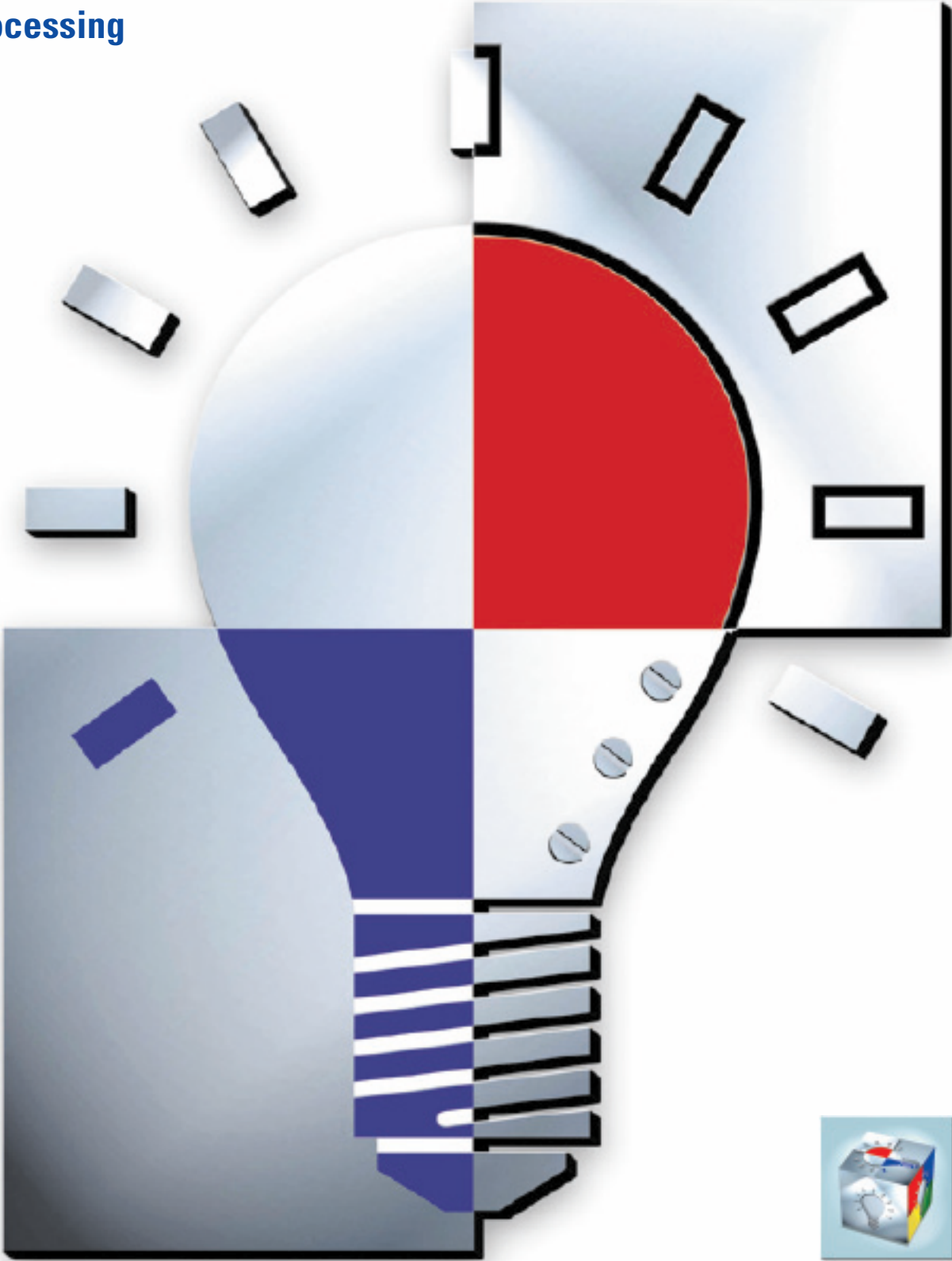


## Processing



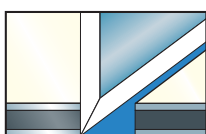
# processing at a glance

## Cutting to shape



### Sawing see page 7

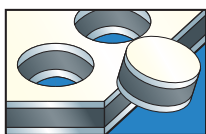
- with vertical panel saw, circular or fret saw



### Cutting see page 8

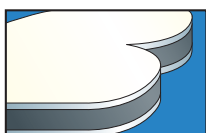
- with guillotine shears (concave PE core edge effect), cushion clamp

## Punching / Decorative work



### Punching see page 8

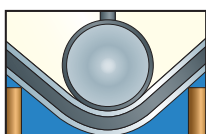
- with steel punch and die 2 and 3 mm panels (concave PE core edge effect)
- with sheet metal punching machines (all panel thicknesses)



### Decorative work see page 8

- with fret saw
- with water torch
- with CNC machining centre

## Shaping



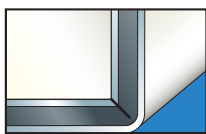
### Bending see page 9

- with folding machine or bending press, min. inner radius  $r = 15 \times t$  ( $t$  = panel thickness) (return travel greater than with solid sheet)



### Roll bending see page 9

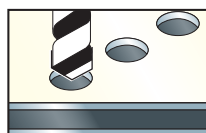
- with roll bending machines. Make sure to use ground rolls.



### Folding (routing technique) see page 11

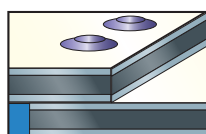
- manually after routing a V-groove, using a panel saw with routing device, a CNC machining centre or a panel routing machine

## Joining



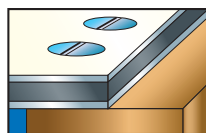
### Drilling holes for joining see page 8

- with drill bits for aluminium sheet and plastic panels (for larger holes use a drill bit with locating point)



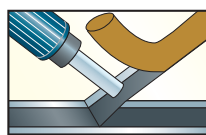
### Riveting see page 16

- with pop or blind rivets



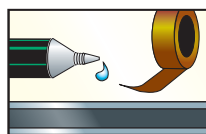
### Screwing see page 17

- with common stainless steel screws or bolts for wood, sheet or metal



### Welding see page 18

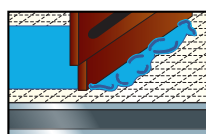
- of the PE-core by means of a hot welding device and polyethylene welding rod



### Glueing see page 19

- with standard metal adhesives for aluminium (no adhesion to core edges)
- with commercial double-sided adhesive tape

## Surface treatment



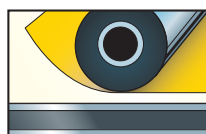
### Screen printing see page 21

- with standard silk screen inks (panel must be clean, free of dust and grease)



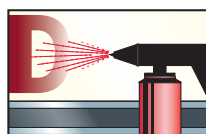
### Digital printing see page 21

- possible with all flatbed printing machines



### Laminating / Foto mounting see page 21

- laminating with self-adhesive foils; mounting fotos with adhesive film or wet with sprayed adhesive



### Lacquering see page 21

- overlacquering of polyester lacquered surfaces possible with suitable lacquer qualities

# contents

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<b>Transport / Storage / Handling</b>	<b>4/5</b>
<b>Cutting and Fabricating</b>	<b>6 - 9</b>
<b>Routing and Folding Technique</b>	<b>10 - 13</b>
<b>Jointing / Fixing Technique</b>	<b>14 - 19</b>
<b>Surface Treatment / Printing</b>	<b>20/21</b>
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<b>Remarks</b>	<b>25</b>
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# transport storage handling

DIBOND® is a panel material with a decorative surface: The panels are either lacquered, anodised or mill-finished. These surfaces are protected by a special foil during transport, storage and processing.

Nevertheless, the following information must be observed when storing and handling the panels:

- The pallets must be handled carefully during transport and unloading.
- Upon delivery, the pallets must be examined for any damage due to moisture (DIBOND® panels that have become wet must be dried to avoid any spots or corrosion). Any damage must be reported immediately and confirmed by the forwarding agent.
- Protect pallets during storage against rain, penetration of moisture and condensation (e.g. when transporting cold panels to warmer rooms).
- Store the pallets stacked one over the other (do not store DIBOND® panels standing vertically), with a maximum of 6 pallets of the same format stacked on top of each other (heavy pallets at the bottom).
- Single panels must be lifted off the pallet by two people holding all four corners and must not be drawn over each other. Carry the panels vertically. Wear gloves to avoid leaving any marks on them.

## **The following should be observed with respect to the DIBOND® protective foil:**

- Storage exceeding 6 months should be avoided. In case of longer storage, the panels should be wiped – after removing the protective foil – with a cloth moistened with methylated spirit.
- Strong changes in temperature reduce the long-term durability. Remove the protective foil prior to outdoor applications (no UV-resistance).
- Should the protective foil come off partly during processing, dirtied edges can occur in the course of time.

# cutting and fabricating



## Sawing

### Carbide tipped (CT) saw blades

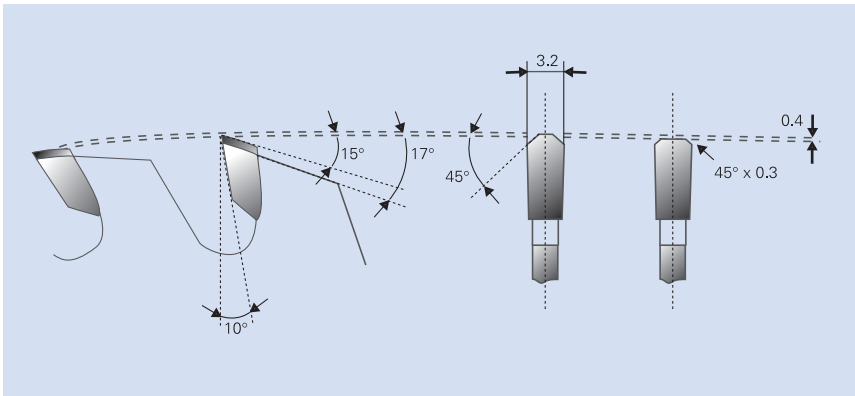
Blade geometry	Tooth thickness approx. 2 – 4 mm, tapered to the inside to prevent jamming
Tooth geometry	trapeze tooth / flat tooth
Pitch t	10 – 12 mm
Clearance angle $\alpha$	15°
Rake angle $\gamma$	10° positive
Maximum cutting speed v	5000 m/min
Maximum feed s	30 m/min

### Carbide tipped (CT) saw blades for HOLZHER and Striebig circular panel saws

#### Trapezoid/flat tooth saw blade, flat teeth 45° chamfered for burr-free edges

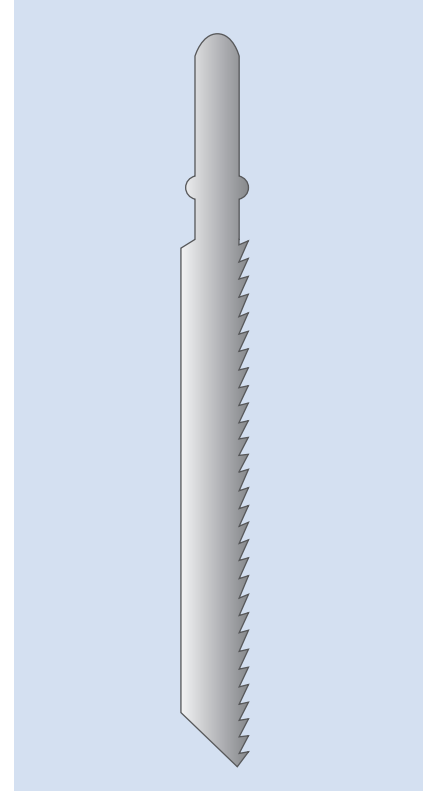
Saw blade dia.	D = 300mm (for Striebig vertical panel saw Standard II)
Number of teeth	t = 72 (for cuts of up to 5 panels) LEUCO Code No. 188389 t = 96 (for single cuts without burrs) LEUCO Code No. 188390
Saw blade dia.	D = 250mm (for Holz-Her vertical panel saw PK 1255 ALUCOBOND®)
Number of teeth	t = 60 (for cuts up to 5 panels) LEUCO- Code No. 188939 t = 80 (for cuts without burrs) LEUCO- Code No. 188940
Bore dia.	D = 30mm
Tooth thickness	3.2 mm
Clearance angle	15°
Rake angle	10° positive

#### Sketch showing the edge geometry for professional resharpening:



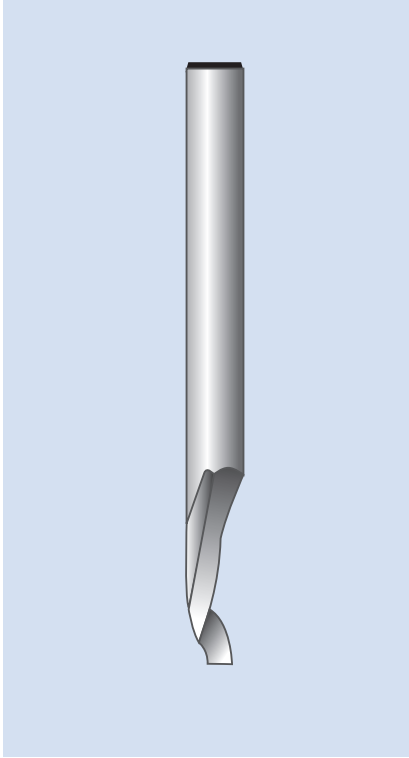
#### Manufacturer/supplier:

Leuco  
Ledermann GmbH  
Postfach 1340  
D-72153 Horb  
Phone +49 74 51 93 - 0  
Fax +49 74 51 93 500  
www.leuco.com



#### Jig saw blades

for wood or plastics, e.g. T101 B (Bosch),  
tooth thickness 2.5 mm for precision cuts



## Routing

DIBOND® can be easily routed on conventional routing machines and CNC machining centres.

To avoid pressure marks on the DIBOND® surface, please use plastic or wood vice jaws when chucking the workpieces.

High-speed steel or carbide tipped cutters suitable for aluminium and DIBOND® have a wide tooth pitch, radiused and smooth grooves and small lip angles.

They produce perfect cuts, e.g. under the following conditions:

- High-speed steel (HSS),  
max. cutting speed 3000 m/min.,  
max. feed 25 m/min.
- Carbide tipped (CT),  
max. cutting speed 5000 m/min.,  
max. feed 30 m/min.

Suitable end milling cutters for DIBOND®:

HSS end milling cutter, shank dia. 8 mm

Dim. 5 x 12 x 60 mm, Art. No. 100 56 0008

Dim. 3 x 12 x 60 mm, Art. No. 100 36 0008

### Manufacturer/supplier:

Werner Albrecht KG  
Be We Präzisionswerkzeuge  
Im Öhrlach 11b  
D-75417 Mühlacker  
Phone ++49 70 41 41 940 310  
Fax ++49 70 41 41 414 31

Carbide end milling cutters series F 113

### Manufacturer / supplier:

Gienger Industrieservice  
Weimarstraße 15  
D-78532 Tuttlingen  
Phone +49 74 61 16 20 20  
Fax +49 74 61 16 20 21  
www.gis-tec.de

## Drilling

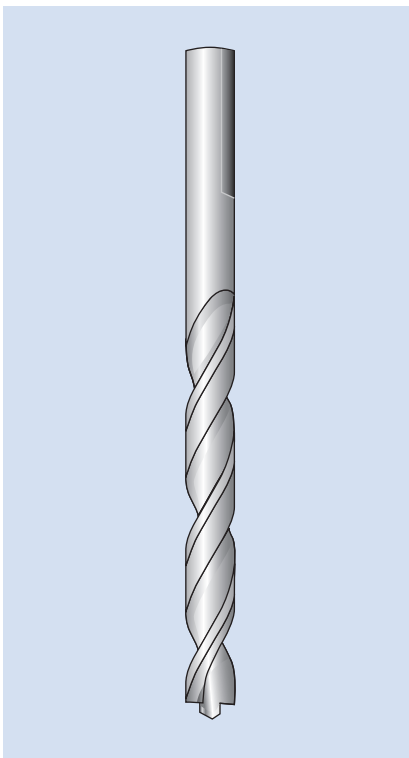
DIBOND® can be drilled with twist drills normally used for aluminium and plastics on machines common for metals.

Drill material: High-speed steel (HSS)

Tool geometry: Lip angle: 100° - 140° or spot facing cutter with centre-point.

Angle of twist: 30° - 45°

e.g. Extreme 2™ HSS-G Metal drill DIN 338 of De WALT, D-Idstein



## Countersinking

Three-lipped core drills and counterbores common for aluminium are used for countersinking pre-drilled holes. Counterbored holes are less out of centre than those produced by twist drills. Countersinks for aluminium can be used for countersinking flat head screws into DIBOND®. Head and shank counterbores for aluminium are mainly used for countersinking screw heads or for making holes through DIBOND®.

## Contour cutting

DIBOND® can be cut to size with jig saws, CNC machining centres and water torches. Please cut abrasively when using a water torch. Pre-drilling of the panels is necessary when starting the cut in the middle of a panel as it is not possible to drill through with a water torch.

## Shearing

DIBOND® is easily sheared with a guillotine. A slight drawing of the aluminium cover sheet caused at the impact side should be noted. The clamp on the shear should be fitted with a shock-absorbing rubber pad to prevent damage to the cover sheet.

## Punching

DIBOND® panels of any thickness can be punched with conventional sheet punching machines. For clean cuts please use evenly ground tools and the narrowest possible cutting gap. This punching method also causes a slight drawing of the panel cover sheet.

Holes of a minimum diameter of 4 mm can be punched. The minimum width of web between hole edges is also 4 mm.



## Bending

DIBOND® can be formed by conventional metal and plastic fabrication methods. Certain specific points should be noted relating to the multilayer structure combining materials of different characteristics.

- The minimum radius is  $r = 15 \times t$   
 $t$  = panel thickness

The spring-back effect experienced when folding sheet metal is larger with DIBOND®. For production series a prototype should be made.

The surface should be protected from damage by affixing plastic film or inserting polyethylene of 1 – 2 mm thickness or plastic film strips during processing.

## Bending with a bending press

(Fig. 1) DIBOND®, like sheet metal, is easily formed with a bending press. The air-bending process is used when forming with a brake press.

The DIBOND® panel rests on the edges of the die (rails, channels) and is bent by the punch (tube or shaft). The bending angle is determined by the width of the die and the stroke of the punch. The die edges should be rounded and smooth.

Ideal die width:  
 $2 \times t + 2 \times \text{protective foil thickness} + \text{punch diameter} + 15 \text{ mm}$

The minimum side length of the bent part should be 5 times the DIBOND® thickness.

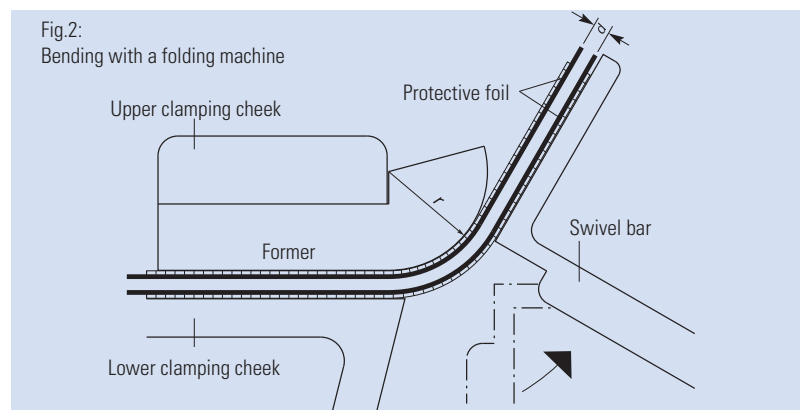
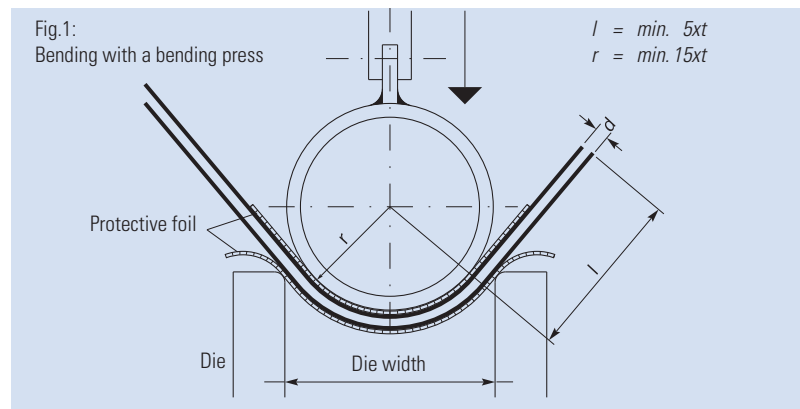
## Bending with a folding machine

(Fig. 2) When working with folding machines, the panel to be bent is clamped between two cheeks. The projecting edge is bent around the upper clamping cheek and former using the movable swivel bar. The bending radius is determined by interchangeable formers attached to the upper clamping cheek.

## Bending with a roll bending machine

DIBOND® can be bent with sheet metal roll bending machines – mainly with three and four-roll machines. Please make sure that the feeder does not exert too much pressure.

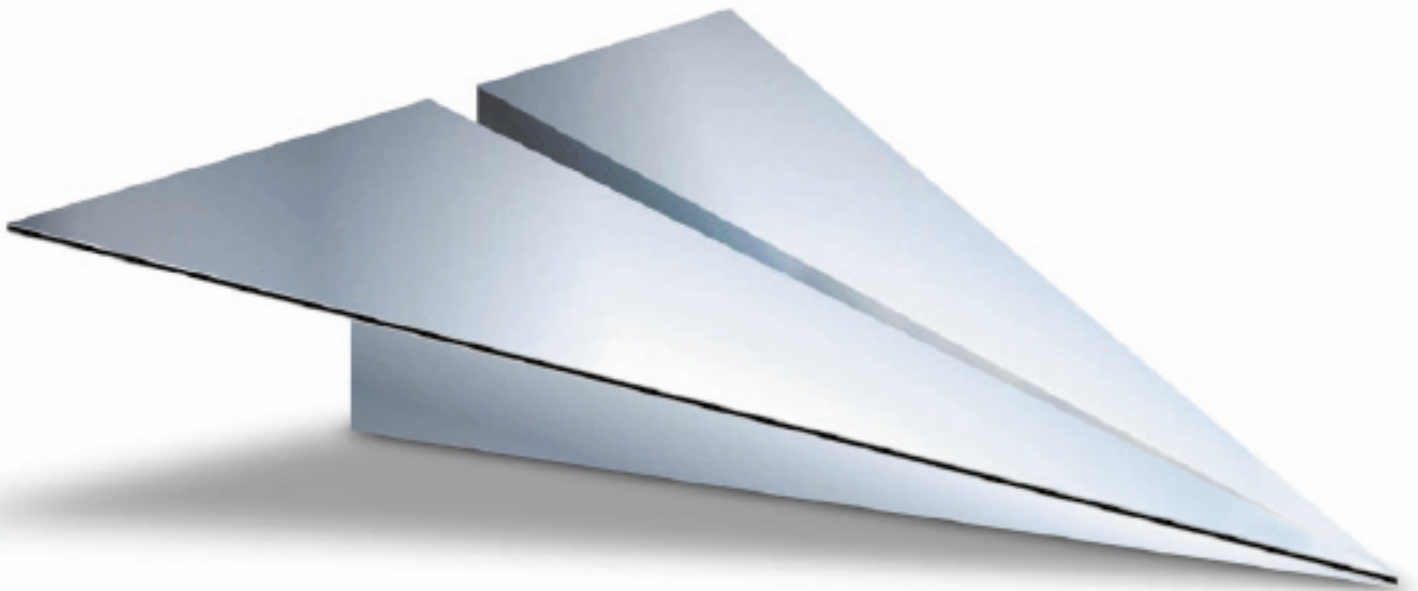
Bending rolls which are also used for bending other metals must be thoroughly cleaned from swarf before processing DIBOND®. We recommend ground rolls to avoid damaging the cover sheets.



# routing and folding technique



for individual  
**shaping**



and  
**design**



## Method

DIBOND® composite panels can be shaped by means of a simple processing technique. This procedure, the routing and folding technique, enables a variety of shapes and sizes to be manufactured.

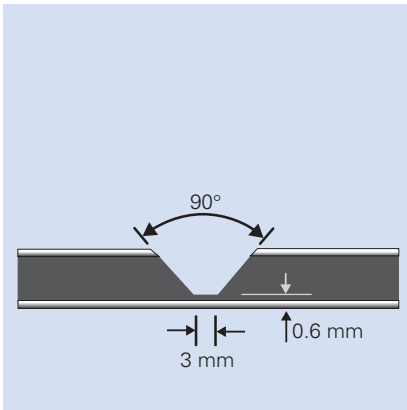
V-shaped or rectangular grooves are routed on the rear of the panels with disk or end milling cutters, whereby the aluminium cover sheet at the front and part of the polyethylene core are retained. The small thickness of the remaining material then allows folding by hand. A folding machine is not required. The groove shape determines the radius of the bend.

The grooves can be produced with both a panel saw with routing device for DIBOND®, on a CNC machining centre, with a panel routing machine or a hand routing machine. The routing and folding technique can be used for composite panels of all standard surfaces.

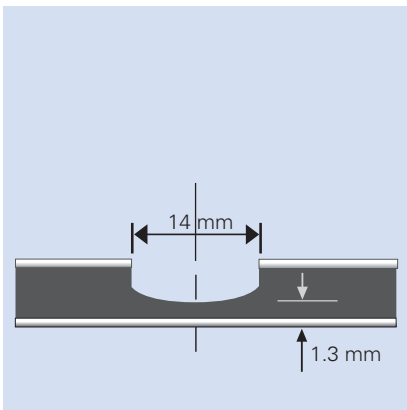
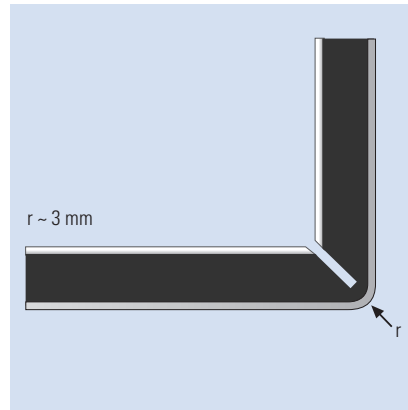
## Advantages

The convincing advantages of the routing and folding techniques are:

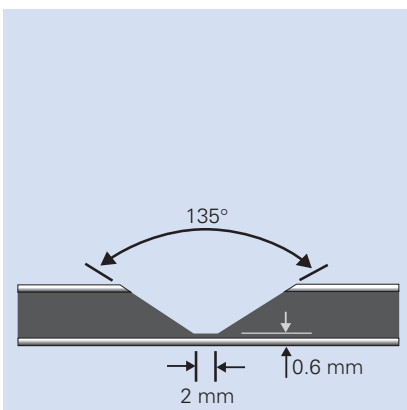
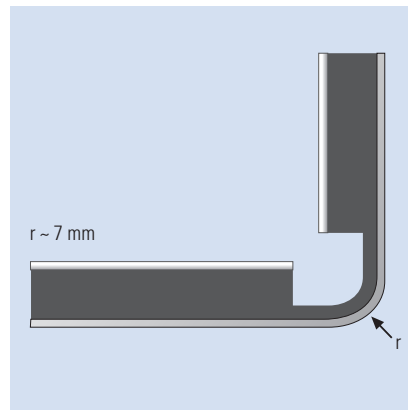
- Minimum investment
- Simple operating technique
- Folding needs not to be done in the workshop, it can be done directly on site; this means low transport and storage costs
- Low-cost manufacturing of preshaped decorative elements, advertising boards, large signboards
- Versatile formability
- Good economy
- Shapes are not restricted by machine dimensions



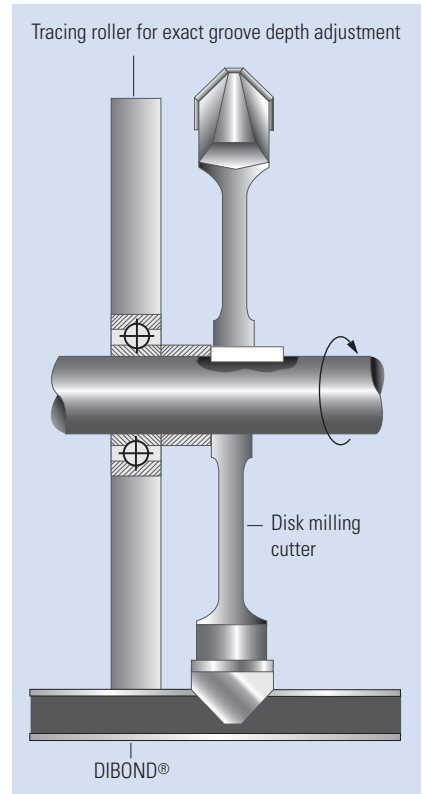
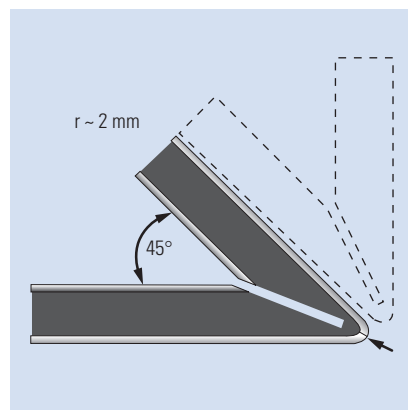
Groove (V-shaped) for edges up to 90°



Rectangular groove for edges up to 180° depending on panel thickness



Groove 135° (V-shaped) for edges up to 135°



# Tools and machinery for routing and folding technique

## Panel saws DIBOND® routing device (special accessory)

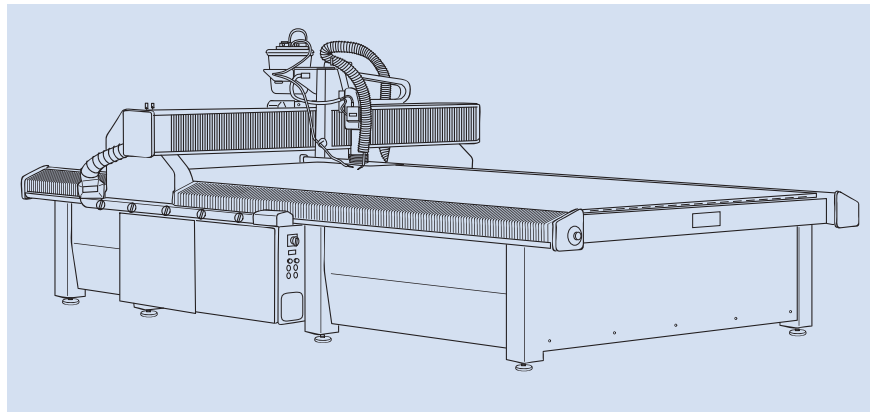
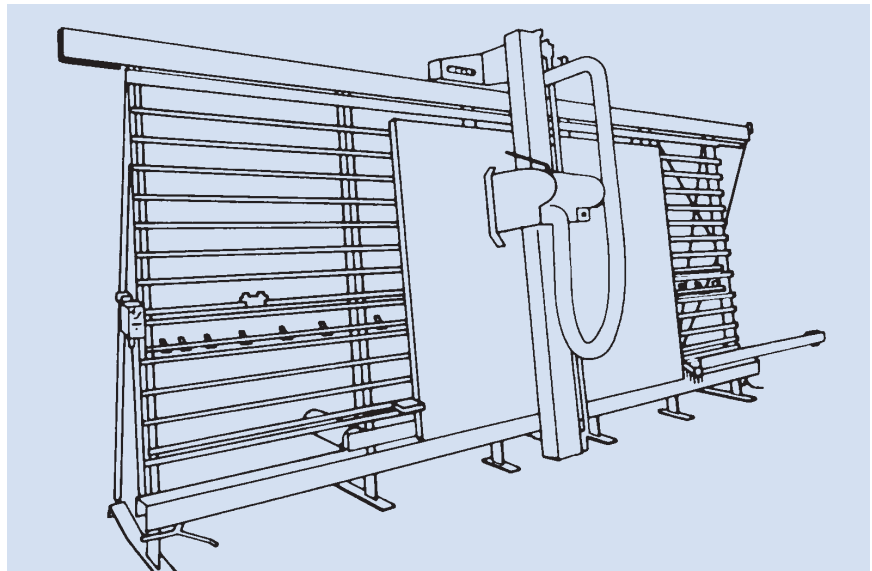
Holz-Her vertical panel saw  
PK 1255 ALUCOBOND®  
Code No. 278.6133

Striebig Vertical panel saw  
Standard II for composite panels

**Manufacturers / suppliers:**  
Reich Spezialmaschinen GmbH  
Plochinger Straße 65  
D-72622 Nürtingen  
Phone +4970 22702-0  
www.holzher.de

Striebig AG Maschinenbau  
Großmatte 26a  
CH-6014 Littau  
Phone +41 41 29 53 53  
www.striebig.ch

Other panel saws can subsequently be provided by the manufacturer with an additional routing device. Please ask for details.



## CNC machining centres

**Manufacturers / suppliers:**  
On request.

## Panel routing machine PF 1200 E-Plus DIBOND®

Fig. 1

Supplied with:

- Tracing roller to fit 3 mm
- Disk milling cutter for V-grooves 90°
- Adjustment template
- Transport box

### Supplier:

Competence-Center  
Hans Sauer GmbH  
Barkhausenweg 8  
D-22339 Hamburg  
Phone +49405389920  
Fax +49405381037  
E-Mail info@hans-sauer.de  
www.hans-sauer.de



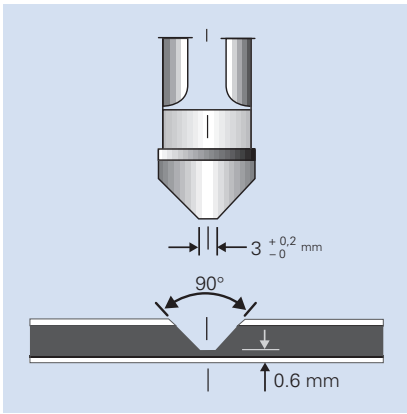
## Hand routing machines

Fig. 2

Commercially available hand routing machines with a minimum rating of 800 W are suitable.

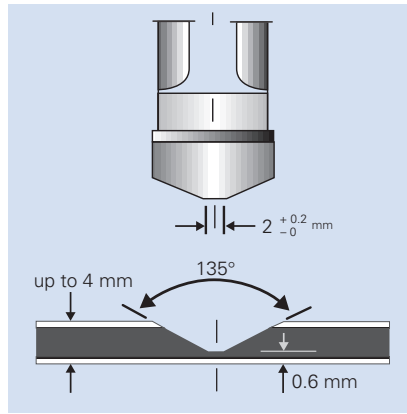
Collet chucks 8 mm dia.

## Carbide tipped disk milling cutters for panel saws



Disk milling cutter for V-grooves 90°

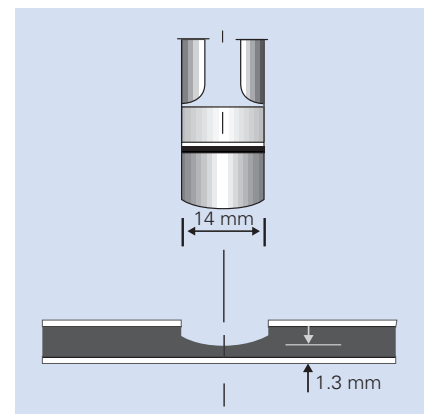
The diameters of tracing rollers and cutter disks are adjusted so as to leave a residual core thickness of 0.3 mm (V-groove) or 1 mm (rectangular groove). The dimensions given in the drawings show the cover panel thickness of 0.3 mm plus the corresponding residual core thickness.



Disk milling cutter for V-grooves 135°

Please address all enquiries relating to

- new machines with accessory parts for milling of DIBOND®
  - possible retrofitting of existing machines (stating machine type/No. and year of construction)
  - accessories such as cutter disks, tracing rollers, etc.
- directly to the manufacturer of the panel saws.

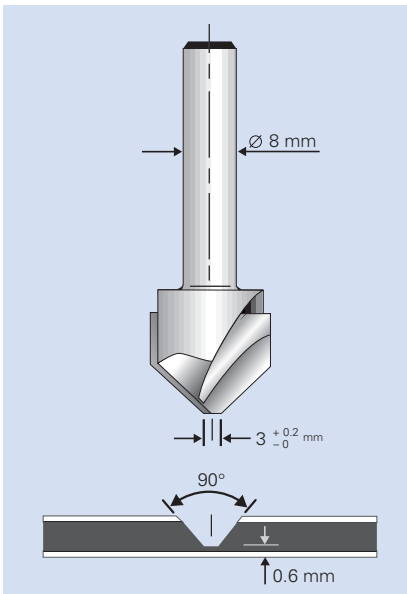


Disk milling cutter for rectangular grooves

### Important:

Please state the following in your enquiry or order "for processing DIBOND® composite panels".

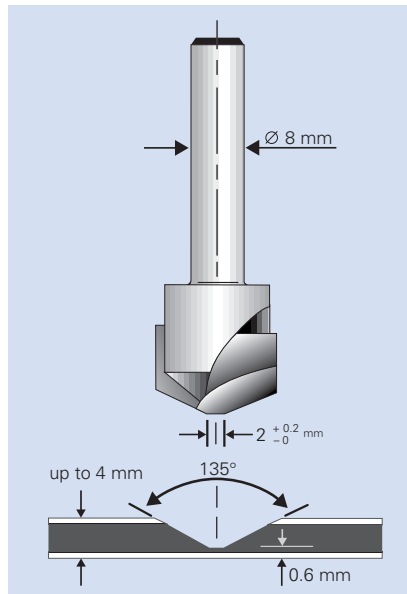
## Milling cutters with cylindrical shank for hand routing machines



End milling cutter for V-grooves 90°

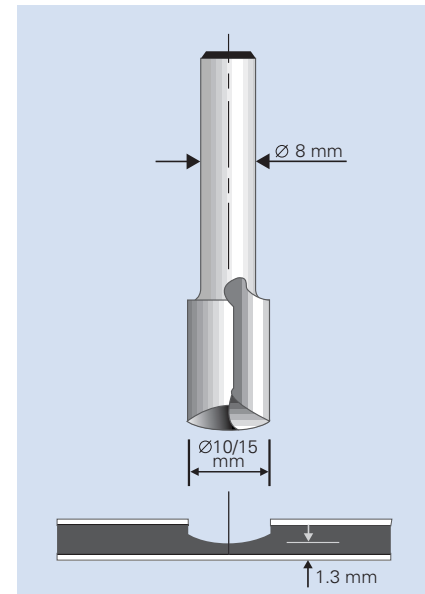
CT cutter No. 79803 (KWO)

HSS cutter No. 201 00 83 08 (MAWEX)



End milling cutter for V-grooves 135°

CT cutter No. 79804 (KWO)



End milling cutter for rectangular grooves

HSS cutter Ø 10 mm No. 79800 (KWO)

HSS cutter Ø 15 mm No. 79801 (KWO)

### Suppliers of profile cutters

KWO-Werkzeuge GmbH  
Aalener Straße 44  
D-73447 Oberkochen  
Phone +49 73 64 9 51 - 8  
www.kwo.de

MAWEX GmbH  
Maschinen und Werkzeuge

Postfach 65  
D-75417 Mühlacker  
Phone +49 70 41 2001  
www.mawex.de



DIBOND® can be joined by means of standard processes used in metal and plastics manufacturing.

If DIBOND® has to be joined to structural parts of metals other than aluminium, or if fasteners (e.g. bolts, screws) are to be used, the following material guidelines shall be observed:

Fasteners and structural parts made of aluminium, plastic or stainless steel should be suitable for the assembly with DIBOND®.

When using other materials please insert insulating washers etc. or apply protective coating to prevent corrosion.

For the outdoor use of DIBOND®, please consider its thermal expansion to avoid jamming or deformation.

The linear thermal expansion of DIBOND® is determined by the aluminium cover sheets.  
**At a temperature difference of 100 °C the thermal expansion is 2.4 mm/m.**

The minimum gap depends on the expected expansion of the panel.

Please refer to processing recommendations for rivets and bolts for additional measures to prevent jamming.

# jointing / fixing technique

# Riveting

ALUCOBOND® panels can be fastened together or joined to other materials with rivets common to aluminium constructions. For outdoor use and for use in areas of high humidity, aluminium blind rivets with stainless steel mandrils should be used to prevent ugly corrosive edges. When using aluminium blind rivets with steel mandrils, the mandril should drop out after riveting (detachable version). Countersunk rivets are suitable for indoor use only.

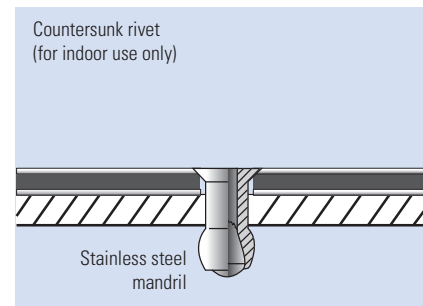
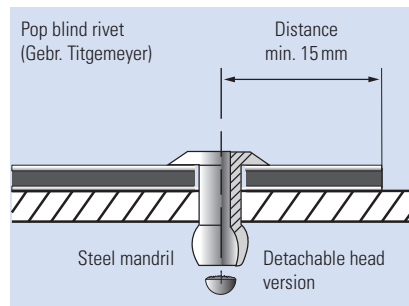
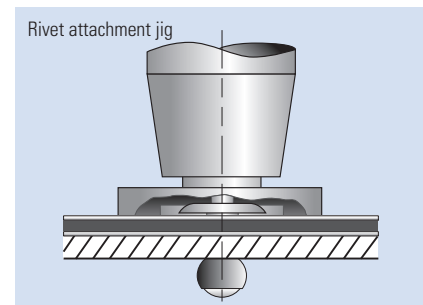
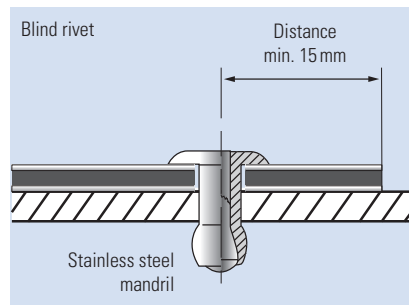
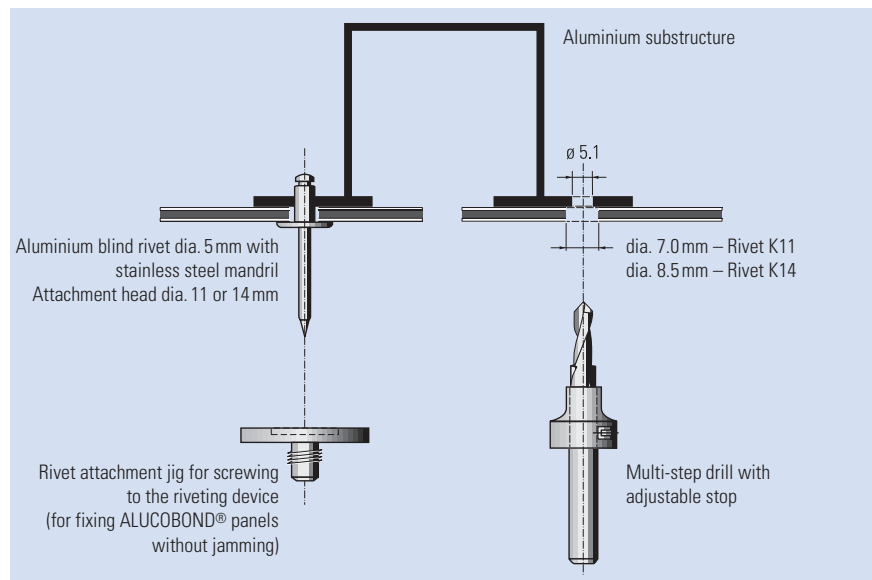
### For outdoor use please note:

- For outdoor use aluminium blind rivets with a 5 mm shaft diameter and an attachment head diameter of 11 or 14 mm are used.
- Please take the thermal expansion of the panel into account (2.4 mm/m/100°C). To avoid jamming, the hole in the panel must be large enough to allow for expansion.
- With the shaft of the rivet fitting closely to the edge of the hole, the attachment head must cover over 1 mm of the area surrounding the hole.
- Multi-step drills or sleeves having corresponding diameters are used for centrally drilling holes into the panel and the substructure and for centrally fitting the rivet.
- Rivet attachment jigs are used for fitting blind rivets without jamming allowing for a tolerance of 0.3 mm. Make sure to use rivet attachment jigs and rivets from the same manufacturer, as the height of the attachment head according to DIN 7337 may vary.
- The clamping thickness results from the thickness of the material to be riveted plus an additional value of 2 mm to ensure that the closing head is perfectly formed. In accordance with this clamping thickness the corresponding shaft length is determined in the tables provided by the rivet manufacturers. ( $L_{\min.} = 14 \text{ mm}$ )

### Important:

Since during riveting many factors may have an influence on the exact tolerance of the rivets of 0.3 mm (e.g. rivet head tolerance), we recommend that you make a test on a panel.

Please always remove the protective foil in the riveting area prior to riveting.



### Manufacturers/Suppliers:

#### Blind rivets

In the trade or from  
GESIPA-Blindniettechnik GmbH  
Postfach  
D-64534 Mörfelden-Walldorf  
Phone +49 61 05 40 02 – 0  
Fax +49 61 05 40 02 – 87  
www.gesipa.com

Gebr. Titgemeyer GmbH & Co KG  
Postfach 4309  
D-49033 Osnabrück  
Phone +49 5 41 58 22 – 0  
Fax +49 5 41 58 64 44  
www.titgemeyer.de

VVG GmbH & Co KG  
Postfach 1537  
D-58721 Fröndenberg / Ruhr  
Phone +49 23 73 76 50 0  
Fax +49 23 73 77 99 1  
www.vvg-befestigungstechnik.de

#### Blind rivets lacquered

MBE GmbH  
Postfach 2525  
D-58685 Menden  
Phone +49 23 73 17 430 – 0  
Fax +49 23 73 17 430 – 11  
www.mbe-gmbh.com

SFS intec GmbH & Co. KG  
In den Schwarzwiesen 2  
D-61440 Oberursel  
Phone +49 61 71 70 02 0  
Fax +49 61 71 70 02 46  
www.sfsintec.biz

#### Multi-step drills (not available ex stock)

KWO Werkzeuge GmbH  
Postfach 1363  
D-73444 Oberkochen  
Phone +49 73 64 95 18  
Fax +49 73 64 95 74 9  
www.kwo.de

#### Hole gauges

Please refer to blind rivets lacquered:  
MBE GmbH

#### Rivet attachment jigs

Appropriate rivet attachment jigs are available from the manufacturers or suppliers of rivets.



# Threaded fasteners

## Threaded fasteners for outdoor use

Please take the thermal expansion of the panel into account when using threaded fasteners outdoors. To avoid jamming, the hole diameter in the panel must allow for the expansion.

Fastening without jamming is possible with fascia screws made of stainless steel with sealing washer (Fig. 1). The screws must be suitable for the corresponding substructure (please note the information given by the manufacturer). The screws should be tightened with a torque wrench or screwdriver so that the sealing washer is placed on the panel for sealing the bore hole without exerting pressure onto the panel.

Multi-step drills or sleeves having corresponding diameters are used for centrically drilling holes into the panel and the substructure and for centrically fitting the rivet.

### Important:

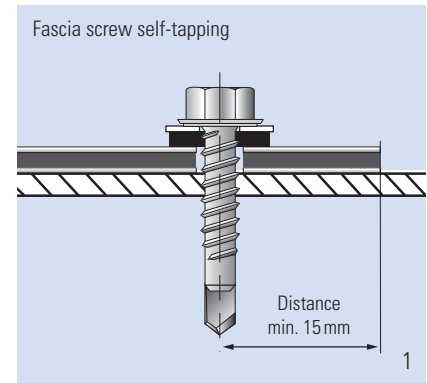
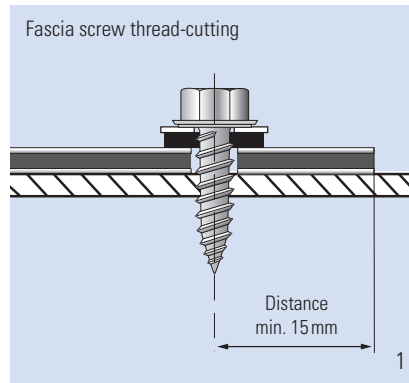
Make sure to remove protective foil prior to screwing.

## Threaded fasteners for indoor use

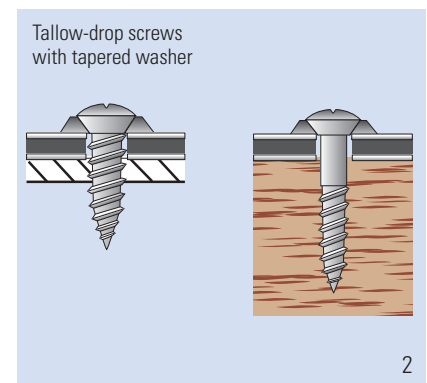
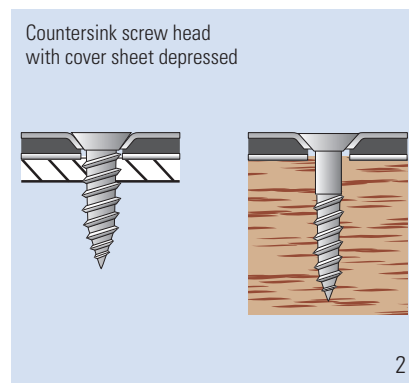
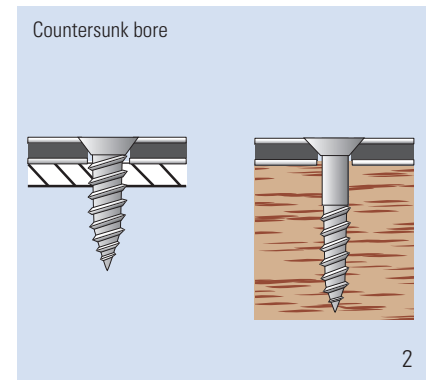
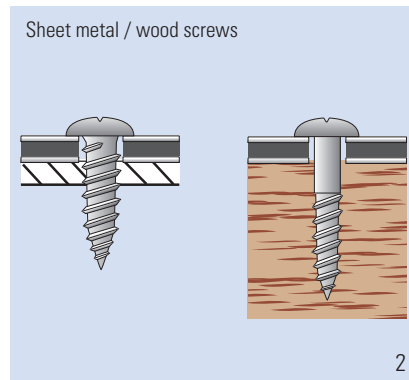
Screws for sheet metal and wood with different head-shapes are suitable for indoor use (Fig. 2). They do not normally allow for any panel expansion.

Countersunk screws can be inserted by the usual countersinking method or by depressing the aluminium surface into the panel. When depressing the aluminium surface, the hole diameter in the panel must be larger than the screw diameter.

Fascia screws for metal substructures



Screws for indoor use – no outdoor use



### Manufacturers/Suppliers:

#### Fascia screws

EJOT Baubefestigungen GmbH  
Postfach 11 35  
D-57323 Bad Laasphe  
Phone +49 27 52 9 08-0  
Fax +49 27 52 9 08-731  
www.ejot.de

#### Fascia screws, lacquered

MBE GmbH  
Postfach 2525  
D-58685 Menden  
Phone +49 23 73 17 430-0  
Fax +49 23 73 17 430-11  
www.mbe-gmbh.com

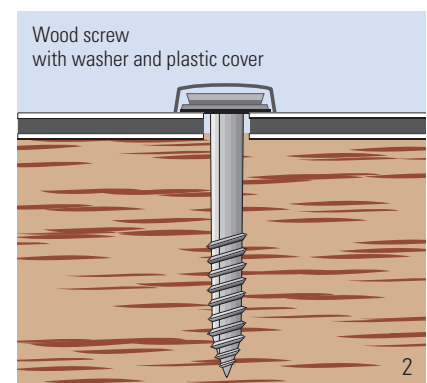
SFS intec GmbH & Co. KG  
In den Schwarzwiesen 2  
D-61440 Oberursel  
Phone +49 61 71 70 020  
Fax +49 61 71 70 0246  
www.sfsintec.biz

### Plastic covers for fascia screws

KU-FA Befestigungs GmbH  
Obere Espen 2  
D-57334 Bad Laasphe  
Phone +49 27 54 37 450  
Fax +49 27 54 81 19

### Multi-step drills (not available ex stock)

KWO Werkzeuge GmbH  
Postfach 1363  
D-73444 Oberkochen  
Phone +49 73 64 95 18  
Fax +49 73 64 95 749  
www.kwo.de



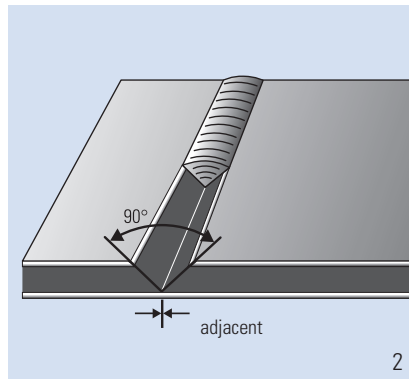
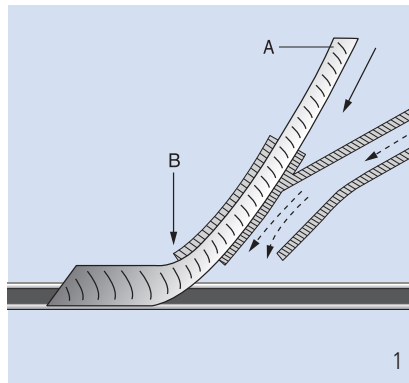
## Hot-air welding

Hot-air welding has proved to be useful for joining thermoplastic plastics and for welding DIBOND®. The plastic core and the plastic welding rod are heated and welded with electrical hot-air welding sets. The following conditions are essential for good results:

- Well prepared welding joint
- Good quality welding rod
- Clean hot air
- Correct temperature
- Correct contact pressure
- Welding speed

### Welding with rapid welding nozzle

(Fig. 1) The rapid welding nozzle method ensures steady heating of the core material and the welding rod and thus results in a better welding quality. Rod A is inserted manually through nozzle tongue B. By applying constant pressure to the nozzle tongue, the rod is pressed into the joint.



### Preparation of welding joint

For butt-welding, the edges of the DIBOND® panels must be chamfered (Fig. 2).

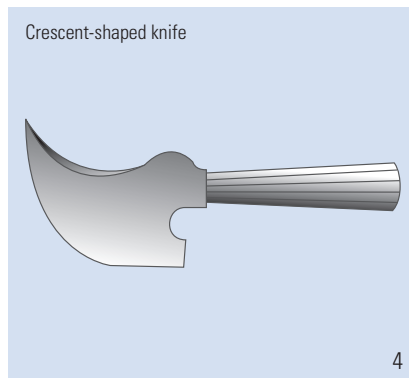
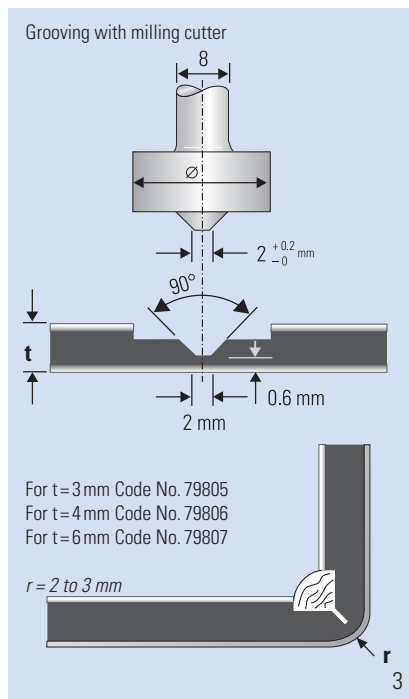
Before folding and welding DIBOND® panels, grooves have to be routed into the panels using corresponding milling cutters (Fig. 3).

As the plastic core oxidizes relatively quickly when exposed to air, welding should be completed within 24 hours after chamfering.

### Welding rod

**Please use the following quality:**  
**Polyethylene, soft, Type: 1800-h**  
**Colour: black, diameter: 3-4 mm**

The outer layer (oxide layer) of the welding rod should be removed with emery cloth immediately before welding. Please chamfer the starting end of the rod to approx. 45°.



### Temperature

The following air temperature is required for hot-air welding: 265°C +/- 5°C

The temperature must be continuously adjustable and is measured with a mercury thermometer or bimetal measuring unit 5 mm from the nozzle point. To measure the temperature, please take off the rapid welding nozzle.

### Contact Pressure

The required pressure to the nozzle shoe (rapid welding nozzle) should be approx. 3 kp.

### Hot-air welding sets

We recommend using the Leister hot-air welding set, Type DIODE PID, in connection with the ventilator, Type MINOR.

### Skimming the welding seam

A scraper blade or knife is used at a very flat angle to shave the welding seam as soon as it has cooled down. For visible welding joints, the seam on butt and corner welds is removed using a crescent-shaped knife (Fig. 4).

### Manufacturers/Suppliers:

#### Hot-air welding sets, temperature measuring devices, crescent-shaped knives and welding rod

Heißlufttechnik GmbH & Co  
 Leister Vertrieb  
 Dültgentaler Str. 11  
 D-42719 Solingen  
 Phone +49 2123 8260-0  
 Fax +49 2123 12324  
 www.heisslufttechnik.de

Herz GmbH  
 Leister-Vertrieb  
 Biberweg 1  
 D-56566 Neuwied  
 Phone +49 2622 81086  
 Fax +49 2622 81080  
 www.herz-gmbh.com

#### Welding rod

Ketterer + Liebherr GmbH & Co KG  
 Gündlinger Str. 20  
 D-79111 Freiburg  
 Phone +49 761 47814-0  
 Fax +49 761 47814-90  
 www.ketterer-liebherr.de

#### Milling cutters (not available ex stock)

KWO Werkzeuge GmbH  
 Postfach 1363  
 D-73444 Oberkochen  
 Phone +49 7364 9518  
 Fax +49 7364 95749  
 www.kwo.de

# Glueing

## Tapes / Velcro tapes

Double-sided tapes (such as the 3M-VHB high capacity jointing systems) can be used for the above applications with low tensile or transversal strength requirements. Velcro tapes are available for detachable joints, for example SCOTCHMATE or tapes marketed under the Dual Lock trademark.

Both products are also available from  
 3M Deutschland GmbH  
 Carl-Schurz-Straße 1  
 D-41460 Neuss  
 Phone +40 2131 14-0  
 Fax +49 2131 14 34 70  
[www.3m.com](http://www.3m.com)

## Adhesive sealing compounds

For high-strength and elastic connections we recommend the following one-component adhesive sealing compound:

Sika Bond-T2  
 (polyurethane base)  
 Sika Chemie GmbH  
 Stuttgarter Straße 117  
 D-72574 Bad Urach  
 Phone +49 71 25 940-0  
 Fax +49 71 25 940-7 10  
[www.sika.de](http://www.sika.de)

For outdoor use, this adhesive can be used for fastening parts of minor static importance.

## Metal adhesives / Universal adhesives

For indoor use such as trade fair/exhibition stand structures and machines, most metal or universal adhesives are suitable.

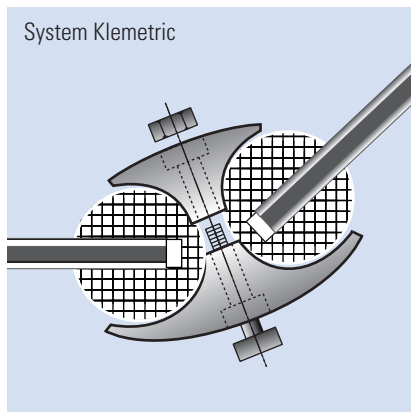
### Important:

Please observe the manufacturer's instructions regarding the application and use of adhesives / tapes.

Adhesives and sealing compounds do not adhere to the DIBOND® plastic core (cut edges).

Laminating of DIBOND® panels to other materials may result in deformation of the laminates (differing expansion / bimetal effect).

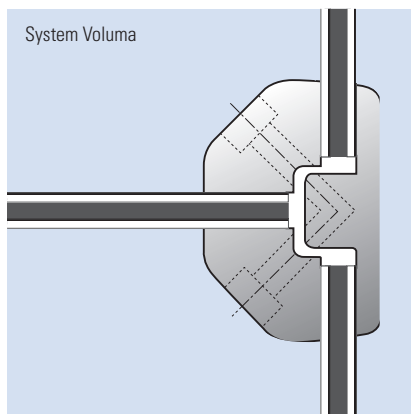
# Clamp Connections



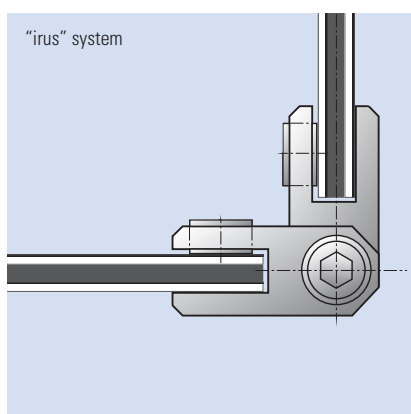
Clamp connections incorporating aluminium or plastics are particularly suitable for DIBOND®. They generally consist of two parts with the clamping effect achieved by bolting. Various designs of clamping elements are used for display and store fitting purposes (no outdoor use).

### Suppliers:

"Klemetric" system:  
 KlemProducts®  
 Gesellschaft für Werbemittel mbH  
 Talangerstrasse 3a  
 D-82152 Krailing/München  
 Phone +49 89 857 72 80  
 Fax +49 89 895 83 48  
[www.klemproducts.de](http://www.klemproducts.de)



"Voluma" system:  
 MERO Raumstruktur GmbH & Co.KG  
 Ausstellungssysteme  
 Postfach 6169  
 D-97064 Würzburg  
 Phone +49 931 66 70-571  
 Fax +49 931 66 70-189  
[www.mero.de](http://www.mero.de)

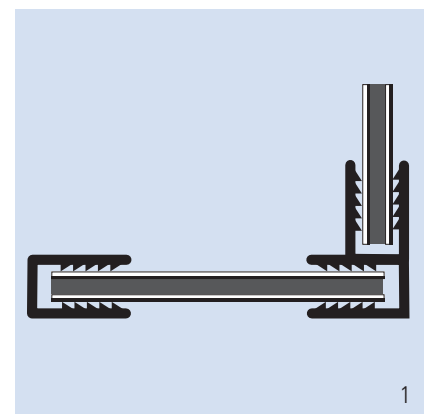
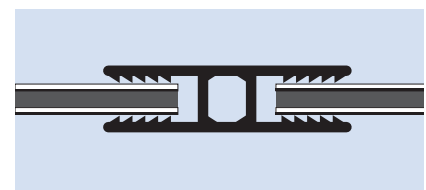
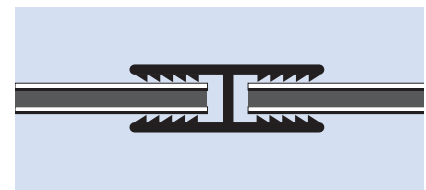


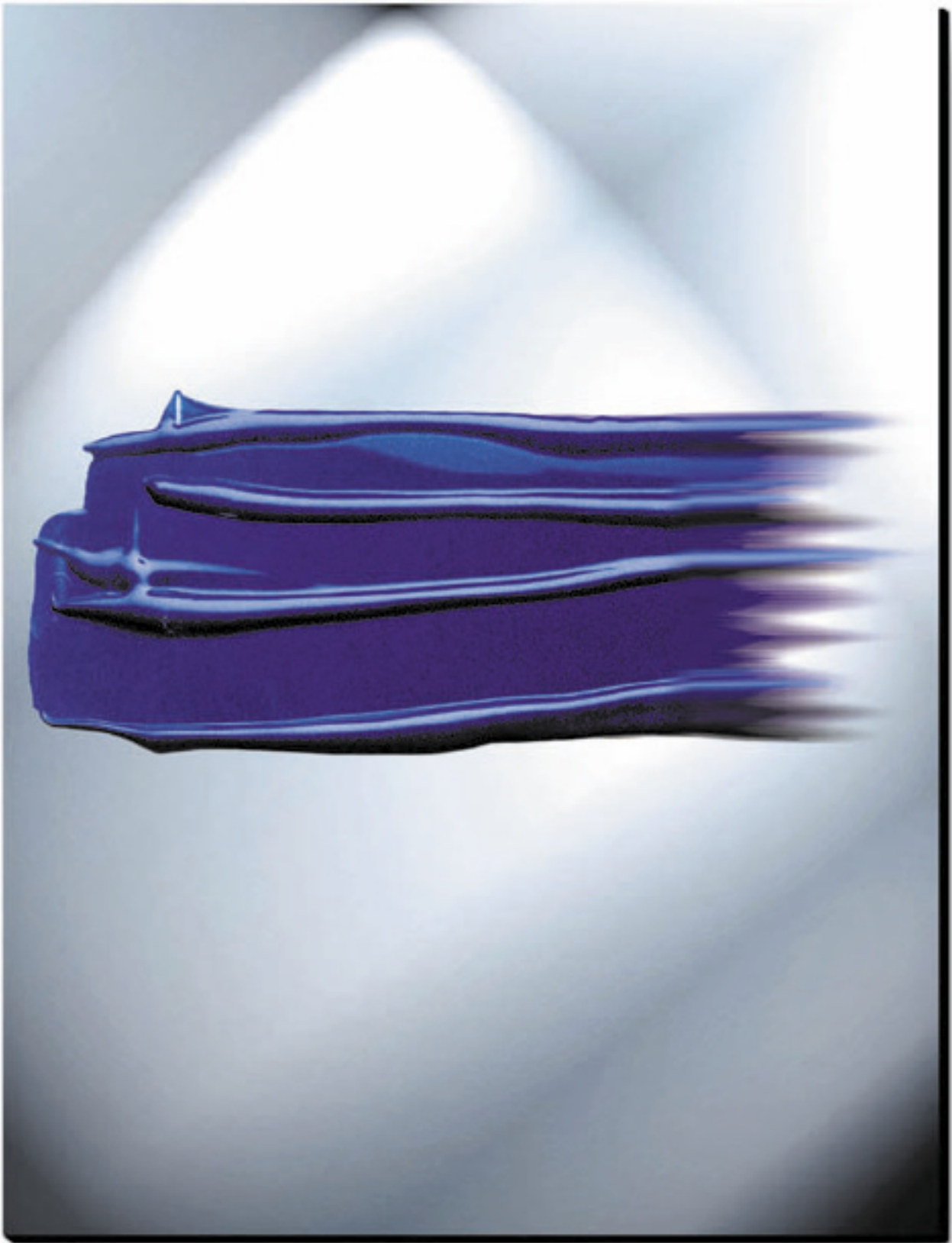
"irus" system:  
 Irus-System  
 Kirchstrasse 15  
 D-78176 Blumberg  
 Phone +49 77 02 36 85  
 Fax +49 77 02 90 45  
[www.irus-system.com](http://www.irus-system.com)

Any suitable connection or shock-resistant frame can easily be built with aluminium sections.

The inevitable tolerances signify different retention forces. A uniform and solid fit of the sections is obtained by pressing the section sides together prior to inserting the panels.

Butt joint, corner and edge sections are available for panels of 3, 4 and 6 mm (Fig. 3). Please ask for our stock list.





## Overlacquering (spray painting) of stove-lacquered DIBOND® surfaces of polyester lacquer quality

The aluminium treatment and priming carried out at the factory in a continuous process with continuous quality control is advantageous to the overlacquering of the stove-lacquered DIBOND® surface.

### DIBOND® overlacquering procedure

- Pre-cleaning of the panels using methylated spirit
- Grinding the surfaces with wet abrasive paper (grain size 360)
- Removing grinding dust with a lintfree cloth moistened with spirit
- For the top coat, please follow the instructions of the top coat suppliers

Any information given with regard to overlacquering does not apply to DIBOND® SR panels.

#### Please note:

- **The maximum permissible temperature of the material (DIBOND® panels) must not exceed 70°C when applying fast-drying methods. During the drying process at high temperatures the DIBOND® panels must be positioned with great care to prevent deformation.**
- DIBOND® cut edges should not be in contact with organic solvents for a prolonged period of time to avoid weakening the bond.
- DIBOND® panels lacquered or overlacquered at a later stage should not be bent or folded. The lacquer in the bends or folds may be damaged due to the low elasticity of the top coat.
- Only inferior lacquer adhesion can be achieved on core material exposed at cut edges.
- Please make a test prior to overlacquering and follow the instructions of the lacquer suppliers.

## Lacquering of mill-finish DIBOND® surfaces

The composition of lacquer coating for DIBOND® is basically the same as that for mill finish aluminium surfaces. However, it is advisable to be familiar with coating systems and materials as well as with working methods for aluminium.

#### Additional information

- For general information on painting, lacquering and coating of aluminium we recommend the leaflets on "02, 03, 012, 015 surfaces" issued by

GDA  
Am Bonneshof 5  
D-40474 Düsseldorf  
www.aluinfo.de

# Surface treatment / Printing

## Screen printing on DIBOND® surfaces of polyester lacquer quality

Stove-lacquered DIBOND® panels are well suited for screen printing.

Prior to printing make sure to remove the protective foil and clean the surface using ethyl alcohol or isopropyl alcohol and a fluff-free cloth. The alcohol must not be applied directly to the panel. If methylated spirit is used it could etch the lacquer coat. Between cleaning and printing make sure to allow approx. 10 - 15 minutes for the alcohol to evaporate.

Practice has shown that even within a given specification of stove lacquer paint and printing ink there may be variances, and in view of this it is recommended that in the case of each particular application the adhesion properties of the selected printing ink should be tested.

In order to achieve certain surface characteristics or to improve mechanical or chemical resistance it may be useful to laminate the print.

Please follow the instructions of the printing ink suppliers.

The above information does not apply to DIBOND® SR panels.

## Digital printing

In extensive tests DIBOND® has proved suitable for direct digital printing.

All DIBOND® standard colours can be printed. After printing with solvent inks, folding and bending of DIBOND® is still possible.

Prior to printing make sure to remove the protective foil and clean the surface using ethyl alcohol or isopropyl alcohol and a fluff-free cloth. The alcohol must not be applied directly to the panel. If methylated spirit is used it could etch the lacquer coat. Between cleaning and printing make sure to allow approx. 10 - 15 minutes for the alcohol to evaporate.

## Laminating / foto mounting

DIBOND® can be laminated (manually or by machine) with cast or calendered self-adhesive foils. The varnish does not come off when changing the foils.

Foto mounting is either done with adhesive films or wet with dispersion adhesive. The panels must be clean and free of dust and grease prior to applying foils or fotos.



Thorough and regular cleaning not only guarantees the aesthetic and representative finish of the stove-lacquered surface but also maintains its quality by removing dirt and aggressive deposits.

Cleaning intervals depend on local environmental conditions and the amount of soiling.

Surfaces should be cleaned either manually or with a suitable cleaning device from top to bottom.

Please do not use any abrasive pads on lacquered surfaces:

We recommend to try the cleaning agent on an unobtrusive part before-hand to make sure that the surface will not be affected.

**Do not clean hot surfaces (>40 °C) as the quick drying process may cause blemishes.**

# cleaning and maintenance of stove-lacquered surfaces

## Suitable cleaning agents

A list of neutral cleaning agents for organically coated or anodized aluminium components is available from

GDA  
Am Bonneshof 5  
D-40474 Düsseldorf  
Phone +49 2 11 47 96-200  
Fax +49 2 11 47 96-410  
[www.aluinfo.de](http://www.aluinfo.de)

Please respect the manufacturer's cleaning and safety instructions!

For further information such as approved and recommended cleaning companies, please contact

Gütegemeinschaft für die Reinigung von Metallfassaden e.V. (GRM)  
(= Association for quality control of metal facade cleaning agents)

Irrerstrasse 17 - 19  
D-90403 Nürnberg  
Phone +49 9 11 20 44 41  
Fax +49 9 11 22 67 55  
[www.grm-online.de](http://www.grm-online.de)

## Non-suitable cleaning agents

Please do not use any powerful alkaline cleaning agents such as potassium hydroxide, sodium carbonate or caustic soda, or any powerful acidic products or heavily abrasive scouring agents such as Vim, Ajax, Imi or lacquer-dissolving cleaning agents.

## Technical Data Sheet

<b>Panel Thickness:</b>		<b>2 mm</b>	<b>3 mm</b>	<b>4 mm</b>	<b>6 mm</b>
Thickness of Aluminium Layers	[mm]	0.30			
Weight	[kg/m <sup>2</sup> ]	2.90	3.80	4.75	6.60
<b>Technical Properties :</b>					
Section modulus	W [cm <sup>3</sup> /m]	0.51	0.81	1.11	1.71
Rigidity	E-I [kNcm <sup>2</sup> /m]	345	865	1620	3840
Alloy/Temper of Aluminium Layers		EN AW-5005A (AIMg1), H42/H44, acc. EN 573-3			
Modulus of Elasticity	[N/mm <sup>2</sup> ]	70,000			
Tensile Strength of Aluminium	[N/mm <sup>2</sup> ]	R <sub>m</sub> : 145 - 185			
0.2 % Proof Stress	[N/mm <sup>2</sup> ]	R <sub>p0.2</sub> : 110 - 175			
Elongation		A <sub>50</sub> ≥ 3%			
Linear Thermal Expansion		2.4 mm/m at 100°C temperature difference			
<b>Core :</b>					
Polyethylene, Type LDPE	[g/cm <sup>3</sup> ]	0.92			
<b>Surface :</b>					
Lacquering		Modified Polyester Laccquer System			
Gloss (initial value)		30 - 85 %			
Pencil Hardness		H			
<b>Acoustical Properties :</b>					
Sound Absorption Factor	$\alpha_s$	0.05			
Sound Transmission Loss	R <sub>w</sub> [dB]	23	24	25	26
Loss Factor	d	0.0048	0.0057	0.0072	0.0102
<b>Thermal Properties :</b>					
Thermal Resistance	1/Λ [m <sup>2</sup> K/W]	0.0047	0.0080	0.0113	0.0180
Heat Transition Coefficient	k [W/m <sup>2</sup> K]	5.72	5.61	5.50	5.30
Temperature Resistance		from -50 °C to +80 °C			



## Remarks

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## **Information**

(Please ask for our additional documentation on)

DIBOND® Information Folder

DIBOND® The Colours

DIBOND® Documentation File

DIBOND® CD-ROM with all information

## **Samples**

Original samples with standard surface