

PROCESSING INSTRUCTIONS

MANUFACTURER: REHAU

MATERIAL: RAUVISIO crystal

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PRODUCT DESCRIPTION REHAU RAUVISIO crystal

The unique glass optics look results from the interaction between surface and laser edge. The glass from the roll is functional and visually perfectly matched to the system components surface, wooden board and veneer. Therefore "RAUVISIO crystal" results in an optimum interaction between modern design and the processing advantages of polymer materials: unique three-dimensional depth effect and modern transparency together with multiple processing options. (source REHAU)

PROCESSING INSTRUCTIONS REHAU RAUVISIO crystal

The following processing information is based on a wide range of test series with the best machining results in each case produced by LEUCO Ledermann GmbH & Co. KG.

DEFINITION OF TERMS

DP = DIA; **HW** = carbide; **HR** = hollow back; **L-S** = slow, quick; **L-S-L** = slow, quick, slow; **vc** = cutting speed; **S-S** = quick-quick; **fz** = tooth feed; **vf** = feed speed

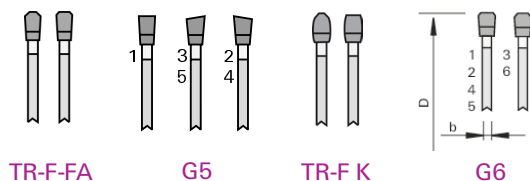
1. GENERAL INFORMATION

Looks like glass but isn't. The polymeric glass laminate "RAUVISIO crystal" has a lot of advantages compared to genuine glass and is mainly used in the manufacturing of furniture fronts for kitchen and bathroom. The furniture surface features a reduced sensitivity to scratching and impact and a lower weight compared to genuine glass and higher flexibility with regard to the processing. The surface material is twistable and can be brought into nearly every shape.

2. TRIMMING CUT / SIZING

2.1 PANEL TRIMMING WITH CIRCULAR SAW BLADES

Various factors are responsible for good trimming results: Glass optics side facing up (panel sizing saw blades and trimming saw blades), correct saw blade projection, feed speed, tooth configuration, tooth pitch, rpm and trimming speed. Depending on the volume to be cut, carbide-tipped (HW) or diamond-tipped (DP) circular saw blades are used. **Recommended tooth configurations:**



2.2 SIZING SAW

In general, saws with a high number of teeth are recommended. The best cutting quality is reached by using a triple chip - flat chamfer (TR-F-FA) tooth form combination. Good cutting results are also achieved using saws with an alternate top bevel tooth form and a front-side shear angle (LEUCO G5). All saws should have an additional protection chamfer of 3/45°. The saw blade projection should be 20 - 30 mm. **Good edges on both sides can only be achieved using a corresponding scorer.** If no scoring saw blade is available, a satisfactory result on the exit side can also be achieved by using the saw type LEUCO solid Surface. For this, a saw blade projection of 15 - 20 mm should be set.

Recommended cutting speed: 60 - 70 m/sec.

Feed per tooth: 0.03 - 0.05 mm.



2.3. PANEL SIZING SAW

Excellent cutting results can be achieved on panel sizing machines with the new circular panel sizing saw blades from the "Q-Cut" range (Q-Cut K). Good results can also be obtained with circular panel sizing saw blades from the "Q-Cut G6" range. The recommended feed per tooth (fz) is between 0.06 - 0.07 mm. The maximum feed per tooth is $fz = 0.096$ mm and should not be exceeded. Here again, tooth engagement occurs on the good side of the panel. Good edges on both sides can only be achieved using a suitable scorer. Very good cutting results are achieved with a suitable saw blade projection. This depends on the diameter. **Good edges on both sides can only be achieved using a corresponding scorer.**



Circular saw blade diameter

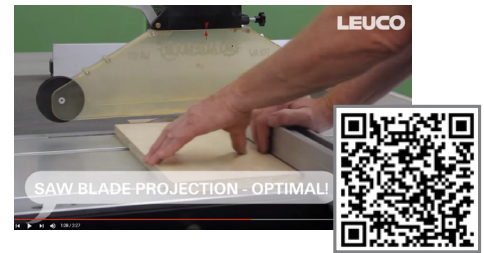
- D = 250 mm
- D = 300 mm
- D = 350 mm
- D = 400 mm
- D = 450 mm

Saw blade projection

- approx. 15 - 20 mm
- approx. 15 - 25 mm
- approx. 18 - 28 mm
- approx. 25 - 30 mm
- approx. 25 - 33 mm

The recommended cutting speed is 60 - 90 m/sec. The upper value should be selected in the case of DP-tipped circular saw blades. Try to aim for a feed per tooth of 0.07 - 0.08 mm.

Please refer to our YouTube channel for more information about the optimum saw blade projection. >>> Scan QR code and watch video on YouTube. Alternatively, go to www.youtube.com/leucotooling <<<



2.4. THROUGH-FEED MACHINES: HOGGERS

Industrial sizing on through-feed machines is done using diamond-tipped tools. When sizing with hogger tools, outstanding results are achieved in the double hogging process. For this purpose, we recommend hogs with low cutting pressure, such as the LEUCO PowerTec hogger. The number of hogger teeth should be matched to the respective machining feed. All hogs tested were used with the following application parameters: **speed:** $n = 6,000$ rpm, **abrasion:** $a = 3$ mm, **feed:** $vf = 30$ m/s. The PowerTec hogs have a favorable cutting geometry for the "RAUVISIO crystal" plate. With other types of hogs, small break-offs must be expected, which, however, can be compensated by additional jointing work.



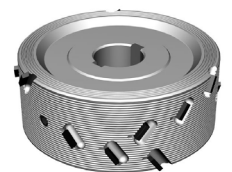
PowerTec airFace

3. MILLING / EDGE PROCESSING

The material can generally be machined with VHW- or HW-tipped tools, HW turnover knives or diamond-tipped cutters. The tools, however, should have cutting edges with alternating shear angles. Jointing in two stages is recommended if a double jointing aggregate is available. When using turnover knives, shaft run-outs may be visible. The use of tools in clamping systems with high concentric accuracy brings visible benefits. A transparent edge in the area of the glass laminate (GP) cannot be achieved with one of these cutters. If this is required, special polishing cutters (suitable for the processing of acryl glass) must be used. Edge trimming can be performed using conventional HW or DP edge cutters, followed by scrapers (recommended: topline scrapers with special edge preparation).



SmartJointer airFace



DIAMAX airFace



4. PROCESSING ON CNC STATIONARY MACHINES

Tools without a shear angle do not work. For long edge lives, the cutting work should be done with diamond-tipped shank-type cutters with alternating shear angles. Small series can also be produced using VHW spiral finishing cutters. The recommended feed per tooth (fz) is in the range from 0.2 - 0.35 mm.

Example:

Number of cutting edges (Z)	Speed (rpms)	Feed Vf (mm/min)
Z=2	18.000 / 24.000	7 - 10 / 10 - 13
Z=3	18.000 / 24.000	10 - 15 / 14 - 20
Z=4	18.000	20 - 25

Grooving or pocket milling can be done very effectively with VHM shank-type cutters with negative spiral. The feed per tooth (fz) should be approx. 0.3 mm (e.g. 18,000 rpm and 8-10 m/min)

To achieve good concentric accuracy, we recommend using the following clamping elements: Hydro expansion chucks (ps-System), power shrink chucks (TRIBOS) or heat-shrinking chucks. Table shaper: milling heads with tungsten carbide turnover knives (polished) or diamond-tipped cutters with the largest possible shear angle are recommended. Polished cutting edges and ultra-fine ground clearance angles on the backside (LEUCO topline) are recommended. Diameter: to be selected as large as possible; cutting speed: 60 - 70 m/sec; tooth feed: 0.5 - 0.8 mm.

5. DRILLING

Dowel holes in the polymeric glass laminate layer (GP):

Wall plug holes and through holes can be made with commonly available HW drill bits. Better results are usually achieved by using VHW dowel and through hole drill bits on account of their higher rigidity.

Application data: Speed: 6.000 rpm Feed: 3 - 4 m/min
Drilling mode: S-S (quick-quick)

In case of hole edge problems on the acrylic glass side, the use of drill bits with back-guide may be useful.

Dowel holes in the polymeric veneer layer (P):

Conventional HW dowel bits can be used. The best hole edges can be achieved using the VHW high-performance dowel bits.

Application data: Speed: 4.500 rpm Feed: 3 - 4 m/min
Drilling mode: S-S (quick-quick)

Through holes:

The best hole edges on the entry side (PG) and the exit side (P) can be reached using HW standard through-hole bits.

Application data: Speed: 5.000 - 6.000 rpm Feed: 3 - 4 m/min
Drilling mode: S-S (quick-quick)

Bores for hinges and concealed hinges:

We recommend using a standard cylinder boring bit or the LEUCO cylinder boring bit "Light".

Application data: Speed: 3.000 rpm Feed: 1,5 - 2 m/min
Revolution speeds of more than n = 4.000 rpm are not recommended.

For all drilling applications, the slow boring mode (L-S-L) is generally not recommended since the hole edges will melt which results in the formation of plastic chips which may wrap around the drill.



6. FORMULAS

6.1. CUTTING SPEED – VC

Unit: m/s

Necessary data: diameter = D [mm];

Tool speed = n [1/min]

Calculation: $vc = (D * \pi * n) / (60 * 1000)$

6.2. TOOTH FEED – FZ

Unit: mm

Required data: feed speed = vf [m/min];

Tool speed = n [1/min]; no. of teeth = z

Calculation: $fz = (vf * 1000) / (n * z)$

6.3. FEED SPEED – VF

Unit: m/min

Required data: tooth feed = fz [mm];

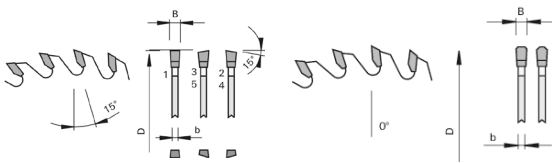
Tool speed = n [1/min]; no. of teeth = z

Calculation: $vf = (fz * n * z) / 1000$

7. LEUCO TOOLS FOR PROCESSING REHAU RAUVISIO crystal

7.1. CIRCULAR SAW BLADES FOR SIZING SAWS

Dimension	Description	Z	Tooth Shape	Cutting Material	Projection	Ident-No.
Ø 300 x 3,0 x Ø 30	G5	100	G5	HL Board 04+	approx. 20 mm	192794
Ø 300 x 3,2 x Ø 30	LowNoise	96	TR-F-FA	HL Board 04+	approx. 20 mm	192788
Ø 303 x 3,2 x Ø 30	HW solid Surface	84	TR-F-FA	HL Board 06	approx. 25 mm	193133

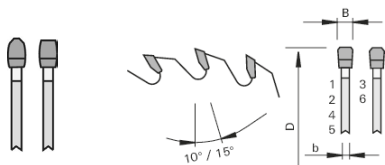


Additional saws with different diameters, cutting widths, bores, and number of teeth **available upon request**.

Number of teeth and feed speed depend on cutting height and application for single panels or stack cuts.

7.2. CIRCULAR SAW BLADES FOR PANEL SIZING SAWS

Dimension	Description	Z	Tooth Shape	Cutting Material	Projection	Ident-No.
Ø 350 x 4,0 x Ø 60	Q-Cut K	72	TR-F K	HL Board 04+	approx. 25 mm	192975
Ø 380 x 4,4 x Ø 60	Q-Cut G6	72	G6	HL Board 04+	approx. 25 mm	192865

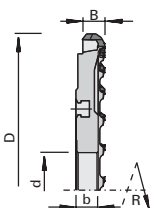


Additional saws with different diameters, cutting widths, bores, and number of teeth **available upon request**.

Number of teeth and feed speed depend on cutting height and application for single panels or stack cuts.

7.3. HOGGERS

Dimension	Description	Z	Cutting Material	Ident-No. (L)	Ident-No. (R)
Ø 250 x 9,5 x Ø 60	PowerTec airFace	20+10	DP	186528	186527
Ø 250 x 9,5 x Ø 60	PowerTec airFace S	20+10	DP	186552	186551



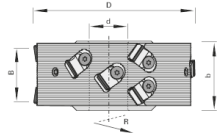
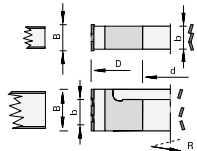
PowerTec airFace

Additional PowerTec hoggers with other dimensions **available on request**.



7.4. JOINTING CUTTERS

Dimension	Description	Machine	Z	Shear<	Cutting Material	Ident-No. (L)	Ident-No. (R)
Ø 125 x 42,8 x Ø 30	DIAREX airFace	Homag	3+3	48°	DP	186323	186323
Ø 100 x 42,8 x Ø 30	DIAREX airFace	SCM	3+3	48°	DP	186362	186363
Ø 85 x 43,2 x Ø 30	DIAMAX airFace	OTT	3+3	35°	DP	186408	186409
Ø 125 x 43,2 x Ø 30	DIAMAX airFace	Homag	3+3	35°	DP	186399	186399
Ø 100 x 43 x Ø 30	SmartJointer airFace	Brandt	3+3	35°	DP	186065	186066
Ø 125 x 63 x Ø 30	SmartJointer airFace	IMA	3+3	43°	DP	186055	186056

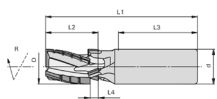


Additional jointing cutters for other machine brands with different diameters, cutting widths, bores and number of cutting edges **available on request**.

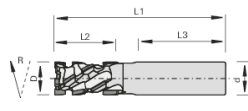
DIAREX/DIAMAX airFace SmartJointer airFace

7.5. CNC SHANK-TYPE CUTTERS

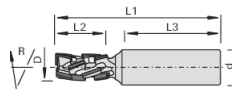
Dimension	Description	Z	Cutting Material	L/R	Ident-No.
Ø 12 x 22 x Ø 16	Nesting shank-type cutter, negative	2+2	DP	R	186113
Ø 12 x 22 x Ø 16	Nesting shank-type cutter, positive	3+3	DP	R	186571
Ø 12 x 23 x Ø 16	Nesting shank-type cutter, negative	3+3	DP	R	185518
Ø 20 x 28 x Ø 25	DIAREX high-performance cutter	2+2	DP	R	186151
Ø 25 x 28 x Ø 25	High-performance cutter, negative	3+3	DP	R	186120
Ø 48 x 28 x Ø 25	High-performance trimming cutter	4+2+4	DP	R	186142



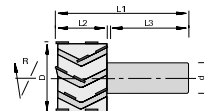
DP High-performance cutter negative



DP High-performance cutter DIAREX



DP Nesting cutter



DP High-performance trimming cutter

Additional shank-type cutters with different diameters (Ø) and cutting lengths (CL) **available on request**.



7.6. THROUGH HOLE, DOWEL- AND BLIND HOLE BITS

Dimension	Description	Cutting Material	Ident-No. (L)	Ident-No. (R)
Ø 5 x L1=70 x Ø 10	Through hole drill bit with back-guide	HW	176255	176254
Ø 8 x L1=70 x Ø 10	Through hole drill bit with back-guide	HW	176257	176256
Ø 5 x L1=70 x Ø 10	Mosquito through-hole drill bit	VHW	183153	183152
Ø 8 x L1=70 x Ø 10	Mosquito through-hole drill bit	VHW	183157	183156
Ø 5 x L1=70 x Ø 10	topline through-hole drill bit	VHW	185742	185741
Ø 8 x L1=70 x Ø 10	topline through-hole drill bit	VHW	185744	185743

Dimension	Description	Cutting Material	Ident-No. (L)	Ident-No. (R)
Ø 5 x L1=70 x Ø 10	Mosquito dowel drill bits	VHW	182390	182391
Ø 8 x L1=70 x Ø 10	Mosquito dowel drill bits	VHW	183151	183150
Ø 5 x L1=70 x Ø 10	topline dowel drill bits	VHW	185760	185759
Ø 8 x L1=70 x Ø 10	topline dowel drill bits	VHW	185764	185763
Ø 5 x L1=70 x Ø 10	High-performance dowel bits	VHW	185772	185771
Ø 8 x L1=70 x Ø 10	High-performance dowel bits	VHW	185776	185775

Dimension	Description	Cutting Material	Ident-No. (L)	Ident-No. (R)
Ø 15 x L1=70 x Ø 10	Standard cylinder boring bits	HW	178978	172250
Ø 35 x L1=70 x Ø 10	Standard cylinder boring bits	HW	178982	172254
Ø 15 x L1=70 x Ø 10	"Light" cylinder boring bits	HW	184685	184684
Ø 35 x L1=70 x Ø 10	"Light" cylinder boring bits	HW	184689	184688

Additional drill bits with other dimensions, cutting lengths and shank dimensions **available on request**.

→ Couldn't find the tool type or tool dimensions you want?
Please contact LEUCO Sales.

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TIP – LEUCO ONLINE CATALOG

You can find LEUCO tool recommendations for processing REHAU RAUVISIO crystal panels in the LEUCO Online Catalog.



Alternatively:
Scan the QR-Code and
learn about the LEUCO
stock program.

**QUICK &
EASY**

- 1 www.leuco.com/products
 - 2 Click "tool" filter
 - 3 "special manufacturer materials"
 - 4 REHAU RAUVISIO crystal
- Select saw blades, hogsers, cutters, drill bits



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