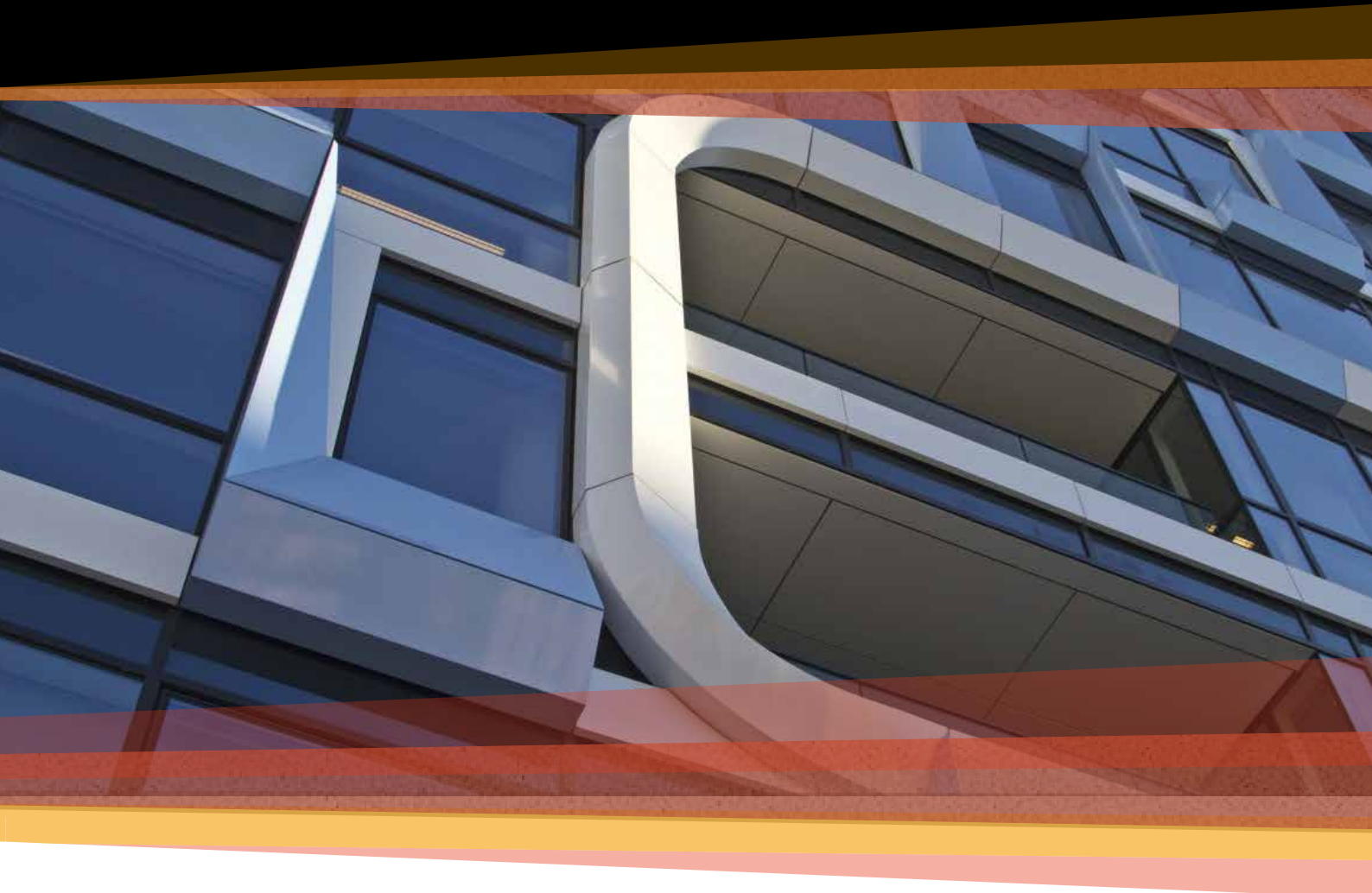


# ALPOLIC™



## TECHNICAL GUIDE





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## REFERENCES

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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](http://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 | 2,050 mm (± 2mm)

Length: max. 7,300 (±1mm/m)

Weight: 7.6kg/m<sup>2</sup>

Fire-retardant core

**Fire Class B - s1, d0\***

### ALPOLIC™ A2

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

Length: max. 7,300 (±1mm/m)

Weight: 8.4kg/m<sup>2</sup>

Non-combustable core (Limited-combustable in UK)

**Fire Class A2 - s1, d0\***

### ALPOLIC™ NC/A1

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

Length: max. 7,300 (±1mm/m)

Weight: 8.6kg/m<sup>2</sup>

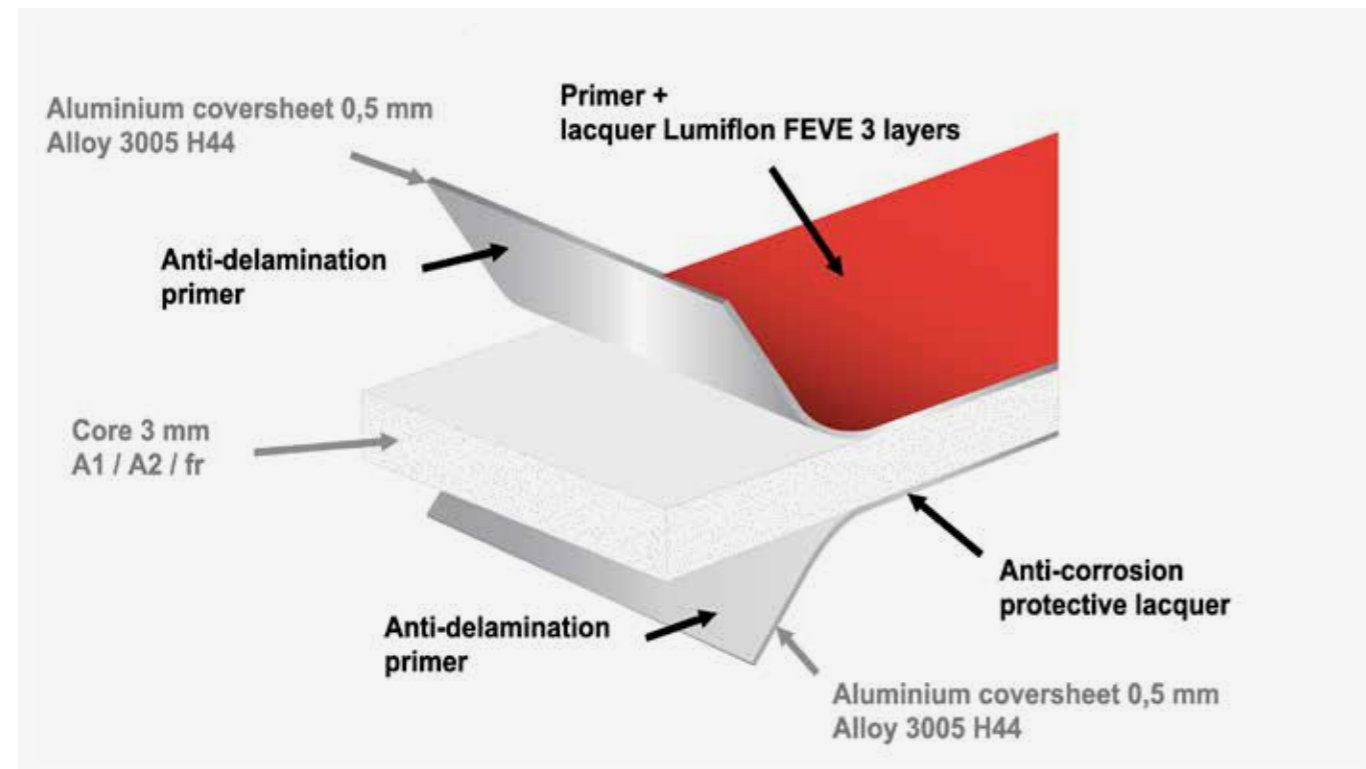
Non-combustable core

**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 CO<sup>2</sup> emission due to the material savings
- Up to 23% energy saving on the building in service, less energy consumption in summer and winter

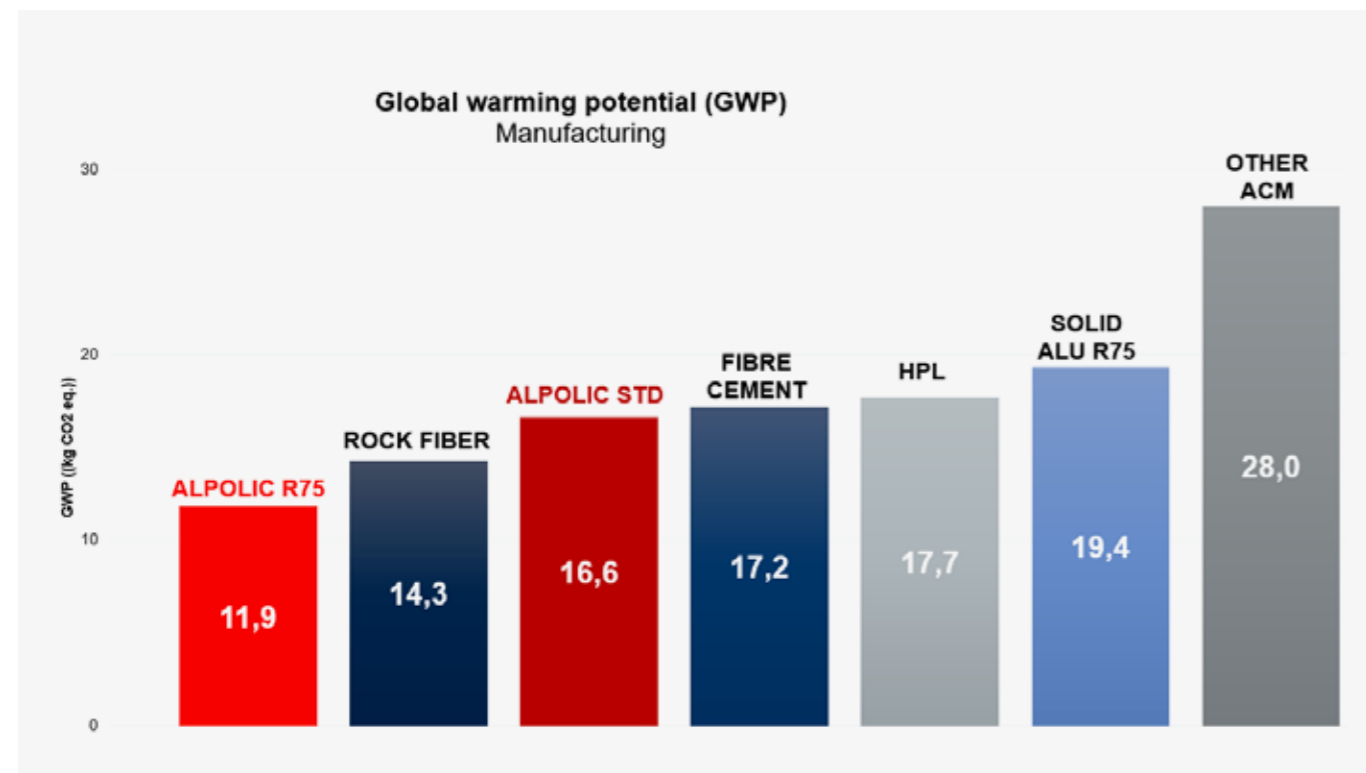


# SUSTAINABILITY & RECYCLING

## Sustainability performance

- Durability: Up to 70 years service life
- Low maintenance
- Reusable or almost 100% recyclable
- Up to 85% recycled aluminium content

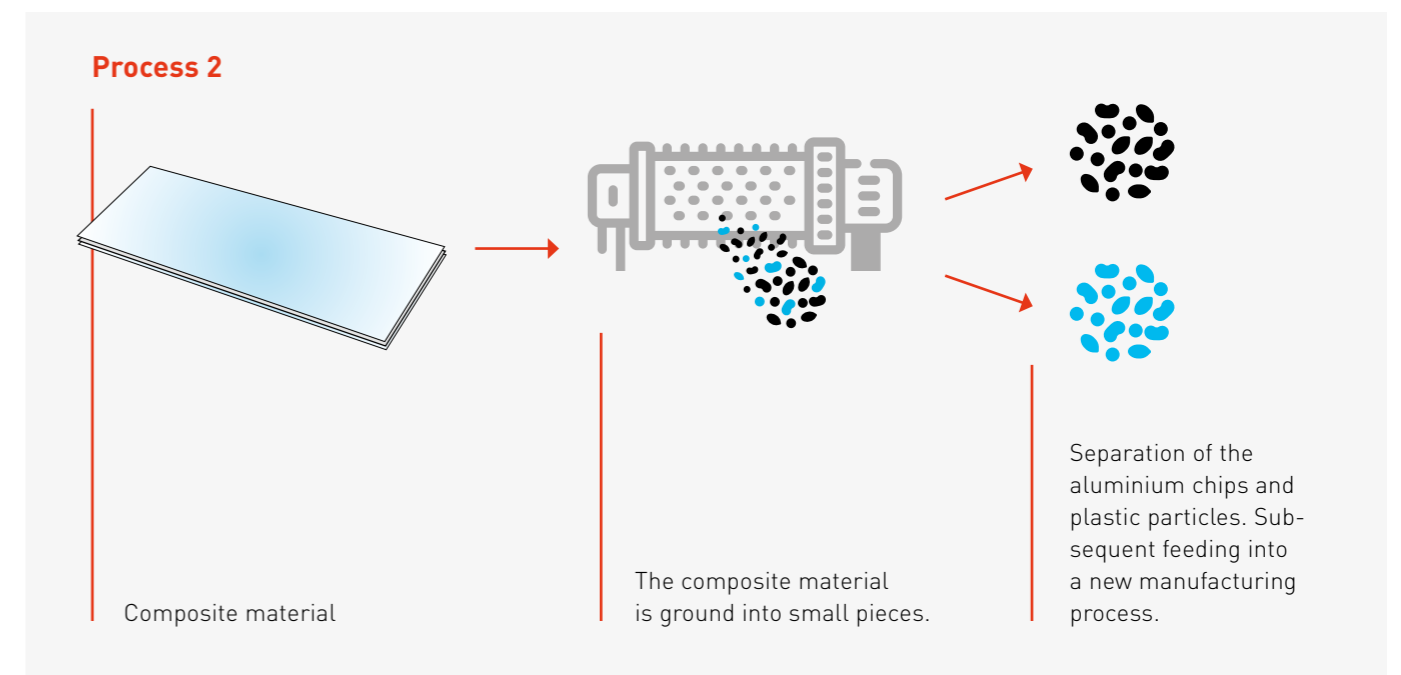
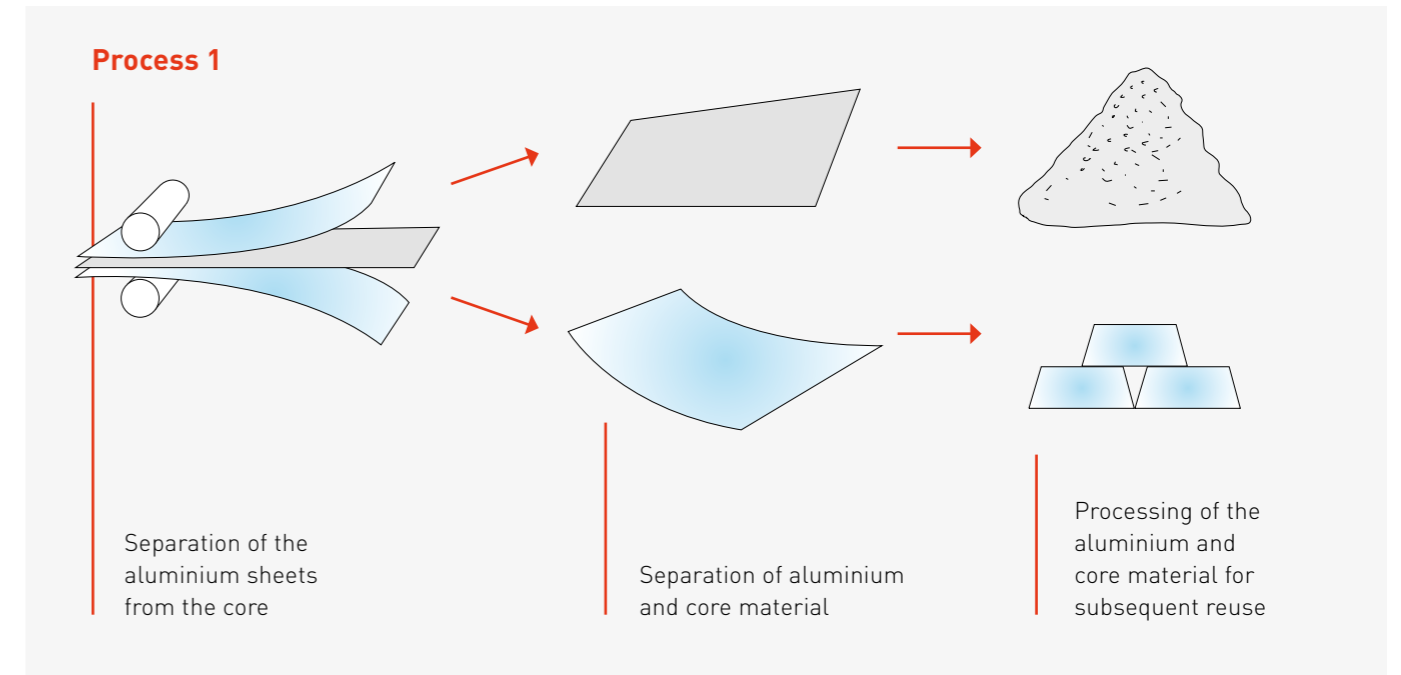
## Comparison of the carbon footprint:



## 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

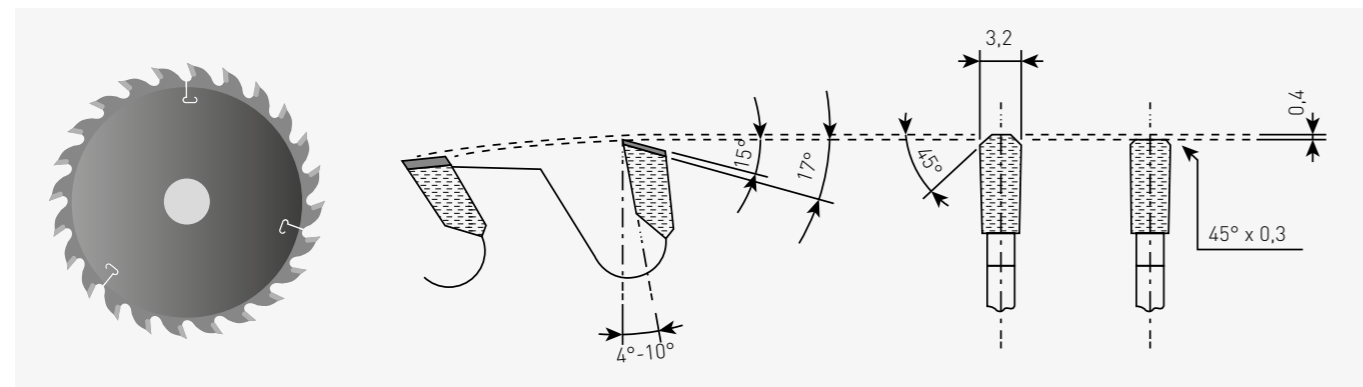
**ALPOLIC™/fr:** can be grooved using a variety of tools, such as a hand router, hand milling machine, panel saw or CNC machine.

**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
Teeth number	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°).

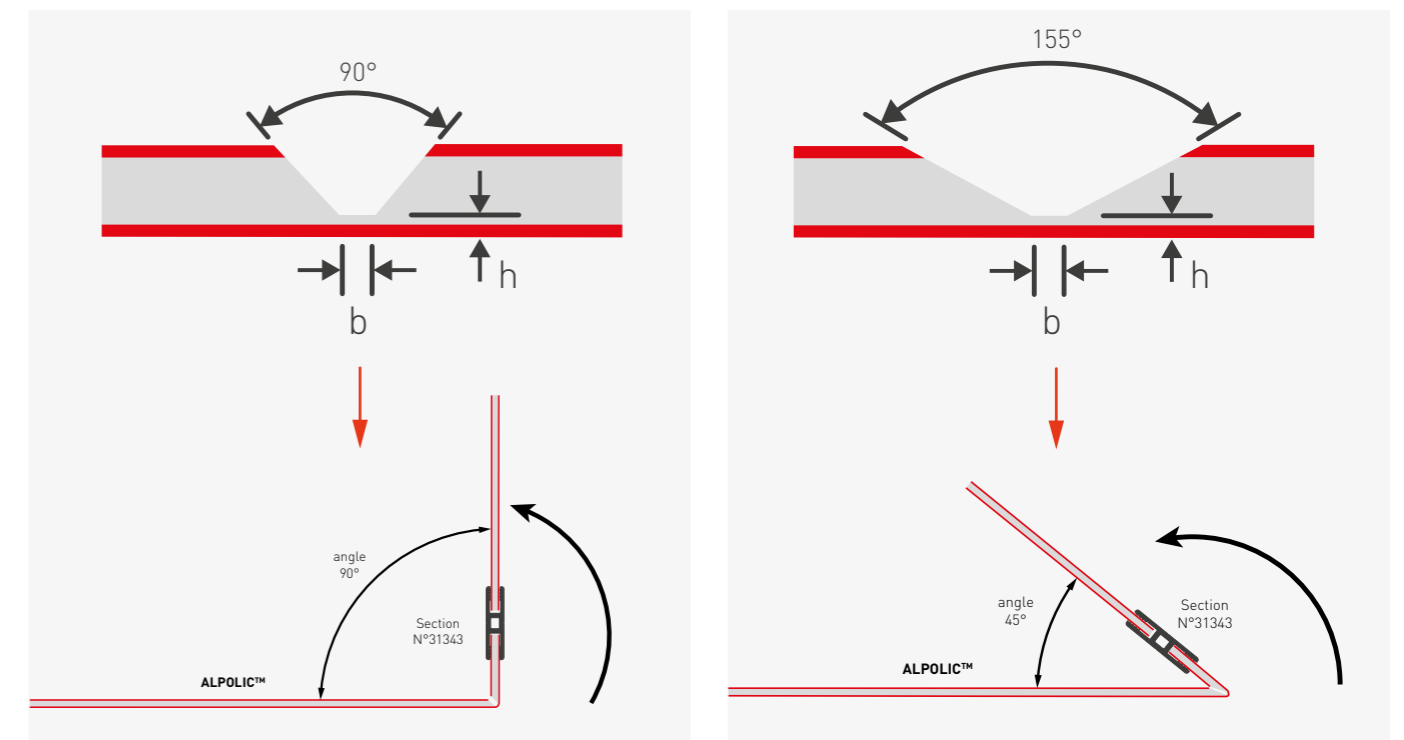


Suppliers: AKE, Bayerwald, Leuco

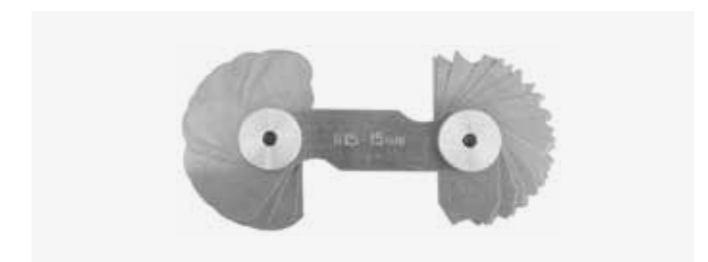
## Milling parameters

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 a 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



## Hand milling machine for ALPOLIC™ panels

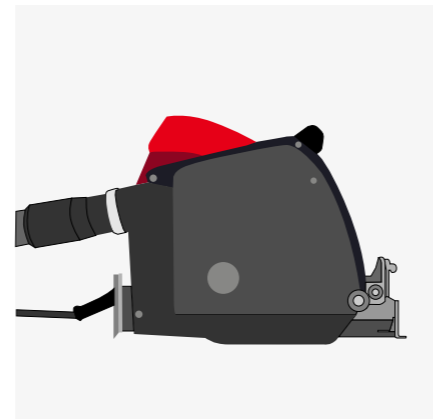
Hand milling machine with minimum rating 800 W.

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

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

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

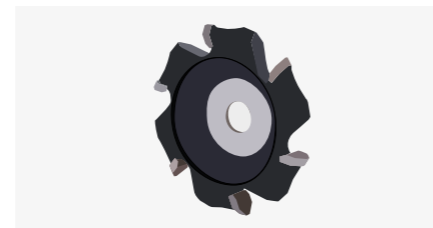
Hand milling machine CA5000XJ from Makita with adjusting screw (manual depth setting)



## Milling desk for ALPOLIC™ panels

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

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



## 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

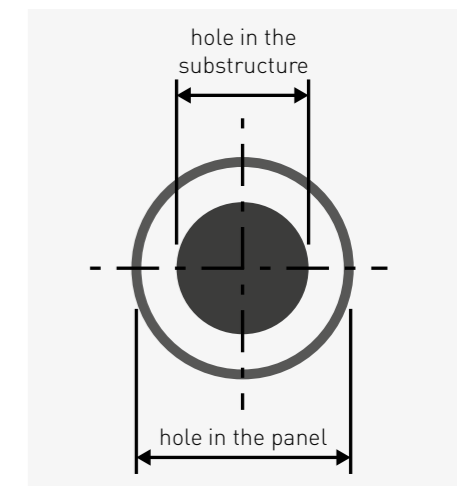
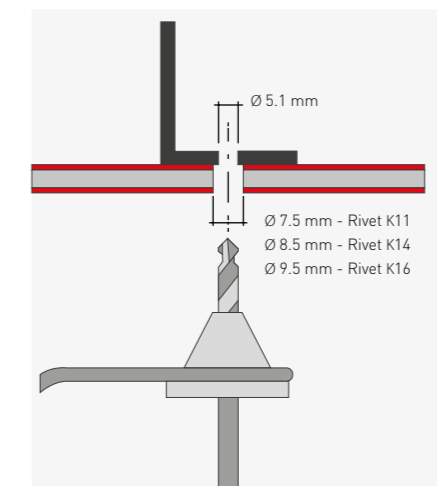
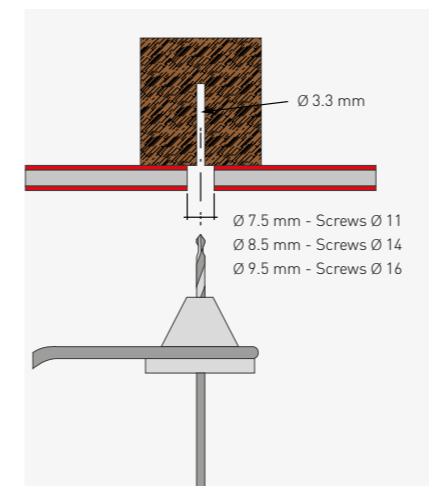
## Pre-drilling of the substructure

Before installation near the sea, check the local regulation about substructure: raw aluminium can be used.

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



## 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

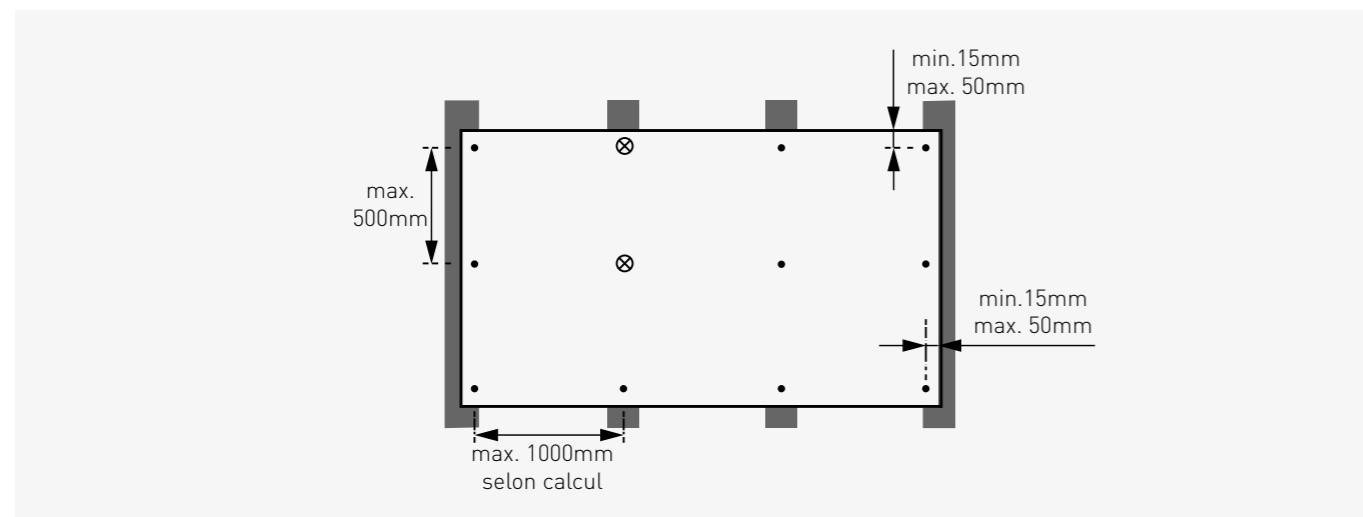
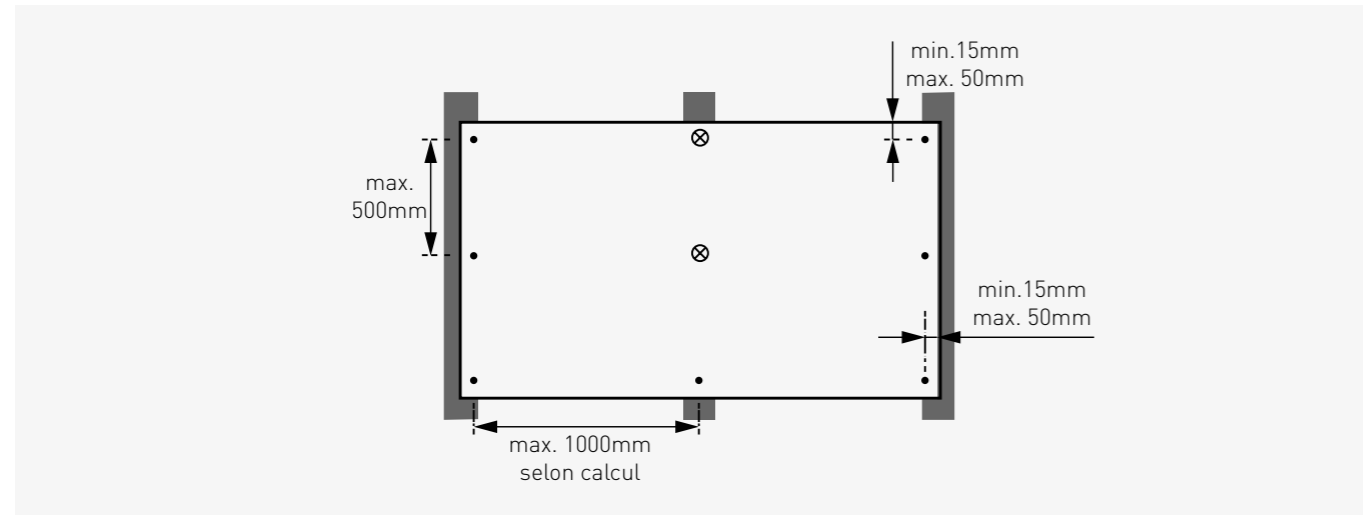
Handle drill-jig (for aluminium Ø8.5mm, Ø9.5mm and Ø10mm, for wood Ø3.3mm.

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 blocking in the event of significant thermal expansion.

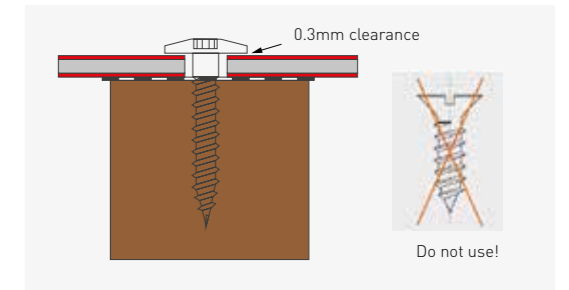
The drilling diameter of the expansion points must be chosen taking into account the thermal expansion, allowing the movement of the panel according to the temperature variations, without restricting it (see table above). Please note that the clearance of the drill hole is between 1.0 mm and 4.5 mm depending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

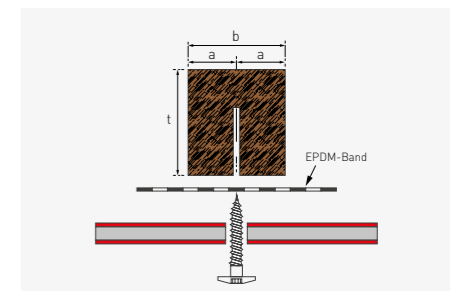


## Façade screws for ALPOLIC™ panel on wood substructure

Brand	Ref.	approval		metal	screw head		type	body $\varnothing$
		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 <b>t</b>	$\geq 40\text{mm}$
Distance from edge <b>a</b>	$\geq 20\text{mm}$
Wooden strip width (intermediate) <b>b</b>	$\geq 60\text{mm}$
Wooden strip width (lateral) <b>b</b>	$\geq 100\text{mm}$



Before screwing, remove the protective film around holes.

## Façade screws for ALPOLIC™ panel 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

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



# SCREWING & RIVETING

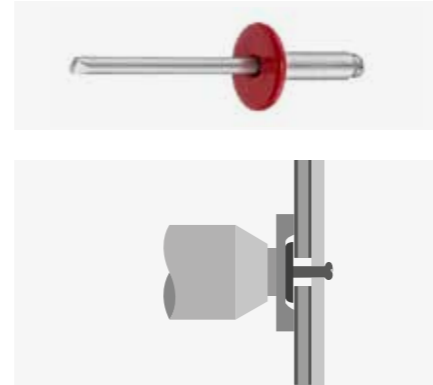
## Riveting

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™ panel 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](http://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](http://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 <sup>-6</sup>	1.2 mm/m
ALPOLIC™ A2	19 x 10 <sup>-6</sup>	1.0 mm/m
ALPOLIC™ A1	21 x 10 <sup>-6</sup>	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

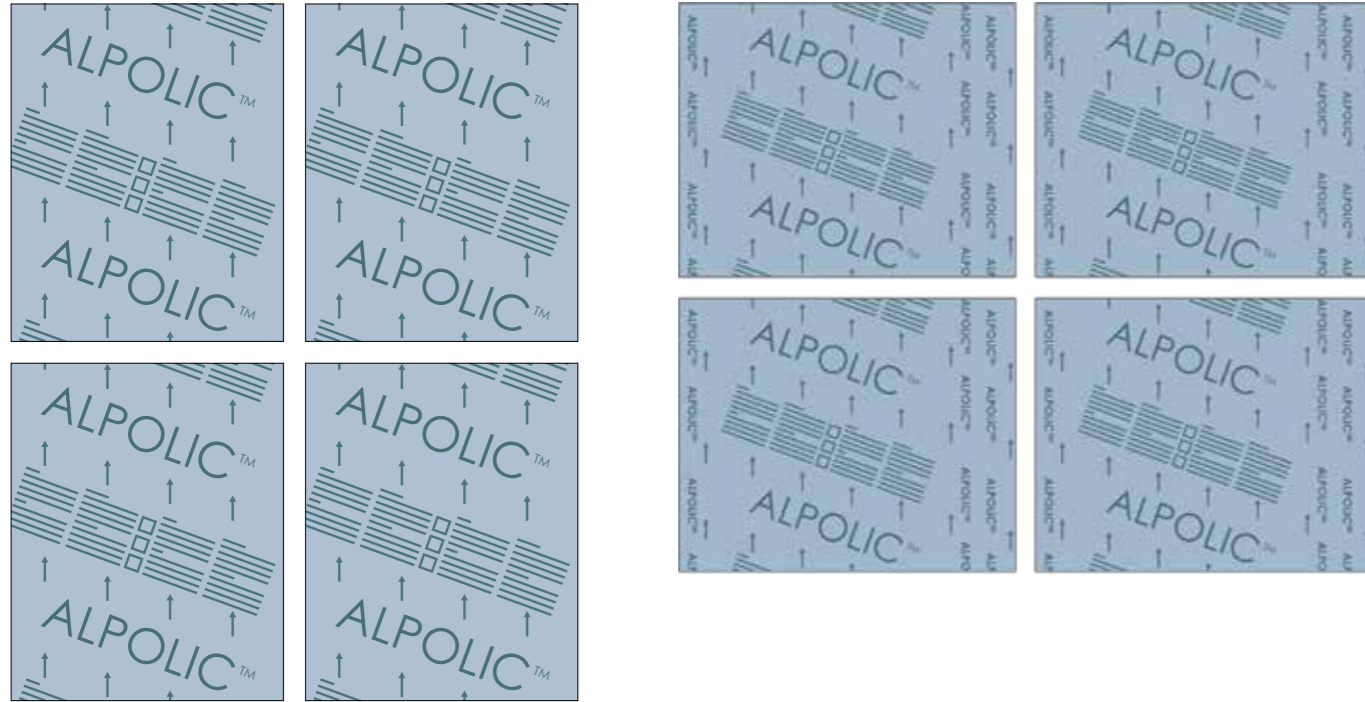
The calculation of thermal expansion is:  $\Delta L = 19 \times 10^{-6} \times (80-20) \times 2,000 = 2.25 \text{ mm}$



# PROTECTIVE FILM & MARKING

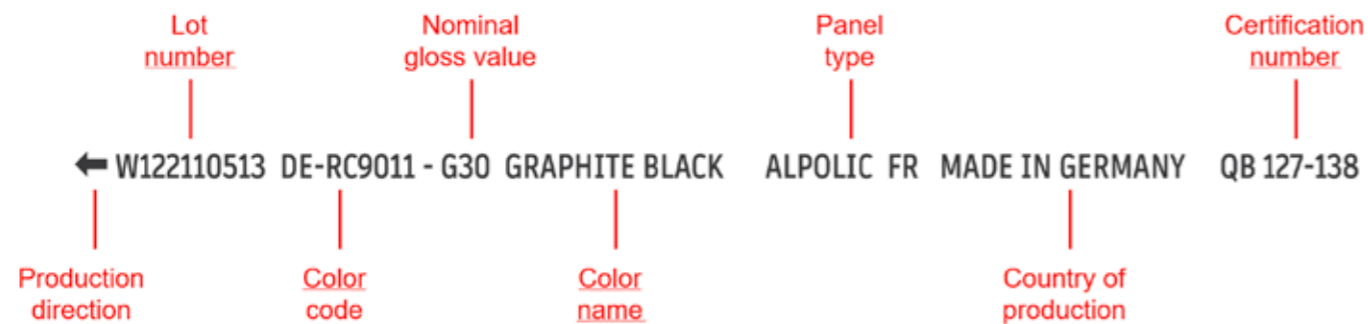
## Protective film

During installation, every panel must follow the same direction 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 rundown 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, some type of alcohol such as IPA (Isopropyl alcohol), ethanol or N-hexane is used. Dilute these alcohols by 50 % with water. Strong solvents or solvents-containing cleaners may have a detrimental effect on the coating surface.

Do a spot test on a small invisible area. Wash the spill 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 invisible 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 rundown 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.

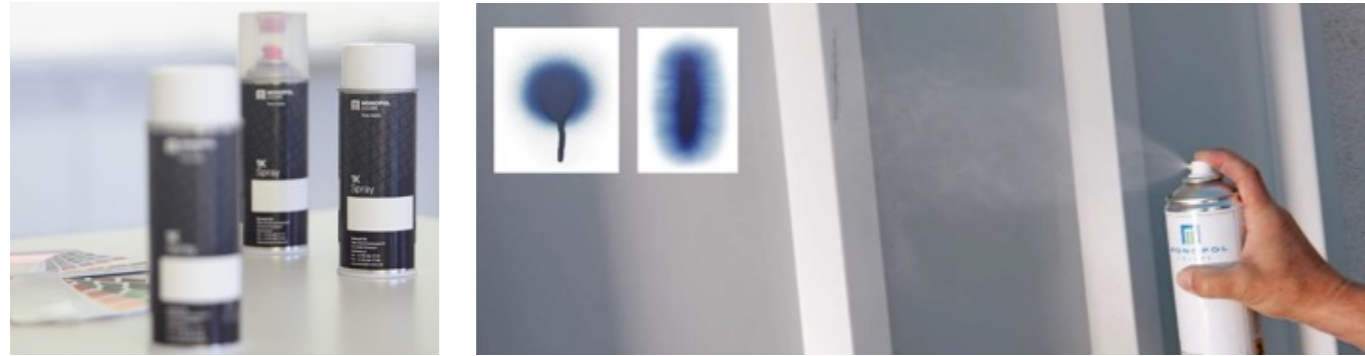
## Graffiti removal

ALPOLIC™ panels with a 3-coat FEVE 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.

# CLEANING & REPAIR

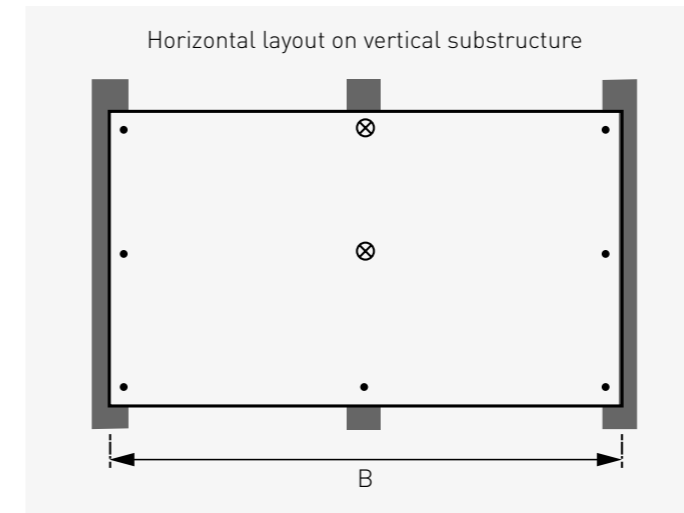
## Scratch repair system

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.



# CHOOSING THE RIVET

## Choosing the rivet according to the panel color & 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	K14	K14	K14	K14	K16	K16	K16	K16		
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K14	K14	K16	K16
1004	51°	10°	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	K11	K14	K14	K14	K14	K14	K14	K14	K14	K16
1007	55°	10°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16	K16	K16					
		20°	K11	K11	K11	K11	K11	K11	K11	K11	K11	K11	K14	K14	K14	K14	K14	K14	K14	K16	K16	K16	K16
2002	62°	10°	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	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	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	K16	K16	K16								
7001	70°	10°	K11	K11	K11	K11	K11	K14	K14	K14	K16	K16											
		20°	K11	K11	K11	K11	K11	K11	K11	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	K14	K16	K16	K16								
5007	78°	10°	K11	K11	K11	K11	K11	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)																							



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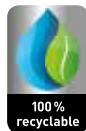
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