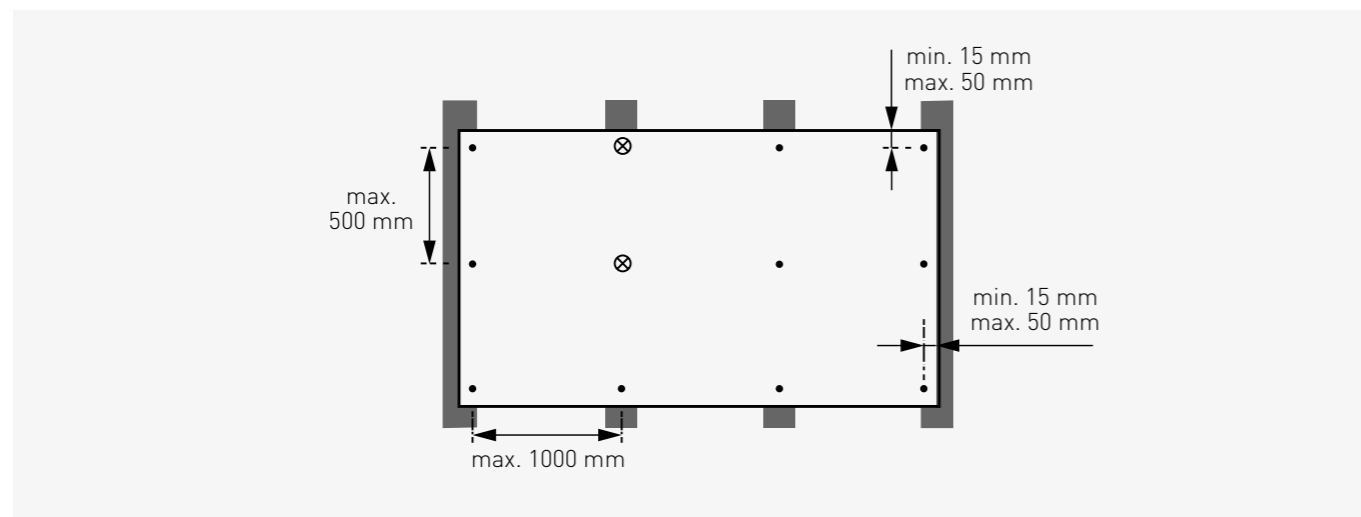
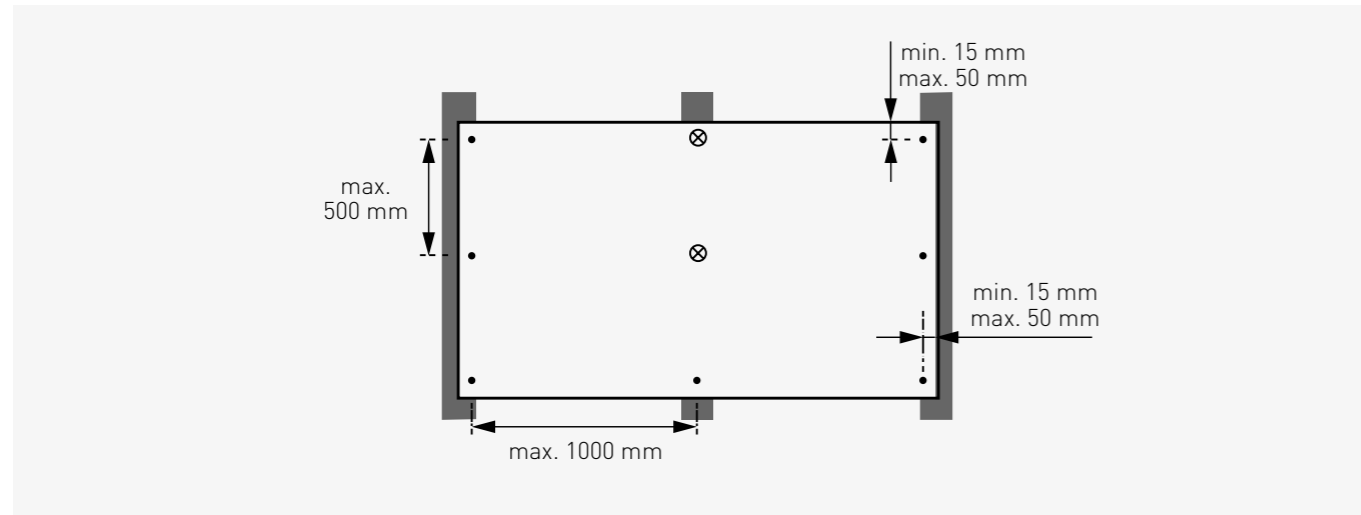
Handle drill-jig (for aluminium Ø8.5mm, Ø9.5mm and Ø10mm, for wood Ø3.3mm.

e.g.: SFS, Etanco, Hilti, EJOT



DRILLING

Drilling of the panel



⊗ Fixed point (drilling $\varnothing 6\text{mm}$)

● Sliding point (drilling $\varnothing 7.5\text{mm}$ for a rivet K11, $\varnothing 8.5\text{mm}$ for K14, $\varnothing 9.5\text{mm}$ for K16)

To position the panel, it is recommended that 2 fixed points with 6mm diameter holes are provided for a 5mm diameter pin (see figures above). The distance between the fixed points must be limited to avoid constraint in the event of significant thermal expansion.

The drilling diameter of the fixed points must be chosen taking into account the thermal expansion, allowing the movement of the panel according to the temperature variations, without restricting it (see table above). Please note that the hole clearance is between 1.0 mm and 4.5 mm depending on the diameter of the rivet/screw head. The fastening elements should be centred in the drilled holes.

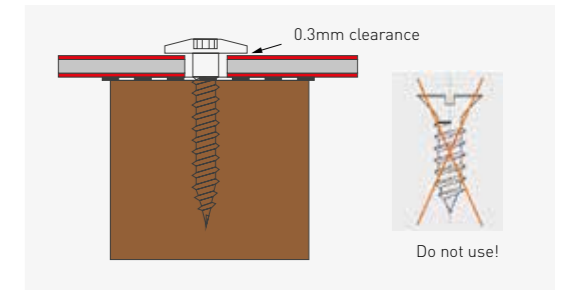
SCREWING & RIVETING

Screwing

We recommend the use of approved stainless steel screws (Check ETA approval of screw suppliers and ALPOLIC™). The screws must be suitable for the corresponding support (follow the manufacturer's instructions). The screws must be installed unconstrained, e.g. using a cordless screwdriver with a depth stop: 0,3mm clearance between the panel and the substructure. Some screws stop automatically at the correct depth.

For example:

- FEIN-ASCS 18-6.3 Select+
- Hilti_ST 1800-A22

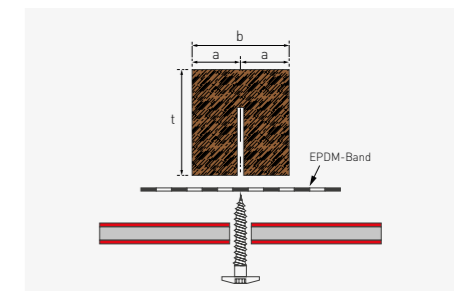


Façade screws for ALPOLIC™ panels on wood substructure

Brand	Ref.	approval		metal	screw head		type	body \varnothing mm
		FR	DE		thick. mm	\varnothing mm		
SFS	TW-S-D12	x	x	A2	2.5	12	T20W	4.8
EJOT	JA3-LT-D12	x	x	A2	2.2	12	T20	4.8
MBE	FA 4,8x30 K16	x	✓	A2	2.7	16	T20	4.8
ETANCO	PANEL BOIS D12	x	x	A2	2.5	12	T20	4.8
ETANCO	PANEL BOIS D16	x	x	A2	2.2	16	T20	4.8

Minimum dimensions of the wooden strips according to DIN 1052.

Façade screw	Pre-drilled
Wooden strip thickness t	$\geq 40\text{mm}$
Distance from edge a	$\geq 20\text{mm}$
Wooden strip width (intermediate) b	$\geq 60\text{mm}$
Wooden strip width (lateral) b	$\geq 100\text{mm}$

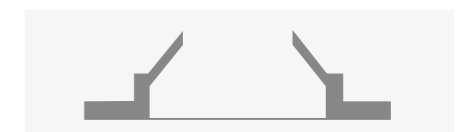


Remove the protective film from around the holes before screwing.

Façade screws for ALPOLIC™ panels on aluminium substructure

Brand	Ref.	approval		metal	cut protect film	depth stop mm	clamping capacity mm	screw head		type	body \varnothing mm
		FR	DE					thick. mm	\varnothing mm		
SFS	SX3-15-D16	✓	x	A2	x	x	5-15	2.5	16	T25W	5.5
SFS	SLA3_6-D16	✓	x	A2	x	✓	6	2.5	12	T25W	5.5
EJOT	JT3-LT_D16	✓	x	A2	x	x	5-15	2.0	16	T25	5.5
EJOT	JT3-LT_D12	x	x	A2	x	x	5-15	2.0	12	T25	5.5
EJOT	JT4-LT_D16	✓	✓	A2	x	x	5-12	2.0	16	T25	5.5
EJOT	JT4-FR_D12	x	x	A2	x	✓	6	2.0	12	TX25	4.8
EJOT	JT4-XT_D12	x	x	A2	✓	✓	6	2.5	12	TX25	4.8
ETANCO	DRILLNOX	x	x	A2	x	x	5-16	2.5	12	T20	5.5
ETANCO	PANEL3 ALU	x	x	A2	x	x	5-16	2.5	12	T20	4.8
ETANCO	PANEL3 ALU P3	x	x	A2	x	✓	6,5-7	2.5	12	T20	4.8

At a distance of less than 1.6 km from the sea, A2 stainless steel screws with a plastic ring must be used.



SCREWING & RIVETING

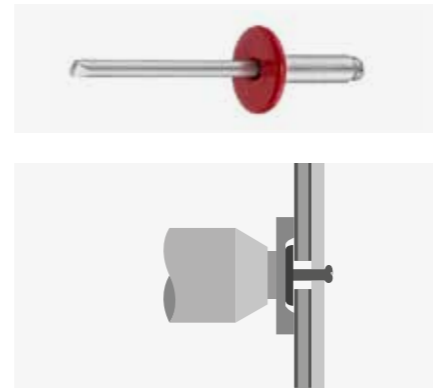
Riveting

We recommend the use of approved aluminum blind rivets, with stainless steel mandrel and Ø5mm shank, with a rivet head of Ø11mm, 14mm, or 16mm (K11, K14, K16). The rivet head should overlap the edge of the hole by at least 1mm.

 **Less than 1.6 km from the sea, A2 stainless steel rivets head with plastic ring have to be used.**

Using suitable jigs (rivet nose), the blind rivets must be fitted without compression, with a clearance of 0.3mm. Rivets and jigs must come from the same manufacturer.

Before riveting, remove the protective film around the holes.



Facade rivets for ALPOLIC™ panels on aluminium substructure

Brand	Ref.	approval		metal	clamping capacity	rivet head		body Ø mm
		FR	DE			thick.	Ø	
		mm	mm			mm	mm	
SFS	AP11_S_5x12	x	✓	alu/SS	4-8	1.5	11	5.0
SFS	AP14_S_5x12	x	✓	alu/SS	4-8	1.5	14	5.0
SFS	AP16_S_5x12	x	✓	alu/SS	4-8	1.5	16	5.0
SFS	SS0-D15-S-5x14	x	x	A4	6-9.5	1.5	15	5.0
IPEX	IPEX K11 4.8x12	x	✓	alu/SS	4-8	1.5	11	4.8
IPEX	IPEX K14 4.8x12	x	✓	alu/SS	4-8	1.5	14	4.8
IPEX	IPEX K16 4.8x12	x	✓	alu/SS	4-8	1.5	16	4.8
EJOT	ECORIV 5x12 K14	x	x	alu/SS	4-8	1.5	14	5.0
ETANCO	RIVCOLOR	x	x	alu/SS	4-8	1.5	14	5.0



Rivet nose

Special rivet nose for Ø11mm, Ø14mm & Ø16mm.
E.g.: SFS, EJOT, Etanco

Suppliers

SFS Division Construction
Rosenbergsaustasse 10
CH-9435 Heerbrugg
Tel. +41 71 727 51 51
<https://de.sfs.com/>

EJOT Germany
In der Stockwiese 35
D-57334 Bad Laasphe
Tel. +49 2752 908-0
www.ejot.de

Etanco France
ZI - Rue du Clos Reine - BP 60073
F - 78410 Aubergenville
Tel: +33 1 34 80 52 00
www.etanco.fr

SFS Group Germany GmbH | MBE Menden
Siemensstr. 1
58706 Menden
Tel.: +49 2373 17430-0
<https://www.mbe-menden.de/>

Screwing and riveting without constraint

- To avoid stress at the fasteners, rivets or screws should be fastened without constraint
- The holes in the panels must be sized according to the calculated thermal expansion, depending on the size of the panels and the colour
- Linear thermal expansion is 1.9 to 2.4 mm per meter of panel length per 100°C temperature difference [from 1,9 to 2,4 mm/m/100°C]

Panel	Thermal expansion factor for 1°C	Expansion in mm/m, for ΔT 50°C
ALPOLIC™/fr	24 x 10 ⁻⁶	1.2 mm/m
ALPOLIC™ A2	19 x 10 ⁻⁶	1.0 mm/m
ALPOLIC™ A1	21 x 10 ⁻⁶	1.1 mm/m

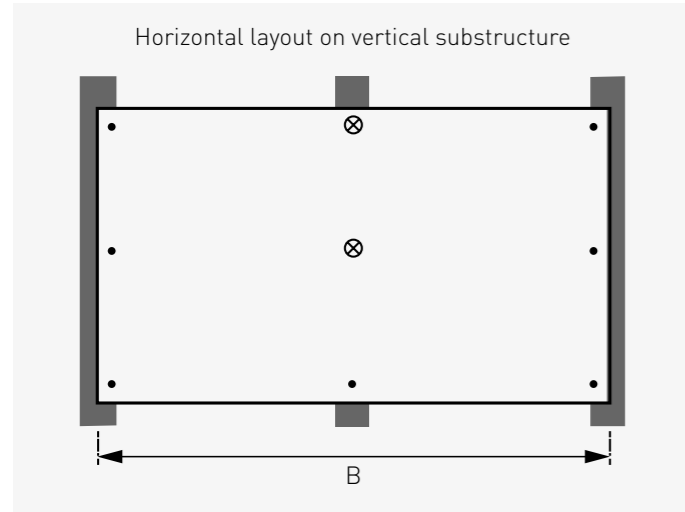
Example:

- Maximum temperature in the summer for a black panel **ALPOLIC™ A2** → 80°C
- Installation temperature → 20°C
- Panel length (horizontal) → 2,000 mm

The calculation of thermal expansion is: $\Delta L = 19 \times 10^{-6} \times (80-20) \times 2,000 = 2.25 \text{ mm}$

DETERMINATION OF THE RIVET HEAD SIZE

Choosing the rivet according to the panel colour & length

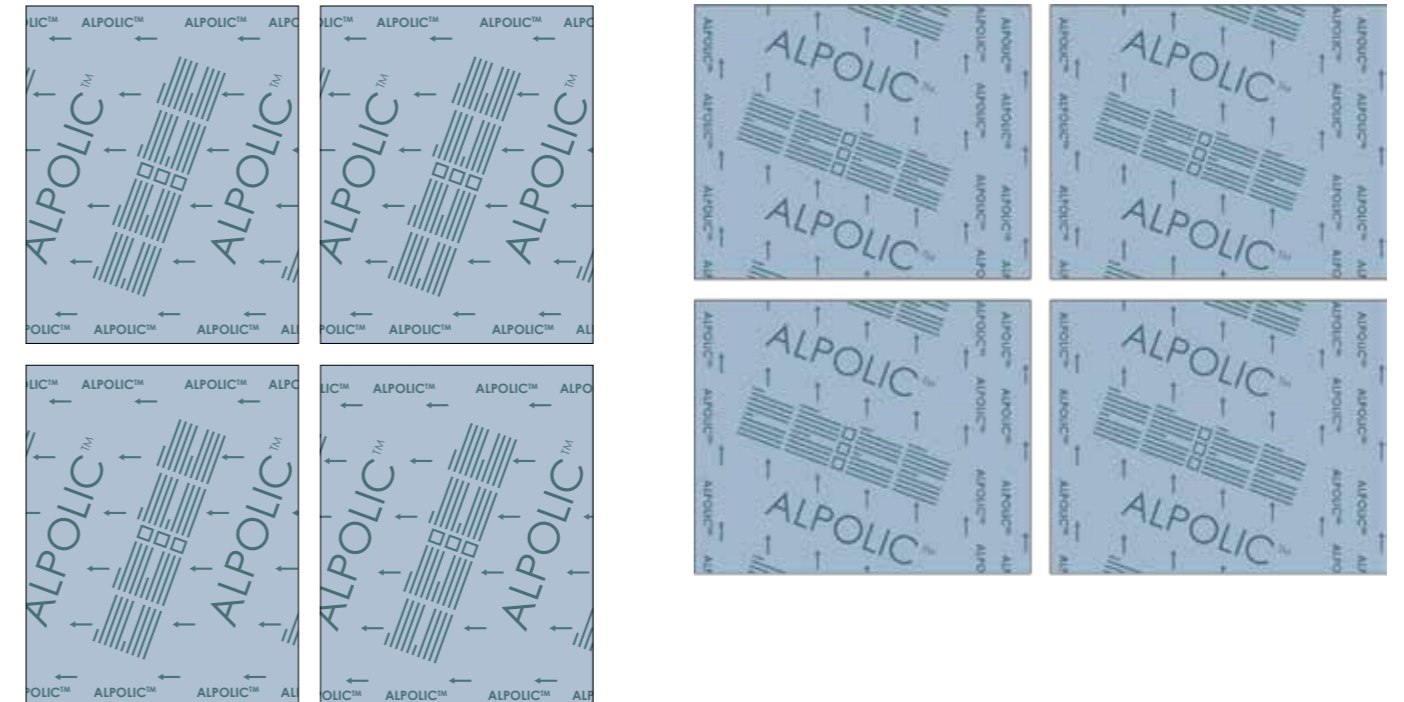


RAL	T° max	T° installation	min. diameter of the rivet/screw head																				
			K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K16	K16	
9001	40°	10°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11
1015	50°	10°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K16	K16	K16	
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K14	K16	K16	K16
1004	51°	10°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K16	K16	K16	K16		
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K14	K14	K14	K16	K16
1007	55°	10°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16	K16					
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K14	K16	K16	K16	K16	
2002	62°	10°	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16	K16	K16							
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K16	K16	K16	K16				
3000	63°	10°	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16	K16									
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K16	K16	K16	K16					
3003	68°	10°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
		20°	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K16	K16	K16	K16							
6011	70°	10°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
		20°	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K16	K16	K16							
7001	70°	10°	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16										
		20°	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K16	K16	K16							
7011	71°	10°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
		20°	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K16	K16	K16								
5010	73°	10°	K11	K11	K11	K11	K11	K14	K14	K16	K16												
		20°	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16	K16									
8003	76°	10°	K11	K11	K11	K11	K11	K14	K14	K16	K16	K16											
		20°	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16	K16									
5007	78°	10°	K11	K11	K11	K11	K14	K14	K14	K16	K16												
		20°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
7031	79°	10°	K11	K11	K11	K11	K14	K14	K14	K16	K16												
		20°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
9005	80°	10°	K11	K11	K11	K11	K14	K14	K14	K16	K16												
		20°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
			500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000	4250	4500	4750	5000		
panel length B (in mm)																							

PROTECTIVE FILM & MARKING

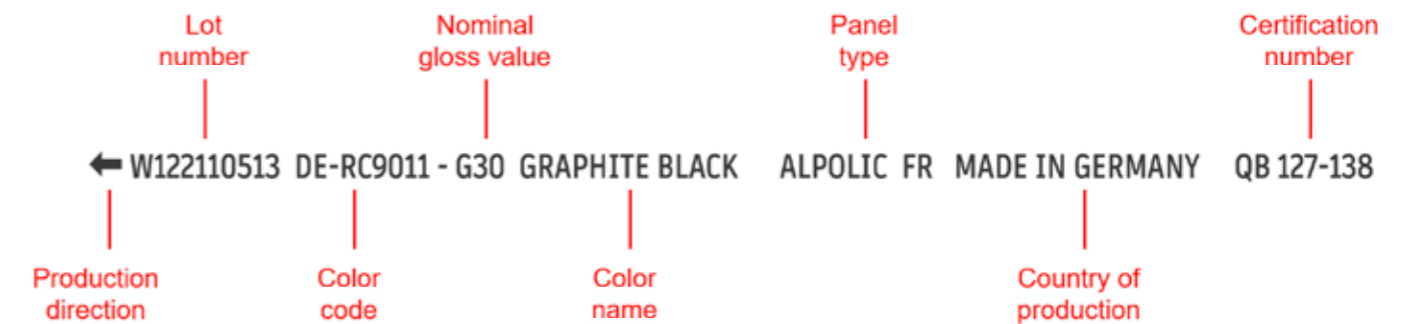
Protective film

During installation, each panel must follow the same direction as indicated on the protective film.



Marking

Example of ALPOLIC™ marking on the back of the panel



CLEANING & REPAIR

Storage

It is recommended that the panels are stored horizontally in a dry indoor environment to avoid the degradation of the protective film caused by moisture and direct sunlight. This protective film must be removed within 6 months of manufacture and a maximum of 20 days after installation.

Removal of light surface soiling

1. Apply a water rinse with moderate pressure to dislodge the soiling. If this does not remove the soiling, test a simultaneous water rinse with a sponge. If the soiling is still adhering after dry, test a diluted mild detergent.
2. When you use a diluted mild detergent, use it with soft sponges or soft rags. Wash the surface with uniform pressure and clean the surface in a horizontal motion first and then in a vertical motion.
3. Minimize the drip and splash of the mild detergent and rinse the runoff immediately to avoid streaking. Clean the surface from top to bottom and follow with a thorough rinse with clean water.

Removal of medium to heavy surface soiling

In order to remove medium to heavy soiling caused by grease and sealing material, alcohols such as IPA (Isopropyl alcohol), ethanol or N-hexane are used. Dilute these alcohols by 50 % with water. Strong solvents or solvents-containing cleaners may have a detrimental effect on the coating surface.

Carry out a spot test on a small non-visible area. Remove the spilled liquid with mild soap and rinse with water.

Caution

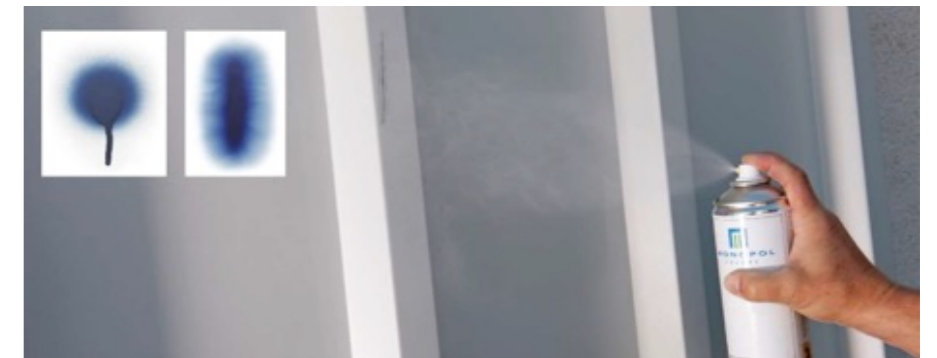
- Strong solvents and strong cleaner may cause damage to the coating. Do a spot test on a small non-visible area
- Do not use household cleaners containing abrasives
- Do not rub excessively as it may change the coating appearance
- Avoid drips and splashes. Remove the runoff as soon as possible
- Avoid extremely high and low temperatures
- Do not use paint removers, strong alkali or acid cleaners
- Do not use strong organic solvents such as MEK (Methyl Ethyl Ketone), MIBK (Methyl Isobutyl Ketone), Treclene (Tri-chloroethylene) or thinner
- Make sure that cleaning sponges and rags are grit free
- Do not mix cleaners

Graffiti removal

ALPOLIC™ panels with a LUMIFLON™ finish are already graffiti resistant at no extra cost, without any additional coatings. Please use the same graffiti removal method as the cleaning process above, but using Monopol's Monoclean X500 & X510 cleaning system.

Scratch repair system

To repair and protect your surface, you can use Monopol Genuine FP quality touch-up paint in aerosol cans with the same colour and gloss to repair scratches and damage on-site.



ALPOLIC™
WORLDWIDE



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Amsterdam, Netherlands



Burj Al Arab,
Dubai, United Arab Emirates



IBG Office building,
Groningen, Netherlands



Residential house,
Gava, Spain



GÜRALLAR LAPIS HAN,
Istanbul, Turkey



City Green Court,
Prague, Czech Republic



Marina Bay Sands,
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