KÖMA ALU®

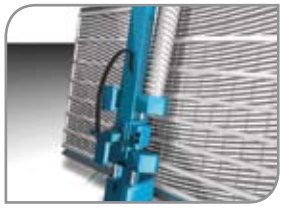
refine. imprint. laminate.

Processing guidelines for composite aluminium panels

KÖMMERLING®

Business Unit Sheets

Cutting



Sawing, page 5

With vertical panel saws, circular saws or jig saws

Shearing, page 7

With gate shears (slight deflection of the upper cover plate), padding holding-down devices

Punching / cutting out

Punching, page 7

With strip steel knives on a cutting plotter for 2/3 mm panels (slight deflection of the upper cover plate)

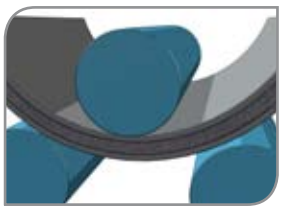
Contour cutting, page 7

With jet cutting machines, CNC processing centres and jig saws

Forming

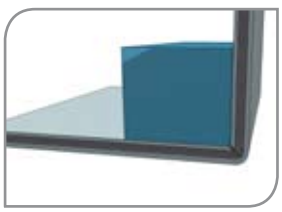
Bending, page 8

With folding machines or bending presses, min. interior bend radius r = 15 x t (t = panel thickness), retraction larger than with full sheet metal



Roll bending, page 8

With roll bending machines using perfectly polished rollers

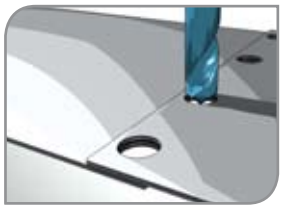


Edge bending (routing and folding technique), page 9

By hand after routing a V-groove on the reverse side using a panel saw with milling attachment, a CNC processing centre or a panel milling machine

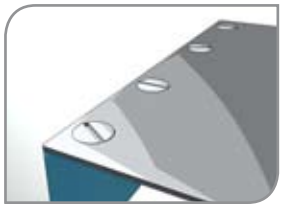
Joining

Riveting, page 12
With conventional machines and rivets or blind rivets



Drilling bolt holes, page 13

With drills for aluminium and plastic panels (for larger boreholes, drills with centring tip should be used)



Screwing, page 14

With conventional stainless sheet metal, metal and wood screws

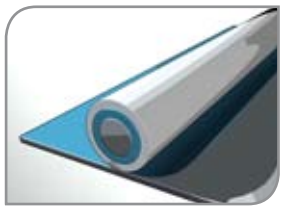
Welding, page 16

Welding PE core material with a hot-air welder and polyethylene welding wire

Bonding, page 18

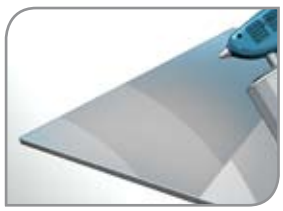
With commercial metal bonding agents for aluminium (no adhesion on the front plastic edges; with commercial double-sided adhesive tapes)

Surface treatments



Laminating / photo mounting, page 21

Laminating with self adhesive foils; photo mounting with adhesive films or wet with dispersion bonding agents



Painting, page 20

Topcoating polyester lacquer surfaces with the proper lacquer quality

KÖMMERLING®
Business Unit Sheets

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Transportation, storage and handling

KömaAlu is available in many colours and varieties. The panels are delivered with a protective foil that prevents damages to the decorative surfaces during transportation, storage and handling. Nevertheless, the composite panels need to be handled with care. Please keep the following suggestions in mind.

. When transporting, loading and unloading, please handle the pallets and products carefully.

. Check the pallets and panels for transportation damage or any damage caused by dampness. Any claims should first be confirmed by the carrier in the letter of consignment before being declared.

. KömaAlu panels that have become wet must be dried before being stored. This prevents possible spotting or corrosion.

. Protect the pallets against rain, splash water and humidity during storage. Condensation should also be avoided. This can develop when cold panels are transported into warm environments, for example.

. KömaAlu panels should be stacked on the ground, with no more than six pallets of the same format on top of one another. Heavier pallets should be placed at the bottom.

. Individual panels must be picked up by two people on the long side – not pulled out. To pick up the panels, all four corners should be grasped.

. Wear gloves when handling the panels. This will prevent the formation of spots or discolouration.

With proper handling, the KömaAlu protective foil ensures that panels are not damaged during the overall progression from transportation to installation. For this reason, the protective foil should be treated with utmost care.

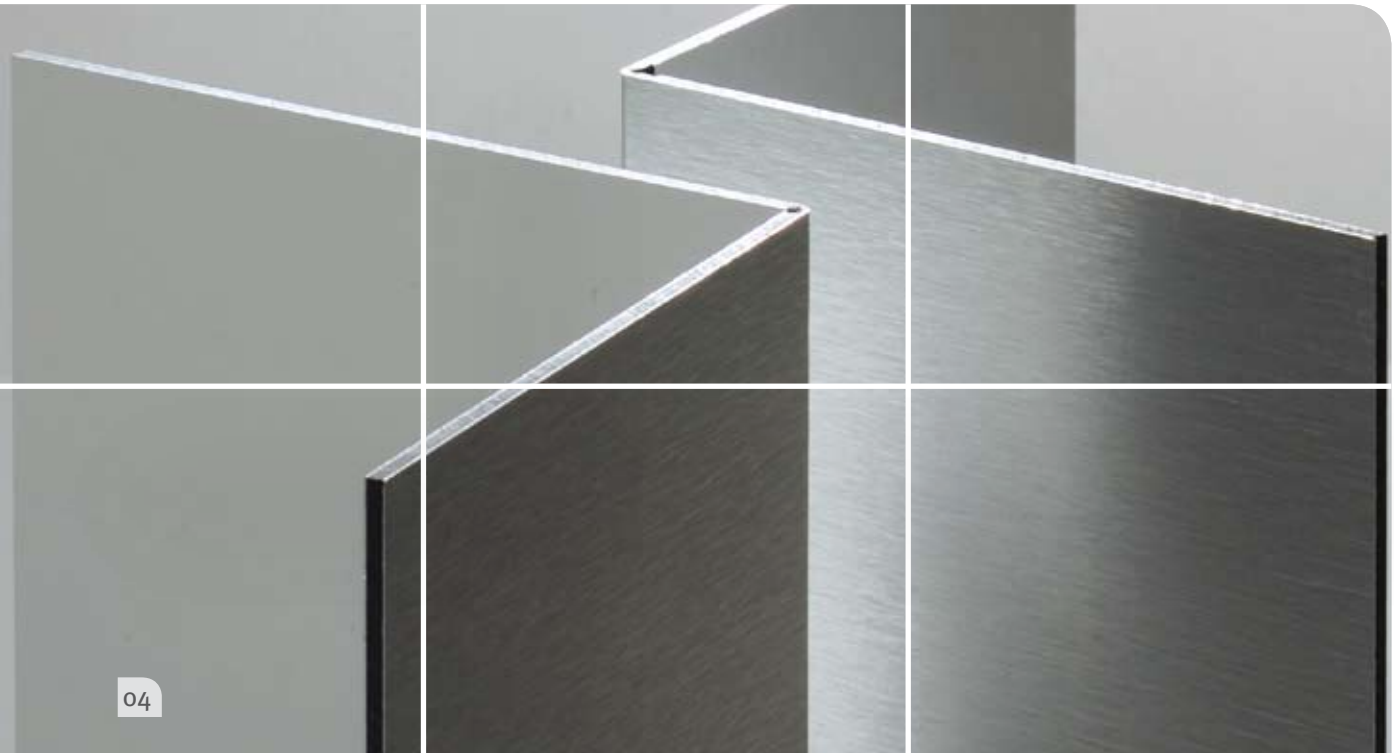
. KömaAlu panels should be stored **no longer than six months**, if possible.

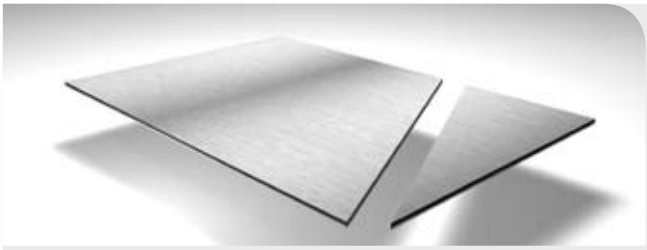
. For longer storage periods: after the protective foil has been removed, the panels should first be wiped with a lint-free cloth that has been moistened with isopropyl alcohol.

. Avoid strong fluctuations in temperature.

. The protective foil is not UV resistant. Therefore, it should always be removed before external use of the panel.

. Make sure that the protective foil does not become partially detached. This could lead to the accumulation of dirt over the course of time.





Machining and non-machining processing methods

Sawing

High-speed band and circular saws with cutting speeds of up 3000 m/min are recommended. Depending on the panel thickness, saw blades with a 5 to 10 mm tooth pitch should be used. For circular saws, a tooth geometry with alternating flat /trapeze teeth and carbide tips is normally recommended to ensure that edges are free of burrs.

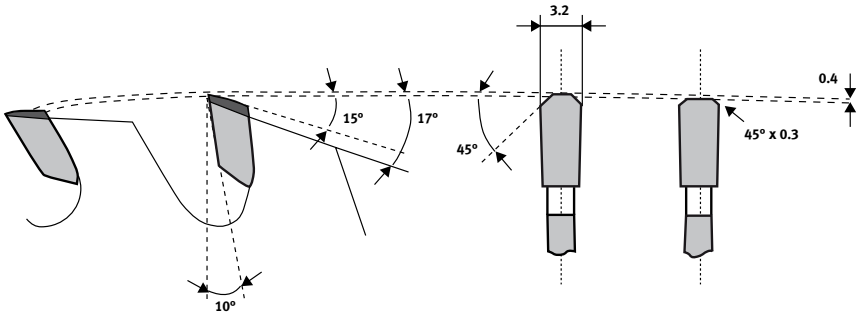
Adjust the saw blade diameter (Ø) and number of teeth for the material to be processed as well as the type of saw and its speed. To ensure clean cutting edges without any chips, the panel material should always be clamped to ensure that it is vibration-free.

This particularly applies for thin panel thicknesses of 2 to 4 mm, both for individual panels and composites. When using jig saws, make sure the saw blades are sharp and are not straight-set (plastic, PVC). Manual feeding must be carried out slowly and evenly.

In special cases, it is advisable to use the consulting service provided by the saw blade manufacturers. Please consult the table on page 23 for information regarding cutting edge geometries and machining procedures. Naturally, the respective machine manufacturer's specifications should always be followed!

Ledermann GmbH & Co. KG
Willi-Ledermann-Strasse 1
72160 Horb am Neckar
Germany
Tel.: +49 (0)7451 930
Fax: +49 (0)7451 93270
E-mail: info@leuco.com
www.leuco.com

Jigsaw blades
for wood and plastic,
e.g. T101 B (Bosch),
tooth thickness 2.5 mm
for fine cuts



Routing

When routing, pay close attention that the tools are slightly sanded in a manner suitable for plastics and that they are able to accommodate sufficient chipping volume. Working with a higher feed rate is advantageous, as well as deeper cutting depths and cutting speeds that are not too high. KömaAlu also ensures that 3-D routing can be carried out without any problems. For this procedure, equip the plotter system with a special ball-end cutter and link it to the appropriate computer software.

For optimal cuts, the following conditions should be maintained:

. High-speed steel (HSS)
Cutting speed max. 3000 m/min
Feed rate max. 25 m/min

. Carbide tip cutters
Cutting speed max. 5000 m/min
Feed rate max. 30 m/min

Supplier/manufacturer:

Werner Albrecht
BEWE-Präzisionswerkzeuge
Im Wiesental 7
75446 Wiernsheim
Germany
Tel.: +49 (0)7044 9158380
Fax: +49 (0)7044 91583838
E-mail: info@bewe-online.com
www.bewe-online.com

The following milling cutters are suitable for contour cutting with KömaAlu panels:

HSS milling cutter, shaft Ø 8 mm
. Dimensions 5 mm x 12 mm x 60 mm, item no. 100 56 0008
. Dimensions 3 mm x 12 mm x 60 mm, item no. 100 36 0008

Carbide tip milling cutters, series F 113

Gienger Industrie Service
Weimarstrasse 15
78532 Tuttlingen
Germany
Tel.: +49 (0)7461 162020
Fax: +49 (0)7461 162021
E-mail: info@gis-tec.de
www.gis-tec.de

Drilling

You can drill KömaAlu panels with twist drills that are normally used for metallic materials (DIN 1412, twist drill) featuring a helix angle of approximately 30°. The point angle can be as high as 110°; the relief grinding angle should not fall below 12°–16°. The cutting speed and feed rate depend on the drilling depth. For larger component thicknesses, these should be set lower. For boreholes above a diameter of 20 mm, use a two-flute cutter with guide pins; for boreholes above a diameter of 40 mm, it's best to use a circle cutter (e.g. quick-helix drill).

For optimal boreholes, the following conditions should be maintained:

. High-speed steel (HSS)
Tool geometry:
Point angle: 100°–140°

Drilling without burrs is possible using a spot facing cutter with centring tip.

Helix angle: 30°– 45°, e.g. Extreme 2TM HSS-G
Metal drill DIN 338 from De WALT in Idstein, Germany

Countersinking

Core drills and shell drills for aluminium should be used for opening pre-drilled boreholes. Countersunk boreholes are rounder than those produced with twist drills. Countersinks for aluminium are suitable for countersinking flat head screws in KömaAlu panels. In contrast, head and shank counter bores for aluminium are mainly used for countersinking screw heads or for drilling holes through the panel.

Contour cutting

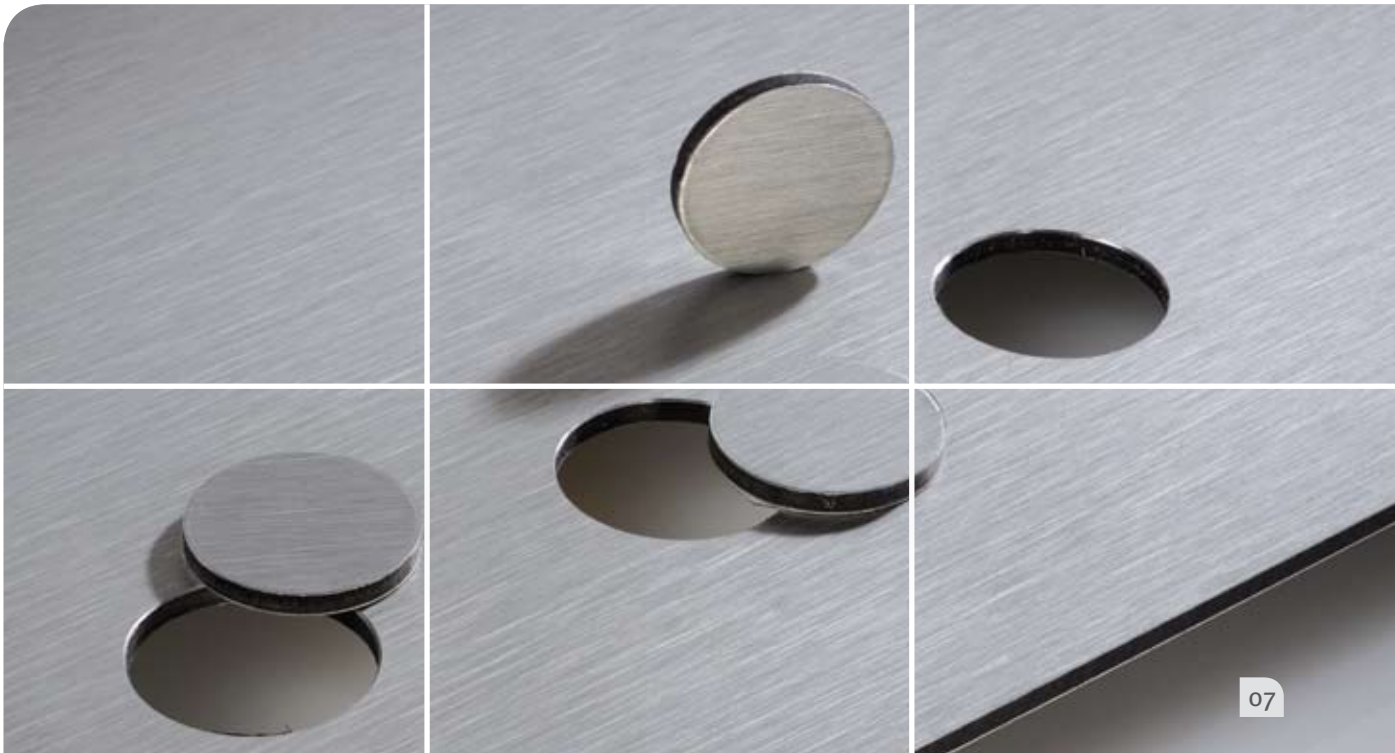
For contour cutting, you can use jig saws, mechanical fret saws, copy milling, CNC machines and water jet cutting equipment. For water jet cutting, you must cut abrasively by adding an abrasive agent (e.g. quartz sand). Pre-drilling of the panel surface is necessary when starting the cut, as it is not possible to drill through the panel with the water jet.

Shearing

Plate shears are highly suitable for cutting KömaAlu panels. Please note that shearing will cause a slight deflection of the cut edge on the impact side. Protection pads attached to the holding-down device of the plate shears should be used to avoid any surface damage.

Punching

You can process KömaAlu of all panel thicknesses with plate punching machines. For a clean cut, please use sharp tools and a minimal cutting clearance. Punching will also cause a slight deflection of the cut edge to occur on the impact side.



Bending

KömaAlu panels can be shaped into different forms using the conventional methods of metal and plastics processing. However, the multilayered structure of the material results in some special attributes that you must take into consideration.

To calculate the minimum bending radius:
r = 15 x t (t = panel thickness)

You are likely aware of the spring-back effect when bending sheet metal. This is slightly greater for KömaAlu composite panels. Carrying out a test is recommended for serial processing. Protect all visible areas from surface damages during processing; affixing standard plastic foils or inserting 1–2 mm thick polyethylene or plastic strips is recommended.

Bending with a bending press

Bending presses are also suitable for shaping KömaAlu panels. The air bending process is used when forming with a bending press. In this method, the KömaAlu panel lies on the edges of the die (rails or channels) and is bent with a punch (tube or shaft). The bending angle is determined by the width of the die and the stroke of the punch. The minimum side length of the bent part should be five times that of the material thickness. You must also ensure that the die edges are rounded and smooth.

To calculate the ideal die width:
2 x t + 2 x protective foil thickness + punch diameter + 15 mm

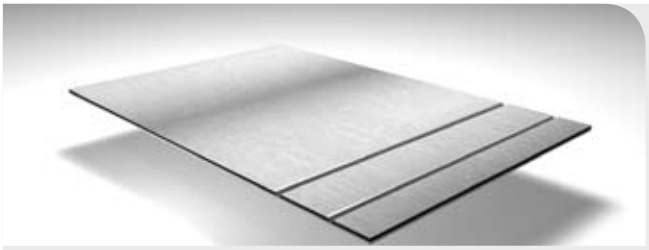
Bending with a folding machine

Clamp the KömaAlu panel between two clamping plates. Using the movable swivel bar, the projecting edge is bent around the upper clamping plate or the profile rail attached to the upper plate. You can also change the bending radius by exchanging the profile rails.

Bending with a roll bending machine

KömaAlu panels are usually processed on a sheet metal roll bending machine using three or four-roller machines. In this process, please make sure that the feed rollers do not exert too much pressure. Mechanical surface damages can also result from indentations caused by extraneous metal cuttings.

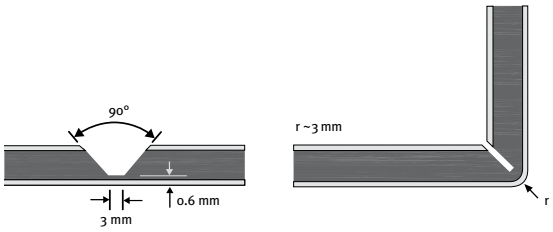
Bending rollers which are also used for bending other metals into round forms must be thoroughly clean before processing KömaAlu. In general, we recommend using ground rollers to protect the surfaces.



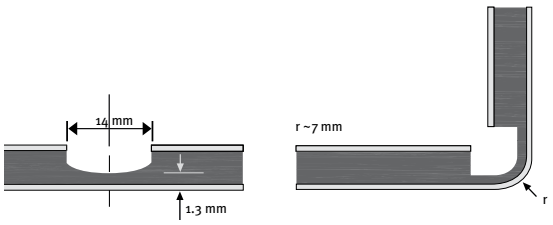
Routing and folding technique

The routing and folding technique is a simple method for shaping different types and sizes of composite panels. In this method, a V-shaped or rectangular groove is routed on the reverse side the KömaAlu panel using a disk or form milling cutter. To create the grooves, you can also use a vertical panel saw equipped with grooving accessories, a sheet milling machine or a hand router. A CNC machining centre may also be used.

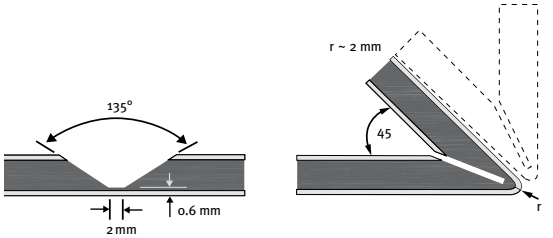
The aluminium cover plate on the front side and part of the plastic core are retained. The remaining thin material can then be easily bent by hand – a folding machine is not required for this task. The bending radius is determined by the form of the groove.



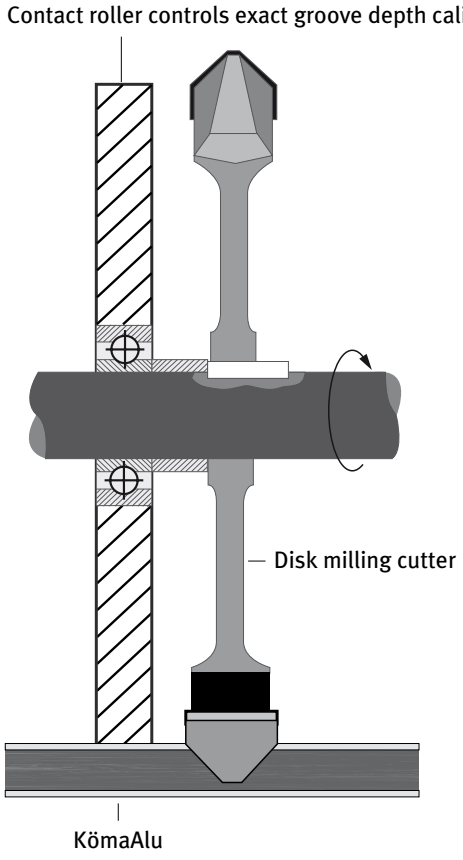
Routed groove (V-form) for folds up to 90°



Routed groove (rectangular form) for folds up to 180°, depending on panel thickness



Routed groove, 135° (V-form) for folds up to 135



Machines and tools for the routing and folding technique

Vertical panel saw

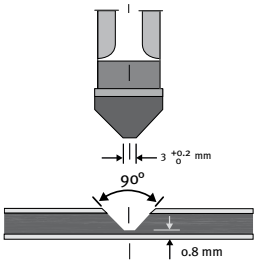
HOLZ-HER-Reich
Spezialmaschinen GmbH
Plochinger Strasse 65
72622 Nürtingen
Germany
Tel.: +49 (0)7022 7020
Fax: +49 (0)7022 702101
E-mail: info@holzher.de
www.holzher.de

Panel milling cutter

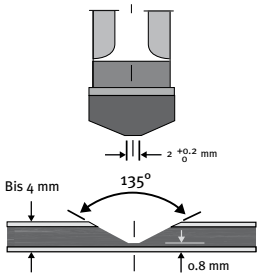
Striebig AG
Grossmatte 26
6014 Littau/Luzern
Switzerland
Tel.: +41 (0)41 2595353
Fax: +41 (0)41 2595350
E-mail: info@striebig.ch
www.striebig.com

TTS Tooltechnic Systems Deutschland GmbH
Markenvertrieb FESTOOL
Wertstrasse 20
73240 Wendlingen a. N.
Germany
Tel.: +49 (0)7024 8040
Fax: +49 (0)7024 80420608
E-mail: vertrieb@tooltechnicsystems.com
www.festool.com

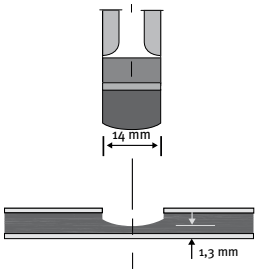
Disk milling cutter with carbide tips for vertical panel saws



Disk milling cutter for V-grooves, 90°

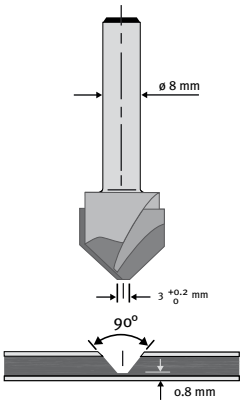


Disk milling cutter for V-grooves, 135°

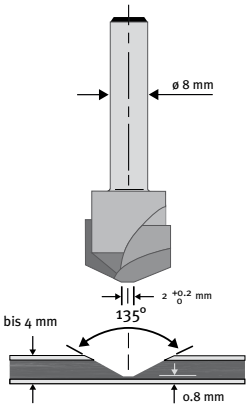


Disk milling cutter for rectangular grooves

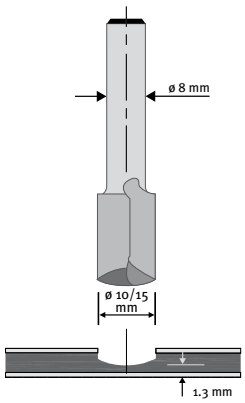
Form milling cutter with cylindrical shaft for hand routing



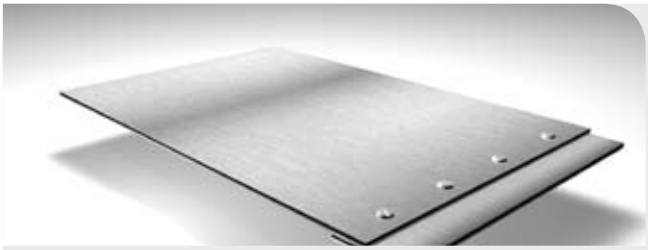
Milling cutter for V-grooves, 90°



Milling cutter for V-grooves, 135°



Milling cutter for rectangular grooves



Fastening and joining techniques

KömaAlu panels can be joined together using standard processing techniques for metal and plastics. Aluminium, plastic or stainless steel construction components and joining elements may be selected. If the materials are intended for outdoor use, insulating interlayers or appropriate protective coatings should be applied to avoid corrosion.

When using Köma aluminium panels outdoors, please allow sufficient expansion room for the panels. In so doing, you will avoid deformations caused by temperature impact. At a temperature difference of 100° C, the **linear thermal expansion amounts to 2.4 mm per meter of length or width**. The minimum gap thus depends on the expected expansion of the panel. Depending on the intended purpose, appropriate fastening constructions may be necessary.

Supplier/manufacturer:

Blind rivets

GESIPA Blindniettechnik GmbH
Nordendstrasse 13–39
64546 Mörfelden-Walldorf
Germany
Tel.: +49 (0)6105 9620
Fax: +49 (0)6105 962287
E-mail: info@gesipa.com
www.gesipa.com

Gebr. Titgemeyer GmbH & Co. KG
Hannoversche Strasse 97
49084 Osnabrück
Germany
Tel.: +49 (0)541 58220
Fax: +49 (0)541 5822490
E-mail: info@titgemeyer.com
www.titgemeyer.com

VVG-Befestigungstechnik GmbH & Co.
Friedrich-Wöhler-Strasse 44
24536 Neumünster
Germany
Tel.: +49 (0)4321 967171
Fax: +49 (0)4321 967196
E-mail: info@vvg-befestigungstechnik.de
www.vvg-befestigungstechnik.de

Blind rivets, coated

MBE GmbH
Siemensstrasse 1
58706 Menden
Germany
Tel.: +49 (0)2373 174300
Fax: +49 (0)2373 1743011
E-mail: info@mbe-gmbh.de
www.mbe-gmbh.com

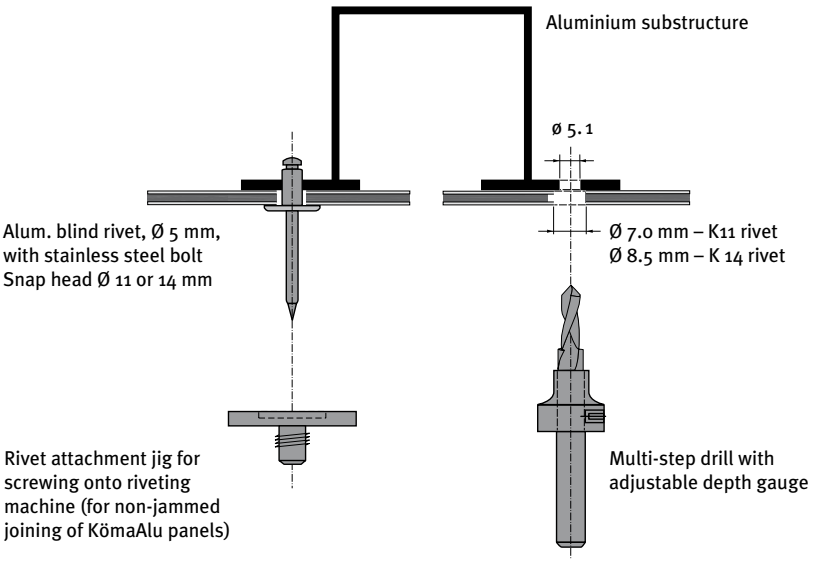
SFS intec GmbH
FasteningSystems
In den Schwarzwiesen 2
61440 Oberursel (Ts.)
Germany
Tel.: +49 (0)6171 70020
Fax: +49 (0)6171 700232
E-mail: de.oberursel@sfsintec.biz
www.sfsintec.biz

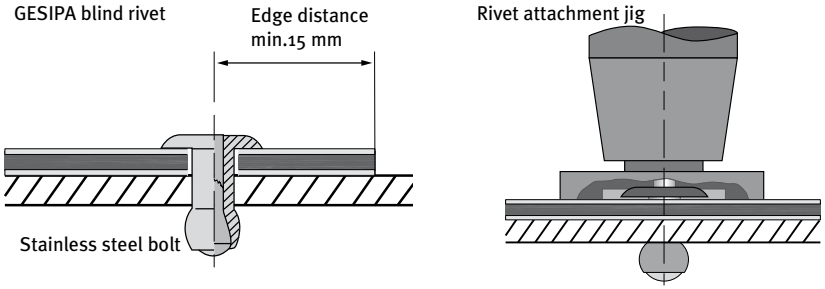
Multi-step drills

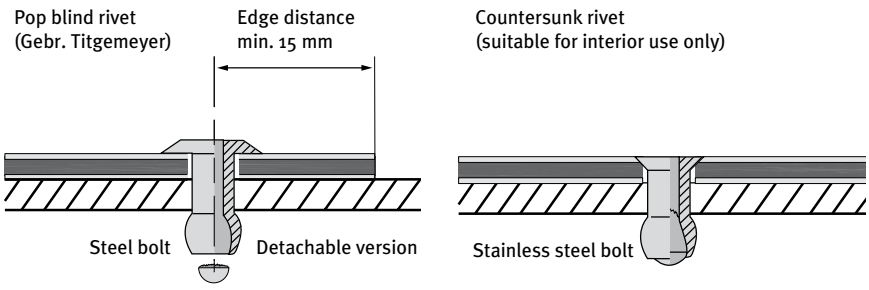
KWO – Werkzeuge GmbH
Im Riegel 1
73450 Neresheim
Germany
Tel.: +49 (0)7326 96420
Fax: +49 (0)7326 964210
E-mail: info@kwo.de
www.kwo.de

Riveting

You may use all standard rivet types for aluminium to join KömaAlu panels with one another or with other materials. In outside or humid locations, aluminium blind rivets with stainless steel bolts are generally used to avoid rusty streaks. When using aluminium blind rivets with steel bolts, the bolt should disconnect after riveting (detachable version). Countersunk rivets are suitable for interior use only.







For outdoor use, please note:

. For outdoor use, only aluminium blind rivets with a 5 mm shaft diameter and snap head diameter of 11 or 14 mm should be used.

. Ensure leeway for the thermal expansion of the panel. To avoid jamming, the hole in the panel should be large enough to allow for the expected expansion.

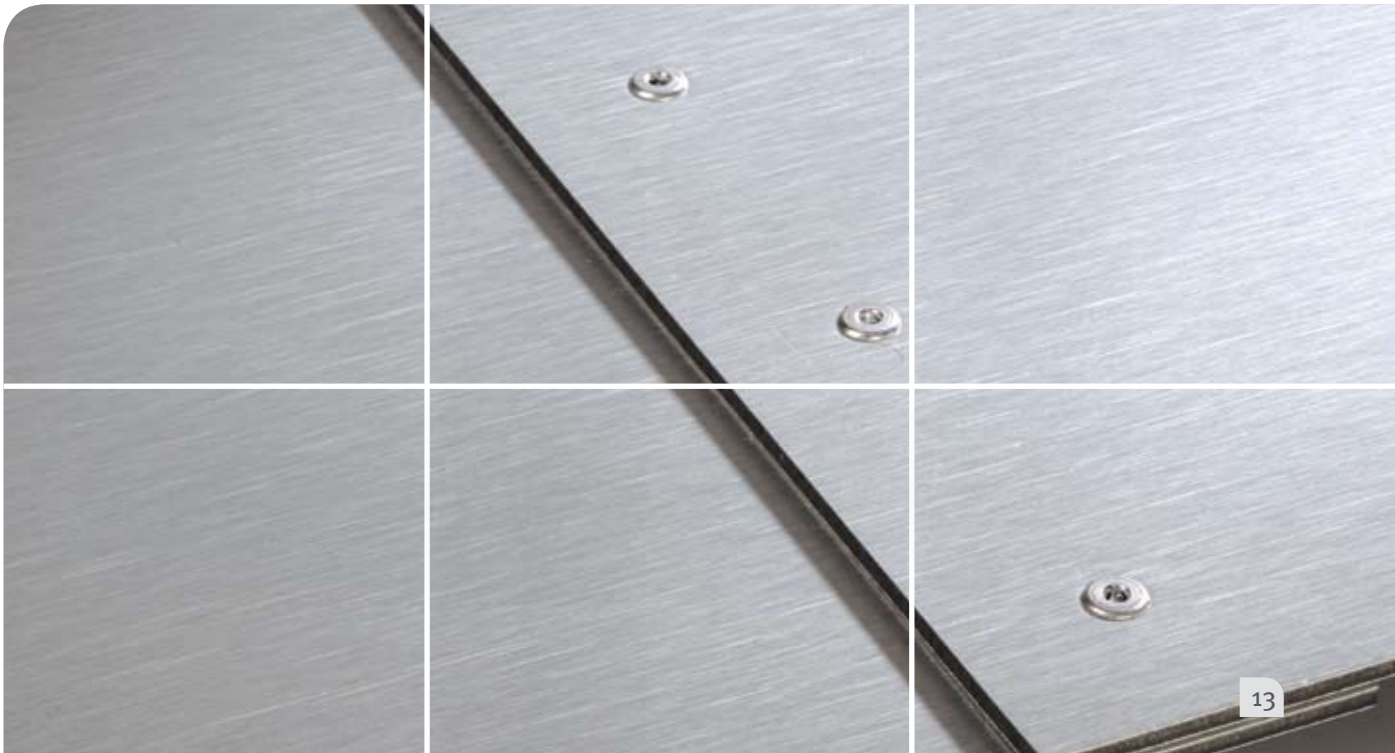
. With the shaft of the rivet fitting closely to the edge of the hole, the snap head of the rivet must cover over 1 mm of the area surrounding the hole.

. Multi-step drills or drill sleeves with corresponding diameters can be used for centrically drilling holes into the panel and the substructure and for centrically setting the rivet.

. Rivet attachment jigs (rivet attachment gauges) are used for setting blind rivets without jamming – a tolerance of 0.3 mm should be allowed. Make sure to use rivets and rivet attachment jigs that have been produced by the same manufacturer, as the height of the snap head may vary in accordance with DIN 7337.

. The clamping thickness is calculated by using 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 can be determined using tables provided by the rivet manufacturers.

. During riveting, many factors may have an influence on the exact tolerance of the rivets (e.g. rivet head tolerance). Therefore, we recommend completing a riveting test on the panel. Always remove the protective foil in the riveting area prior to riveting.



Screws for outdoor use

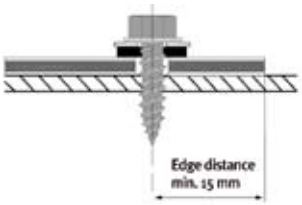
Please take the panel's thermal expansion into account when using bolted connections in exterior areas. To avoid jamming, the hole tolerance in the panel should correspond to the size of the expected expansion. To ensure that bolted connections do not jam, it is best to use stainless steel facade screws with sealing washers. Naturally, the screws must also be suitable for the intended substructure. Please follow the manufacturer's specifications here. Use a torque wrench or power screwdriver to attach the screws in such a way that the washer mounted on the plate seals the borehole without exerting any pressure on the plate. Multi-step drills or drill sleeves with corresponding diameters can be used for centrically drilling holes into the panel and the substructure and for centrically setting the rivet. Please be sure to remove the protective foil in the screw area prior to screwing.

Screws for indoor use

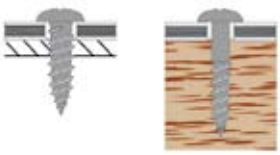
Sheet metal screws as well as wood screws with various head forms are suitable for indoor use. Expansion of the panel is normally negligent, so a tolerance does not need to be factored in. Countersunk screws can be embedded using the conventional countersinking method or by depressing the surface of the panel. When depressing the aluminium surface, the hole diameter in the panel must be larger than the screw diameter.

Screws for interior use – not suitable for exterior use!

Facade screw,
thread furrowing

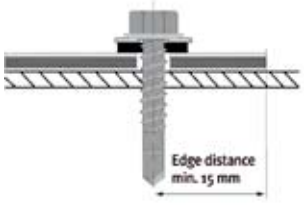


Sheet metal/wood screws with
cross recess

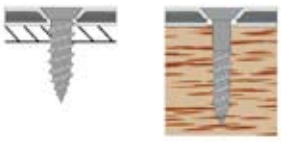


Borehole, countersunk

Facade screw,
self-drilling



Countersunk head with cover plate,
depressed



Rounded head screw with tapered
washer

Wood screw with washer and plastic cap

Plastic caps for facade screws

KU-FA Kunststoff-Fabrikation- und Vertrieb GmbH
Obere Espen 2
57334 Bad Laasphe
Germany
Tel.: +49 (0)2754 37 450
Fax: +49 (0)2754 8119

Multi-step drills

KWO – Werkzeuge GmbH
Im Riegel 1
73450 Neresheim
Germany
Tel.: +49 (0)7326 96420
Fax: +49 (0)7326 964210
E-mail: info@kwo.de
www.kwo.de

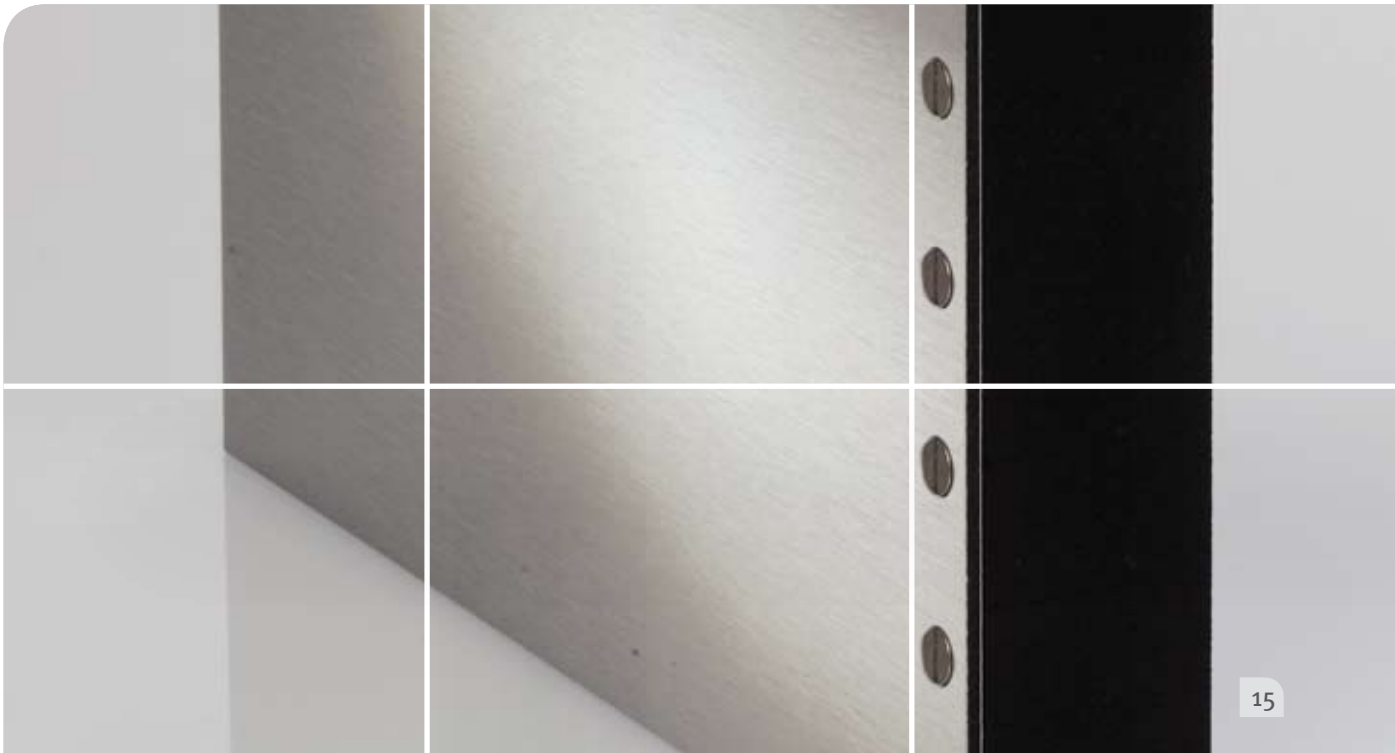
Facade screws

EJOT Baubefestigungen GmbH
In der Stockwiesen 35
57334 Bad Laasphe
Germany
Tel.: +49 (0)2752 9080
Fax: +49 (0)2752 908731
E-mail: bau@ejot.de
www.ejot.de

Facade screws, coated

MBE GmbH
Siemensstrasse 1
58706 Menden
Germany
Tel.: +49 (0)2373 174300
Fax: +49 (0)2373 1743011
E-mail: info@mbe-gmbh.de
www.mbe-gmbh.de

SFS intec GmbH
FasteningSystems
In den Schwarzwiesen 2
61440 Oberursel (Ts.)
Germany
Tel.: +49 (0)6171 70020
Fax: +49 (0)6171 700232
E-mail: de.oberursel@sfsintec.biz
www.sfsintec.biz

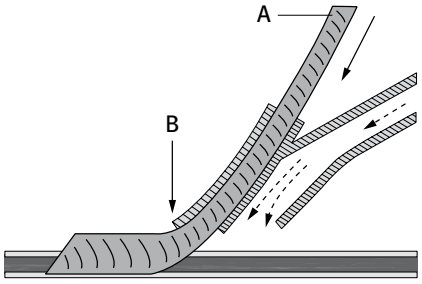


Hot-air welding

Hot-air welding, a standard joining method for thermoplastic plastics, is recommended for fusing KömaAlu panels. In this process, the plastic core and plastic welding wire are heated and welded with electric hot-air welding equipment.

Good welding quality requires equally good preparation. Make sure to select a high-quality welding wire and prepare the welding groove in a skilled manner. Important factors for welding include the correct temperature and clean hot-air, as well as the contact pressure and welding speed.

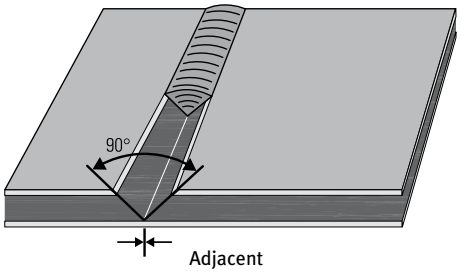
By using a detachable high-speed welding nozzle (fig. 1) you can attain an even heating of the core material and the welding wire – which will ensure better welding quality. In this process, the welding wire A is fed by hand through the nozzle flap B. The welding wire is pressed into the welding groove with the nozzle flap under constant contact pressure.



1

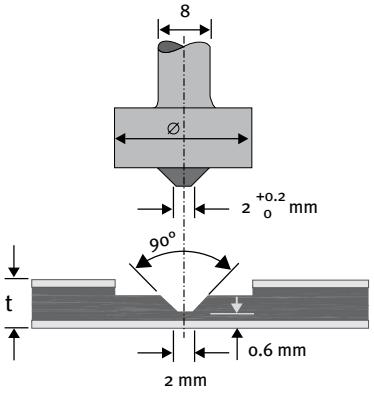
Preparing the welding groove

For butt welding, the edges of the panels must be chamfered (fig. 2). Grooves have to be routed into the panels beforehand with the corresponding form milling cutter (fig. 3).
As the plastic core oxidises relatively quickly when exposed to air, we recommend completing the welding within 24 hours after chamfering.

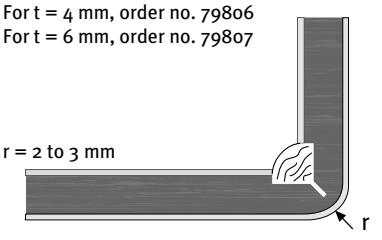


2

Routing grooves with form milling cutter



For t = 3 mm, order no. 79805
For t = 4 mm, order no. 79806
For t = 6 mm, order no. 79807

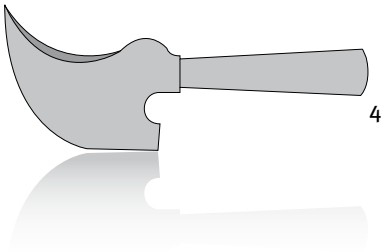


3

Welding wire

For the optimum welding quality, use polyethylene welding wire (soft, type 1800-h, colour black) with a wire diameter of 3 to 4 mm. Directly before welding, remove the outer layer of the welding wire – the oxide film – using emery cloth. Then chamfer the starting end of the welding wire to approx. 45°. For hot-air welding, a temperature of 265° C ± 5°C is necessary. To measure the temperature, remove the high-speed welding nozzle. The measurement should be taken 5 mm from the nozzle point with a mercury thermometer or a bimetal measuring unit.

Crescent-shaped knife



4

Contact pressure

The optimal contact pressure on the nozzle shoe (high-speed welding nozzle) is approximately 3 kp.

Shaving the welding seam

A knife or draw blade is used at a very flat angle to shave off the welding seam as soon as it has cooled down. Visible welding joints are removed on butt and corner joints using a crescent-shaped knife (fig. 4).

Supplier/manufacturer

Hot-air welding equipment, temperature gauges, crescent-shaped knives and welding wire

Heisslufttechnik Flocke GmbH
Elsässer Strasse 14–18
42697 Solingen
Germany
Tel.: +49 (0)212 382600
Fax: +49 (0)212 312324
E-mail: info@heisslufttechnik.de
www.heisslufttechnik.de

Herz GmbH
Biberweg 1
56566 Neuwied
Germany
Tel.: +49 (0)2622 81086
Fax: +49 (0)2622 81080
E-mail: herz-gmbh@t-online.de
www.herz-gmbh.com

Welding wire

Ketterer + Liebherr GmbH
Gündlinger Str. 20
79111 Freiburg
Germany
Tel.: +49 (0)761 478140
Fax: +49 (0)761 4781490
E-mail: mail@ketterer-liebherr.de
www.ketterer-liebherr.de

Form milling cutters (not available ex stock)

KWO – Werkzeuge GmbH
Im Riegel 1
73450 Neresheim
Germany
Tel.: +49 (0)7326 96420
Fax: +49 (0)7326 964210
E-mail: info@kwo.de
www.kwo.de

Adhesive/velcro tapes

Double-sided adhesive tapes (e.g. 3M VHB heavy-duty joining systems) can be used for lower tensile and transversal strength requirements. Velcro tapes (e.g. available under the SCOTCHMATE™ brand name) are particularly suitable for detachable joints. Suitable joining tapes are also marketed under the Dual Lock™ brand.

Supplier/manufacturer:

3M Deutschland GmbH
Carl-Schurz-Strasse 1
41453 Neuss
Germany
Tel.: +49 (0)2131 140
Fax: +49 (0)2131 142649
www.3m.com

Sealing adhesives

You can also produce high-strength, elastic bonds with specific single component sealing adhesives. These are used in outdoor areas, e.g. for fastening parts of minor static importance.

Supplier/manufacturer:

Sika Bond-T2 (polyurethane basis)
Sika Chemie GmbH
Stuttgarter Strasse 139
72574 Bad Urach
Germany
Tel.: +49 (0)712 59400
Fax: +49 (0)712 5940321
www.sika.de

Metal adhesives/universal adhesives

Depending on the application, commercially available metal or universal adhesives are suitable for indoor use, exhibition stand structures and machine construction.

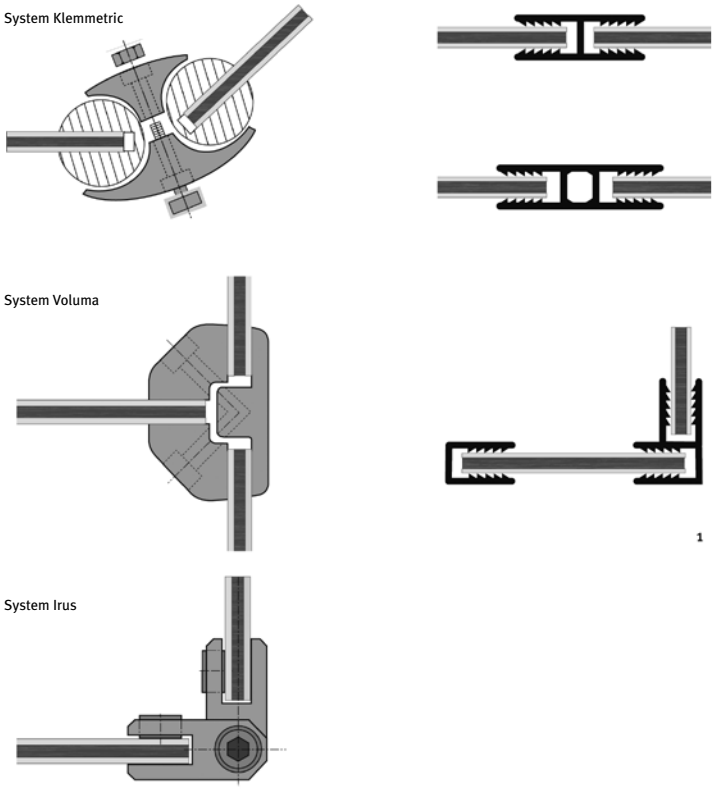
Note on applying and processing bonding agents and adhesive tapes:

It is important to observe the manufacturer's guidelines. Bonding agents and sealing compounds do not adhere to the KömaAlu plastic core or the cut edges. If KömaAlu panels are fully glued to other materials on one side, the different expansion properties of the materials may result in deformation of the laminates.

Clamping

Clamp connections are mainly used for shopfitting and display construction. Aluminium or plastic clamps are particularly suitable for KömaAlu panels. Usually, they consist of two parts – with the clamping effect achieved by bolting.

Aluminium profiles are particularly suitable as connectors or impact-resistant frames. Inevitable tolerances lead to different levels of holding force. However, you can obtain a uniform and solid profile fit by pressing the profile sides together before inserting the panels. Butt joint, corner and end profiles are available for panel thicknesses of 3, 4 and 6 mm (fig. 1). Request the stock list, as necessary.



1

Supplier/manufacturer:

System Klemmetric:

KlemProducts
Gesellschaft für
Ausstellungstechnik mbH
Talangerstrasse 3 a
82152 Krailing/Munich
Germany
Tel.: +49 (0)89 8577280
Fax: +49 (0)89 8561410
E-mail: info@klemproducts.com
www.klemproducts.com

System Voluma:

MERO – TSK International GmbH &
Co. KG
Max-Mengeringhausen-Strasse 5
97084 Würzburg
Germany
Tel.: +49 (0)931 66700
Fax: +49 (0)931 6670409
E-mail: info@mero-tsk.de
www.mero.de

System Irus:

Irus-System
Kirchstrasse 15
78176 Blumberg
Germany
Tel.: +49 (0)7702 3685
Fax: +49 (0)7702 9045
www.irus-system.com

Surface treatment and imprinting

Varnishing enamelled KömaAlu surfaces in polyester lacquer quality

Enamelled KömaAlu surfaces are already pre-treated and primed in the factory. Continuous processes are subject to regular quality controls. This creates the optimal preconditions for varnishing.

We recommend the following work steps: first clean the panels with methylated alcohol. Then sand all surfaces – it is best to use abrasive paper for wet sanding with the grain size 360. Before varnishing, remove any abrasive dust with a non-lint cloth moistened in ethyl alcohol.

Please follow the manufacturer's specifications for building up the topcoat. In the case of accelerated drying, the KömaAlu panel should not be exposed to temperatures higher than the maxim permissible material temperature of 70 °C. Avoid deformations by professionally securing and/or storing the panels during the drying process.

On the exposed plastic core – e.g. on cut edges – varnish will only adhere in an inferior manner. Organic solvents can damage the panel bond if they come into contact with the cut edges for longer periods of time.

KömaAlu panels that are lacquered or varnished at a later stage have limited topcoat elasticity. Therefore, they should not be bent or folded, in order to avoid damages to the lacquer in the bending areas.

Lacquering mill-finished KömaAlu surfaces

The steps for lacquering mill-finished – i.e. unlacquered – KömaAlu panels are the same as those for sheer aluminium surfaces. Information on paintwork, lacquering and surface coating can be obtained from the Gesamtverband der Aluminiumindustrie (GDA – German Aluminium Industry Association).

GDA – Gesamtverband der
Aluminiumindustrie e. V.
Am Bonneshof 5
40474 Düsseldorf
Germany
Tel.: +49 (0)211 47960
Fax: +49 (0)211 4796408
E-mail: information@aluinfo.de
www.aluinfo.de

Published data sheets "Surface 02, 03, 012, 015"

Silk-screen printing on KömaAlu surfaces in polyester lacquer quality

Enamelled KömaAlu panels are highly suitable for silk-screen printing procedures. Before printing, remove the protective foil and clean the surface with an ethyl or isopropyl alcohol-moistened, lint-free cloth. Please note that the alcohol may not be poured directly onto the panel. Do not use methylated alcohol, as this could dissolve the lacquer coat. Before beginning the printing process, wait 10 to 15 minutes after cleaning in order to ventilate the alcohol.

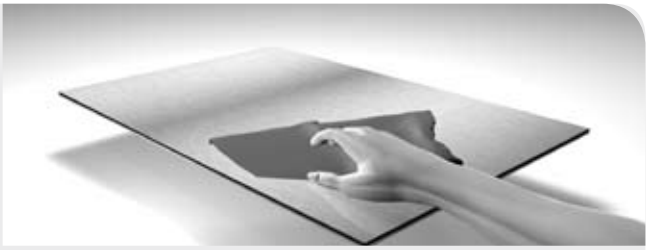
Practical experience shows that the stove enamelling and printing ink may exhibit composition differences, even within a single grade. One should therefore test the adhesion before every application.

Laminating / photo mounting

You can laminate the entire surface of KömaAlu panels with cast or calendered self adhesive foils – using either manual or machine-based processes. The foil can also be exchanged later – the lacquer coating will not be stripped.

KömaAlu is also highly suitable as a base for photo mounting. It enables adhesive film or dispersion glue to be mounted without any problems.

Before adhering the foil or photo, make sure the panels are clean and free from dust and grease.



Cleaning and care

Cleaning and maintaining enamelled surfaces

To ensure that the decorative surfaces of KömaAlu panels last for many years, they should be cleaned regularly and professionally. Dirt and aggressive deposits are removed, allowing surfaces to be returned to their original aesthetic finish.
Cleaning intervals depend on the local environmental conditions and the degree of soiling. Cleaning can either be conducted manually or with suitable cleaning equipment. Do not use abrasive cleaning pads for lacquered surfaces. In this context, we recommend that you complete a preliminary cleaning test beforehand on an inconspicuous part.
Another important tip: do not clean sun-heated surfaces (⇢ 40 °C). Due to quick drying, there is a greater risk of blemishes or streaks forming.

Cleaning agents

Information about neutral cleaning agents for organically coated or anodically oxidized aluminium components can be obtained from the Gesamtverband der Aluminiumindustrie (GDA – German Aluminium Industry Association).

GDA – Gesamtverband der
Aluminiumindustrie e. V.
Am Bonneshof 5
40474 Düsseldorf
Germany
Tel.: +49 (0)211 47960
Fax: +49 (0)211 4796408
E-mail: information@aluinfo.de
www.aluinfo.de

Published data sheets “Surface 02, 03, 012, 015”

It is important to follow the manufacturer’s cleaning and safety regulations.

Unsuitable cleaning agents

Never use strongly alkaline cleaning agents such as potassium hydroxide, sodium carbonate or sodium hydroxide – nor should strongly acidic products or abrasive household scrubbing and cleaning agents be used, which can dissolve the lacquer film.

Technical data

Thickness	Norm	Unit	Value
Cover plate thickness		mm	0.25
Weight, thickness: 2 mm Weight, thickness: 3 mm Weight, thickness: 4 mm		kg/m² kg/m² kg/m²	3.10 kg /m² 4.20 kg / m² 5.30 kg / m²
Technologische Werte Technological values			
Alloy / cover plate condition			1100 H48; EN AW-Al 99, 0 Cu
Elasticity module		N/mm²	70.000
Cover plate tensile strength		N/mm²	150
Breaking elongation			≥ 1%
Linear expansion coefficient			2.4 mm/m at 100° C temperature difference
Core			
Polyethylene, type LDPE		g/cm³	~ 0.92
Surface			
Lacquering			Modified polyester lacquer system
Gloss (initial values)		%	0–8
Hardness (pencil hardness)			H
Gloss level matte panel side (Measuring angle 60°)	ISO 2813		20 to 40 (± 10)
Gloss level brilliant panel side (Measuring angle 60°)	ISO 2813		85 (± 10)
Coat thickness of topcoat and backcoat / polyester		µm	20 (± 2)
Material topcoat and backcoat			Polyester
Tolerance levels			
Length tolerance	DIN 16927/ISO 11833-1	mm	-0/+2
Width tolerance	DIN 16927/ISO 11833-1	mm	-0/+2
Gauge tolerance	DIN 16927/ISO 11833-1	mm	±0.1
Diagonal tolerance	DIN 16927/ISO 11833-1	mm	3
Fire behaviour			
Thickness: 3 mm	DIN 4102		B2
Thickness: 2-4 mm	PV 68-08		M1

Note:
All other specifications are valid for every thickness. You may obtain a warranty certificate from your contact partner in the Pirmasens facility.

For the sake of the environment

"Recycling and reuse"

There are no toxic or harmful substances in KömaAlu that can be given off over the long term. KömaAlu is free from formaldehyde, asbestos, lindane, PCB, PCP and CFCs. What's more, it is cadmium- and lead-free and is also made without any monomers, biocides and plasticisers.

This is why KömaAlu poses absolutely no hazard to people or the environment, neither during its manufacture, while in use, nor after disposal.

Old sheets no longer in use or left-over sections of sheets can be recycled without any problem: they are ground up in shredders and cutting machines before being returned to the production process to make new sheets. This closed material cycle is not only economical, but ecological, too.

Certified according to DIN ISO 9001

"Uncompromising quality from start to finish"

Systematic research and development work and decades of experience with plastics are the basis for the generally recognised high quality of our products.

We carry out tests at all stages – starting with the raw materials on delivery through to final inspection of the finished products.

Regular examinations and analyses conducted by independent testing institutes confirm the high degree of care we take during the production process. Our quality assurance system is certified to DIN ISO 9001.

With compliments of:

profine GmbH – KÖMMERLING KUNSTSTOFFE/Business Unit Sheets – Postfach 21 65 – 66929 Pirmasens – Germany
Tel.: +49 (0)6331 560 – Fax: +49 (0)6331 562155 – info@komasheets.com – www.komasheets.com

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