

Quality Management ISO 9001

Coding: PIPS EN  
 Revision: 01  
 Approved: 30/01/2018

## Processing instructions

### EGGER PerfectSense lacquered boards

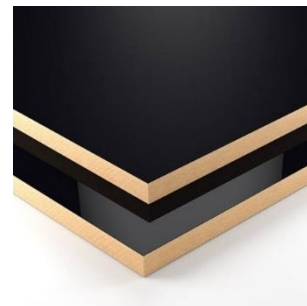
**Material description:**

Decorative, UV-lacquer coated wood based product.

**Board type:** EGGER MDF ST E1 CARB2/TSCA

**Application:**

Decorative wood based boards for indoor use.



## Product description PerfectSense lacquered boards

With PerfectSense we offer for the first time a lacquered surface with a highly reflective and exceptionally smooth finish (Gloss), as well as a special look, feel and anti-fingerprint feature (Matt). The production of this premium product category involves finishing a melamine-resin-coated MDF coreboard with the help of an innovative lacquering process that is precisely adjusted for the surface. This product once again demonstrates that we are able to meet the demand for premium board surfaces. Distributors, fabricators, architects and the furniture industry are provided with a solution for high-quality furniture construction for contract projects involving kitchen and furniture frontals. Our EGGER MDF is used as coreboard, which meets both E1 and CARB2/TSCA requirements. ST2 is the standard for back panel textures.

## Processing instructions PerfectSense

The following processing instructions are based upon different series of tests and the best results gained from these tests in cooperation with our partner LEUCO Ledermann GmbH & Co.KG



## General processing guidelines

When working with Egger PerfectSense boards, the following cutting speeds (vc) and feed per tooth (fz) values should be taken into account:

Processing method	Cutting speed vc [m/s]
sawing	60 – 90
hogging	80

Processing method	Feed per tooth fz [mm]
sawing	0,05 – 0,08
hogging	0,15 – 0,3

These parameters are dependent upon the tool diameter (D), the number of teeth (Z), the rotational speed (n) and the feed rate (vf) of the machine in question. The correct calculation of these factors is the only way to achieve optimal results.

The following formulas are to be used to calculate the cutting speed, feed per tooth and feed rate:

$v_c$  - Cutting speed [m/s]

$$v_c = D \cdot \pi \cdot n / 60 \cdot 1000$$

$D$  – Tool diameter [mm]  $n$  – tool speed [min-1]

$f_z$  – Feed per tooth [mm]

$$f_z = v_f \cdot 1000 / n \cdot z$$

$v_f$  – feed rate [m/min]

$n$  – Tool speed [min-1]  $z$  – number of teeth

$v_f$  – Feed rate [m/min-1]

$$v_f = f_z \cdot n \cdot z / 1000$$

$f_z$  – Feed per tooth [mm]

$n$  – Tool speed [min-1]  $z$  – number of teeth

## Tool material

The tool requirements for PerfectSense boards are not much higher than the requirements for normal MDF boards. In principle, tools with metal-cutting-edges (HW) can be used. However, when processing a large number of boards or when working with modern machinery, we recommend the use of tools with diamond-cutting-edges (DP).

## General information for tools

In order to achieve an optimal cut quality when working with EGGER PerfectSense boards, we highly recommend the use of new or newly refurbished tools.

## Cutting boards with a disk saw

### General

Please be aware of the following:

- Visible side (side with foil) facing upwards
- Choose the correct saw blade projection (see table)
- Adjust tool speed and number of teeth according to the required feed rate
- The use of a scoring saw on the underside is recommended in order to achieve cleaner cuts

Saw blades with metal cutting edges (HW) or diamond cutting edges (DW) can be used, dependent upon the cutting angle. HW cutting blades with saw-tooth shape roof-flat-Duplovit (DA-F-DU) or trapezoidal-flat-Fase (TR-F-FA) are especially good for the cutting of small numbers of PerfectSense boards. Satisfactory results can also be achieved through the use of G5 circular saw blades.

Diameter (D) of circular saws [mm]	Projection Ü [mm]
250	15 – 20
300	20
350	25
400	25 – 35
450	28 – 35



(to adjust saw blade projection optimally)

Recommended saw-tooth shape



Table saws

HW saw blades with the tooth shape roof-flat-Duplovit (DA-F-DU) or trapezoidal-flat-Fase (TR-F-FA) gave the best results when processing small numbers of boards. Satisfactory results were also achieved with the use of G5 circular saw blades. The number of teeth and rate of feed are dependent upon the cutting height and whether single boards or multiple boards are being cut.

Circular saw blades

Dimension	Designation	Z	Tooth shape	Tool material	Projection	Ident-Nr.
303 x 3,2 (2,2) x 30	circular saw blades	60	TR-F-FA	HL Board 03 plus	ca. 20 mm	192124
303 x 3,2 (2,2) x 30	LowNoise	60	DA-F DU	HL Board 06	ca. 20 mm	189690
300 x 3,0 (2,2) x 30	circular saw blades HW „G5“	100	G5	HL Board 03 plus	ca. 20 mm	1922081

Saws with different diameters, cutting widths, holes and teeth are available.

Panel-sizing saws

The new panel-sizing saw blade 80338052 from the FinishCut blade family of the LEUCO group delivered extremely good results in testing. The LEUCO UniCut-LowNoise circular saw blades, also available as HW, also delivered good results.

When making final cuts, panel sizing saw blades with trapezoidal tooth (TR-TR) tooth format from the LowNoise range should be used.

The engagement of the saw teeth should also be on the décor side of the board. In order to achieve a good edge quality on both sides of the board, the use of a scorer is recommended. On top of this, the saw blade protrusion must be correct. This is dependent upon the diameter of the saw blade.

Dimension	Designation	Z	Tooth shape	Tool material	Projection	Ident-Nr.
380 x 4,4/3,2 x 60	FinishCut-B	72	TR-F-B	HL Board 03 plus	ca. 25 - 35 mm	80338052
450 x 4,8 /3,5 x 60	FinishCut Plus	72	TR-TR	HL Board 03 plus	ca. 28 - 35 mm	192172
480 x 4,8/3,5 x 60	UniCut Plus	72	TR-F	HL Board 03 plus	ca. 28 - 35 mm	192020

Saws with different diameters, cutting widths, holes and teeth are available.

The number of teeth and feed rate are dependent upon the cutting height and the number of boards being cut. The recommended cutting speed is 60-90 m/sec. For diamond-tipped cutting blades, higher speeds should be used. A feed of 0.05 - 0.08mm per tooth is recommended.

### Milling & jointing

Good results can be achieved easily when performing edge jointing work on both high gloss and matt boards through the use of P-jointing cutters (axial angle 70°) and/or DIAREX jointing cutters (axial angle 43°).

Tools with diamond cutters should be used for all milling work. If you have access to a double-jointing unit, we recommend that you perform jointing in two stages. First perform the initial, rough cut in order to clear the way for a second, finishing cut of max. 0.5mm.

#### Jointing cutters

Dimension	Designation	Number of teeth Z	Tool material	Ident-Nr.
125 x 43 x 40 x 30	DIAREX-jointing cutter	3+3	Diamant	184633
125 x 47,8 x 40 x 30	p-system jointing cutters MEC	3+3	Diamant	184071
125 x 47,8 x 54,8 x 30	p-system jointing cutters MAN	2+2	Diamant	184333

Other jointing cutters with different diameters, cutting widths, drilling and number of teeth are available.

## Continuous cutting machines

Very good results were achieved when using the double-cutter method on continuous cutting machines. We recommend the use of cutters with limited cutting pressure, for example the Leuco cutter “Powertec III Topline”.

Cutting speed:80m/sec

Feed rate: 0.2 – 0.3 mm with PowerTec-Cutters

#### Cutter

Dimension	Designation	Number of teeth Z	Tool material	Ident-.Nr.
250 x 14,5 x 23 x 80	Power Tec III topline	20+20+5	Diamant	184610

Other PowerTec-Cutters with different dimesions are available.

## CNC stationary machines

Alongside diamond-tipped tools, tools with hard-metal tips are also suitable for the milling of cut-outs and pockets. However, the largest diameter possible should always be chosen in order to reduce the risk of vibration.

Similar to processing on continuous cutting machines, we recommend the use of P-jointing cutters and standard nesting milling bits when working with stationary machinery.

For short processing procedures, hard-metal tools without axial rotation can be used. However, it is important that a very low feed rate is used here in order to avoid complications.

For grooving PerfectSense boards, standard tools and insert milling cutters with an axial angle of 0° can be used. When using diamond tipped end mills, normal tools can also be used. When creating grooves and pockets, a low feed rate should always be used.

Clamping device: Hydro-clamping system or shrink fit chucks, in order to guarantee smooth processing

Tool: Hard metal or diamond tipped tools

Diameter: largest possible diameter. When milling pockets or cut-outs, the tools should always have a basic edge/drilling edge.

Feed rate: according to the following table

Feed rate

Material: Span-/ MDF-boards	Tool-diameter [mm]				
	3 – 10	10 – 16	16 – 25	25 – 40	> 40
recommended fz [mm]	0,03 – 0,10	0,10 – 0,20	0,20 – 0,30	0,30 – 0,40	0,40 – 0,50

CNC end mills

Dimension	Designation	Number of teeth Z	Tool material	Ident.-Nr. (L)	Ident.-Nr. (R)
16 x 50 x 25	End mill with HW-inserts	2	HW HL Board 05	180805	
25 x 38 x 8 x 25	High performance end mill CM	3+3	Diamant	183267	183268

Other end mills with different diameters (Ø) and cutting lengths (SL) are available.

## Drilling

When drilling blind holes or clearance holes, we recommend the use of a drill with low cutting pressure and a good dust clearing ability. For example, drills from the range “Mosquito” (clearance drill), 3-5 mm drilling pins and the cylinder head drill “Light”.

Clamping: clamping material with good clearance and a safe and secure grip

Blind drills, clearance drills and drilling pins

Dimension	Designation	Tool material	Ident.-Nr. (L)	Ident.-Nr. (R)
35 x 10 x 70	Cylinder head drill - „Light“	HW	184689	184688
5 x 35 x 10 x 70	Mosquito clearance drill	HW	182462	182463
6 x 35 x 10 x 70	Mosquito dowel drill	HW	181526	181525
3 x 12 x 45	Drilling pins	VHW	180943	

Other drills with different diameters, cutting lengths and shaft dimensions are available.

## Storage

### Horizontal storage/stacking

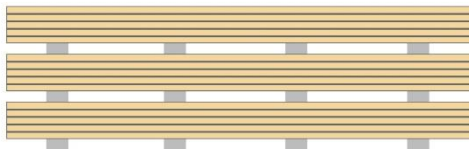
- Stacking should take place on load-bearing and flat ground.
- Joists should have a uniform thickness and their length should correspond to the width of the board stack.
- The distance between the foundation joists depends on the thickness of the boards.
  - Board thickness  $\geq 15$  mm: The distance must be of at least 800 mm. In any case, at least 4 joists should be used for half-format boards (l=2800mm).
  - Board thickness  $< 15$  mm: The distance should be smaller than 800mm. The rule of thumb is "Distance = 50 \* board thickness (m)"



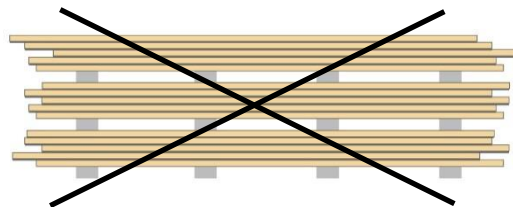
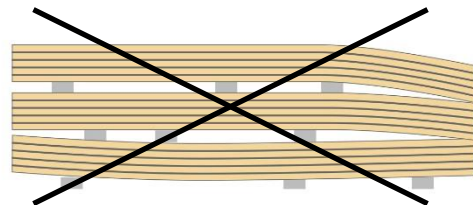
(Image: 1)

- In order to protect the board surface cover boards must be used.
- Ensure sufficient edge protections if board stacks are to be fastened subsequently with steel or plastic bands. This can be achieved with the help of special paperboard or by using protection boards
- In the case of max. 4 stacks stored on top of each other, the joists must be placed in a vertical line underneath each other (Image: 2).
- Protruding boards in same-format stacks must be avoided (Image: 2).

Right!



Wrong!



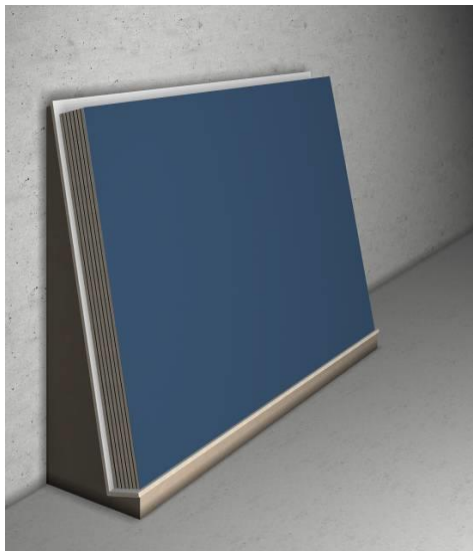
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### Vertical storage

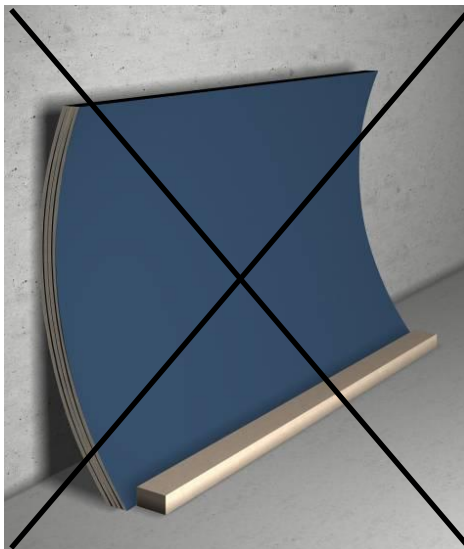
- Vertical storage should only take place with a very small number of PerfectSense lacquered boards, horizontal storage should always be preferred to the vertical one.
- Safe fastening of PerfectSense lacquered boards is particularly important in the case of vertical storage.
- Sufficient fastening can be achieved with closed storage locations, stacks, or shelves.
- The storage surface should not exceed a width of 500mm.

- If open storage locations are used, the contact surface should have a minimum slope of approximately 10° (Image 3).
- In addition, only same-format PerfectSense lacquered boards should be stored in open storage locations.

Right!



Wrong!

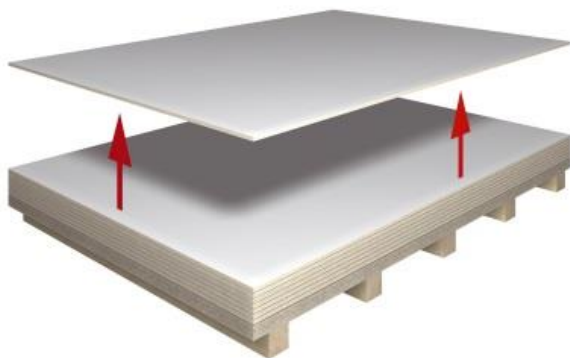


(Image 3)

## Handling and transport

- Avoid negative humidity impact during transport (e.g., no direct weather exposure, by using cover film or a closed truck tarpaulin).
- During transport, the load should be secured against slipping and falling by using suitable fastening systems (tension belts, tensioning straps, etc.).
- For the protection of the lacquered surfaces, MDF boards are generally recommended.
- Anti-slip mats should be used in order to prevent the load from slipping.
- When large boards are transported manually, they should be carried edgewise, in order to avoid significant bowing. Using board carriers is recommended. In addition, protection gloves and safety shoes should be used in order to prevent injury.
- Pushing should be avoided or it should only take place on special textile surfaces.

The boards should be lifted so shifting the decorative sides against each other or pulling them across each other must be avoided (Image 4).



(Image 4)

## General notes

- PerfectSense boards made of wood-based material should be stored and processed in a closed storage/workshop space with stable climate ( $T \geq 10^{\circ}\text{C}$  at approx. 50-60% relative air humidity).
- Storage and processing conditions should correspond to the climate of later use.
- In order to ensure optimal flat storage, it is necessary to avoid the following negative impact on the product during transport, storage, and processing:
  - Storage in the immediate proximity of heating devices or other sources of heat
  - Direct exposure to heat and sunlight (outdoor UV light)
  - Unequal air-conditioning with increased air humidity.
- Individual boards, as well as the stack's top and bottom boards react faster to changing environmental influences (climate) than boards inside the stacks.
- Prior to installation, PerfectSense boards should be conditioned for an adequate period of time in the respective rooms under the subsequent conditions of use.
- The protective foil is not used to label the workpieces and must remain on the entire surface during the processing process.
- The protective foil on EGGER PerfectSense boards should be removed as soon as possible after processing, at the latest 5 months after delivery in order to ensure a clean and problem free removal of the foil. Boards covered with a protective foil should not be left in direct sunlight (UV light).
- The given information does not free the processor/buyer from their responsibility to check the conditions of the object and or project upon which they are working and to decide whether to use EGGER PerfectSense boards.
- Aus der kontinuierlichen Weiterentwicklung von PerfectSense Lackplatten und Änderungen der Werkzeug- und Maschinentechnologie können hinsichtlich der Verarbeitung Änderungen resultieren. Daher empfehlen wir den Abgleich dieses Dokumentes mit unserer Website unter: <http://www.egger.com/perfectsense>

## Further documents

Technical datasheet: PerfectSense Gloss / Matt

Provisional note:

This technical data sheet has been carefully drawn up to the best of our knowledge. We accept no liability for any mistakes, errors in standards or printing errors. In addition, technical modifications may result from the continuous development of EGGER PerfectSense®, as well as from changes to standards and public law documents. The contents of this technical leaflet should therefore not be considered as instructions for use or as legally binding.

