

# TOOL RECOMMENDATION

**MANUFACTURER: EGGER**

**MATERIAL: COMPACT LAMINATE**

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# TOOL RECOMMENDATION



## EGGER COMPACT LAMINATE

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## PRODUCT DESCRIPTION EGGER COMPACT LAMINATE

EGGER compact laminates are compact laminates according to EN 438. They have a multilayer structure and consist of a top layer made of decor paper impregnated with melamine resin and a fibrous core layer bounded with thermosetting resin. The different layers are pressed together at high pressure and temperature. The described production method corresponds to the criteria of the HPL production. When print decors are used, the compact laminate is provided additionally with an overlay which is used to increase the resistance to abrasion and thus to protect the decorative printing layer.

EGGER compact laminates are available with black, flame-retardant or solid-colored core for use in the furniture or interior design industry. The colors available for the solid-colored cores are white, light gray and dark gray.

## TOOL RECOMMENDATION EGGER COMPACT LAMINATE

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

## WEAR BEHAVIOR OF THE EGGER COMPACT LAMINATE

Due to their homogeneous and dense structure, compact laminates are difficult to process. Compared with other wood-based materials, the high cutting forces required for processing result in a higher wear of the tools used.

## DEFINITION OF TERMS

**DP** = DIA; **HW** = tungsten carbide; **L-S** = slow, fast; **L-S-L** = slow, fast, slow; **S-S** = fast, fast; **S-S-S** = fast, fast, fast; **vc** = cutting speed; **fz** = teeth feed; **vf** = feed rate; **G6** = tooth group cutting geometry; **TR-F-FA** = triple chip - flat chamfer; **HR** = hollow back; **HR-TR** = hollow back trapezoid

## 1. GENERAL INFORMATION

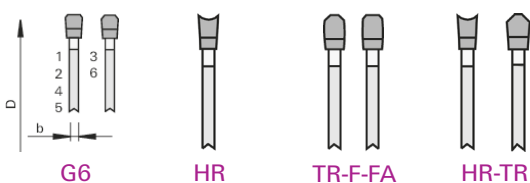
EGGER compact laminates offer a large variety of processing possibilities and a long life of the components. The homogeneous core of the EGGER compact laminate is perfectly suitable for a precise processing with no additional edge trimming required. In order to obtain an irreproachable result after the processing of compact boards, the use of a perfect cutting edge and the selection of the appropriate tools are essential. Particularly the latter ensures reduced noise and odor nuisance. For the processing of larger series or the implementation of ambitious projects, the use of the correct tools are particularly decisive.

## 2. TRIMMING / SIZING

### 2.1 PANEL TRIMMING WITH CIRCULAR SAW BLADES

Various factors are responsible for good trimming results:

Good side facing up, correct saw blade projection, feed rate, tooth configuration, tooth pitch, rpm and trimming speed. Depending on the volume to be cut, tungsten-carbide-tipped (HW) or diamond-tipped (DP) circular saw blades are used. **Recommended tooth configurations:**





## 2.2 SIZING SAW

The panels can be cut very well with HW and DP saw blades. For an optimal cutting result on both the entry and exit edge and on the cutting surface, the following circular saw blades are particularly suitable:

HW saw blades: sizing saw blades HW - solid surface "TR-F-FA"  
 DP saw blades: sizing saw blades DP - nn-System DP flex "HR"

### Optimal application data:

Saw blade projection:  $SÜ = 15 - 20 \text{ mm}$   
 Revolutions per minute:  $n = 5000 - 6000 \text{ /min}$   
 Feed rate = manual:  $4 - 6 \text{ m/min}$

## 2.3 PANEL SIZING SAW

On panel sizing saws, the panels can be cut with HW and DP circular saw blades. For an optimum cutting quality, the trimming cut should be made with a HW circular saw blade. For higher quantities, it is recommended to use a DP circular saw blade for the trimming cut. **The following circular saw blades are recommended for an optimum cutting quality:** (same format as for "Optimal application data")

HW saw blades: panel sizing saw blades - Q-Cut "G6"  
 DP saw blades: panel sizing saw blades DP - "HR-TR"

### Optimal application data:

Saw blade projection:  $SÜ = 25 \text{ mm}$   
 Feed/tooth:  $fz = 0.04 - 0.06 \text{ mm}$   
 Cutting speed:  $vc = 55 - 80 \text{ (m/s)}$



The tools, particularly the cutting edges, in permanent use are to be cleaned regularly. This increases the edge life and improves the cutting quality. Different cleaning agents can be used. It is also important to ensure the correct saw blade projection, which has an impact on the cutting quality and depends on the diameter.

#### 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 the QR-Code and watch the video on YouTube or go to [www.youtube.com/leucotooling](http://www.youtube.com/leucotooling) <<<





### 3. PROCESSING ON STATIONARY CNC MACHINES

For the milling operation, tungsten carbide tools (turnover knives or VHW spiral shank-type cutters) or diamond-tipped (DP) tools can preferably be used. HW cutters are suitable for small production quantities. Diamond-tipped tools, ideally with continuous cutting edge and slight shear angles guarantee high processing quality and significantly higher edge lives. **Edge lives can be increased by:**

! Best possible workpiece clamping. Use of as many suction devices as possible in best possible condition on the console tables. Regular cleaning of the surfaces of the suction devices has a positive effect on the adhesion.

! **Note: Optional milling strategy in case of frequent dividing cuts/full cuts; e.g. for the nesting technology:**

1. First, a DP roughing cutter is used, e.g. ØD14 Z = 2,
2. followed by a finishing milling operation with a tool ØD12 or ØD16 Z = 2 or Z = 3 with a respectively higher feed rate.
3. This results in a high machining quality and significantly higher edge lives of the finishing tools.

! Use of the tools in high precision clamping elements (hydro expansion chuck, TRIBOS or heat-shrinking chucks).

! Occasional cleaning of the cutting edge (face and clearance face) e.g. with acetone.

! Avoidance of lumpy chips = heat! Speed reduction or higher feed!

**Recommended application parameters:**

Revolutions per minute = 16,000 – max. 18,000/min

Feed per tooth (fz): 0.2 - 0.3 mm

Milling against feed

**Reference values (basis Fz = 0.25 m/min at 18,000 rpm)**

Number of cutting edges (Z)	Diameter (mm)	Speed (rpm)	Feed rate vf (m/min)
Z=2	12 / 14 / 16	18.000	6 - 8 / 6 - 10 / 6 - 10
Z=3	12 / 16	18.000	8 - 12 / 8 - 14

**Dividing cut:** Lower value ranges, depending on the machining situation, the values must be further reduced if necessary.

**Jointing cut:** Higher value ranges

**Information on pocket milling:**

If common tools with normal basic cutting edges are used for pocket milling, the milling paths are often visible. In this case, it can be useful to observe the following:

1. Use of tools with a modified cutting edge geometry. Example LEUCO Reference drawing AD-380807
2. Milling in clockwise direction
3. Use the program function "Smoothing without ramp factor"
4. Lateral stepover 5%
5. Revolutions per minute: n = 18,000 /min
6. Feed rate Vf: approx. 2 - 3 m/min
7. Milling with several stepovers according to the depth.

The bottom of the pocket will become smoother; feed rate-related grooves are reduced.



## 4. DRILLING

### Wall plug holes:

Using the common HW-tipped dowel bits with back-guide, the results in terms of quality are very good. Good results and longest edge lives are achieved with VHW high-performance drill bits, especially when they are provided with a cutting pressure-reducing geometry.

Recommended application parameters (in drilling aggregates):

Speed: 4,500 rpm

Feed rate: 1.5 - 2 m/min

Drilling mode: S-S

### Through holes:

Very good drilling quality at the entry and exit side are achieved with standard HW through-hole bits. VHW through-hole bits, e.g. LEUCO types HL and Mosquito, can also be used and offer longer edge lives.

Recommended application parameters:

Speed: 4,000 rpm

Feed rate: 1.5 m/min

Drilling mode: S-S-S

In case of material thicknesses >12 mm, the machining should take place with retracting movement (chip removal).

### Hinge holes:

Very good results can be achieved using the LEUCO "Light" cylinder boring bits.

Recommended application parameters:

Speed: 4,500 rpm

Feed rate: 1.5 m/min

Drilling mode: S-S

## 5. FORMULAS

### 5.1 CUTTING SPEED – VC

| Unit: m/s

| Data required: diameter = D [mm];

tool speed = n [rpm]

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

### 5.3 FEED RATE – VF

| Unit: m/min

| Required data: tooth feed = fz [mm];

tool speed = n [rpm]; number of teeth = z

| Calculation:  $vf = (fz \cdot n \cdot z) / 1000$

### 5.2 TOOTH FEED – FZ

| Unit: mm

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

tool speed = n [rpm]; no. of teeth = z

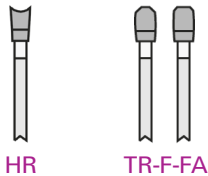
| Calculation:  $fz = (vf \cdot 1000) / (n \cdot z)$



## 6. TOOL RECOMMENDATION FOR THE PROCESSING OF EGGER COMPACT LAMINATES

### 6.1 CIRCULAR SAW BLADES FOR SIZING SAWS

Dimension	Designation	Z	Tooth shape	Cutting material	Projection	Ident-No.
Ø 303 x 3,2 x Ø 30	HW solid Surface	84	TR-F-FA	HL Board 06	approx. 25 mm	193133
Ø 303 x 2,5 x Ø 30	nn-System DP flex	60	HR	DP	approx. 25 mm	192444

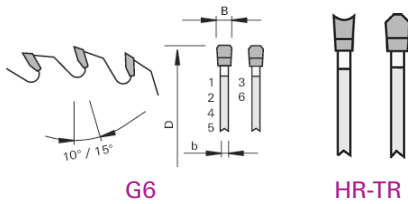


Additional saws with different diameters, cutting widths, bores, and number of teeth **available upon request**.

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

### 6.2 CIRCULAR SAW BLADES FOR PANEL SIZING SAWS

Dimension	Designation	Z	Tooth shape	Cutting material	Projection	Ident-No.
Ø 350 x 4,4 x Ø 60	Q-Cut G6	72	G6	HL Board 04+	approx. 25 mm	193148
Ø 360 x 4,4 x Ø 30	Q-Cut G6	72	G6	HL Board 04+	approx. 25 mm	193153
Ø 350 x 4,4 x Ø 60	DP panel sizing saw blade	72	HR-TR	DP	approx. 25 mm	193046

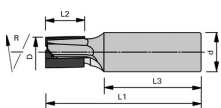


Additional saws with different diameters, cutting widths, bores, and number of teeth **available upon request**.

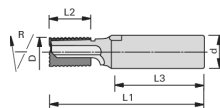
Number of teeth and feed speed depend on cutting height and application for single panels or stack cuts.

### 6.3. CNC SHANK CUTTERS

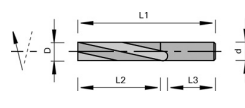
Dimension	Designation	Z	Tooth shape	Ident-No.
Ø 12 x 15 x Ø 16	Shank-type cutters for solid core panels	2+1	DP	186436
Ø 12 x 15 x Ø 16	Shank-type cutters for solid core panels	3+1	DP	186305
Ø 16 x 20 x Ø 20	Shank-type cutters for solid core panels	2+1	DP	186439
Ø 16 x 20 x Ø 20	Shank-type cutters for solid core panels	3+1	DP	186431
Ø 14 x 20 x Ø 16	Roughing cutters for solid core panels	2	DP	186579
Ø 16 x 35 x Ø 16	Spiral shank-type cutter, positive	3	VHW	178341
Ø 16 x 30 x Ø 25	TOK shank-type cutter	2	HW	180804



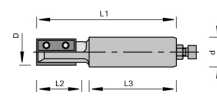
Shank-type cutters for solid core panels



Roughing cutters for solid core panels



Spiral shank-type cutter, positive



TOK shank-type cutter

Additional shank-type cutters with different diameters (Ø) and cutting lengths (L2) **available on request**.

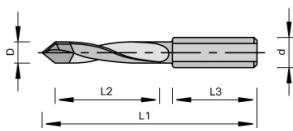


## 6.4 THROUGH HOLE, DOWEL AND DRILLING PINS AND CYLINDER DRILL BITS

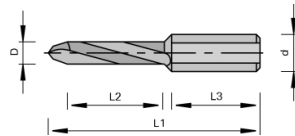
Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 5 L1=70 x Ø 10	Through-hole bit with back-guide	HW	176255	176254
Ø 8 L1=70 x Ø 10	Through-hole bit with back-guide	HW	176257	176256
Ø 5 L1=70 x Ø 10	Mosquito through-hole bit	VHW	183153	183152
Ø 8 L1=70 x Ø 10	Mosquito through-hole bit	VHW	183157	183156

Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 5 L1=70 x Ø 10	Dowel bit with back-guide	HW	167203	167194
Ø 8 L1=70 x Ø 10	Dowel bit with back-guide	HW	167205	167196
Ø 5 L1=70 x Ø 10	High-performance drill bit	VHW	185772	185771
Ø 8 L1=70 x Ø 10	High-performance drill bit	VHW	185776	185775

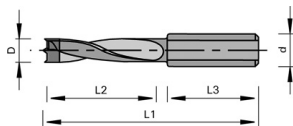
Dimension	Designation	Cutting material	Ident-No. (L)	Ident-No. (R)
Ø 15 L1=70 x Ø 10	"Light" cylinder boring bits	VHW	184685	184684
Ø 35 L1=70 x Ø 10	"Light" cylinder boring bits	VHW	184689	184688



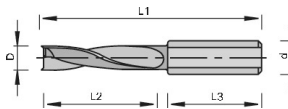
Through-hole bit with back-guide



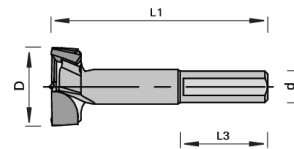
Mosquito through-hole bit



Dowel bit with back-guide



High-performance drill bit



"Light" cylinder boring bits

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 the LEUCO tool recommendations for processing EGGER - Compact laminates in the LEUCO online catalog.



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



Click here!

### Further information:

In the LEUCO brochure:  
“Tools for the machining  
of solid-core materials and  
mineral-based materials”

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- 4 „EGGER”
- 5 Compact laminate

→ Select saw blades, hogsers, cutters,  
drill bits



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