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. ST9 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

LEUCO
LEUCO Ledermann GmbH & Co.KG
http://www.leuco.com

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:

<table>
<thead>
<tr>
<th>Processing method</th>
<th>Cutting speed vc [m/s]</th>
</tr>
</thead>
<tbody>
<tr>
<td>sawing</td>
<td>60 – 90</td>
</tr>
<tr>
<td>hogging</td>
<td>80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Processing method</th>
<th>Feed per tooth fz [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>sawing</td>
<td>0,05 – 0,08</td>
</tr>
<tr>
<td>hogging</td>
<td>0,15 – 0,3</td>
</tr>
</tbody>
</table>

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:

\[ vc = D \times \pi \times n / 60 \times 1000 \]

\[ D \quad – \quad \text{Tool diameter [mm]} \]
\[ n \quad – \quad \text{tool speed [min-1]} \]

\[ fz = \frac{vf \times 1000}{n \times z} \]

\[ vf \quad – \quad \text{feed rate [m/min]} \]
\[ n \quad – \quad \text{Tool speed [min-1]} \]
\[ z \quad – \quad \text{number of teeth} \]

\[ vf = \frac{fz \times n \times z}{1000} \]

\[ fz \quad – \quad \text{Feed per tooth [mm]} \]
\[ n \quad – \quad \text{Tool speed [min-1]} \]
\[ z \quad – \quad \text{number of teeth} \]

**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 sawtooth 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.

<table>
<thead>
<tr>
<th>Diameter (D) of circular saws [mm]</th>
<th>Projection (\tilde{U}) [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>15 – 20</td>
</tr>
<tr>
<td>300</td>
<td>20</td>
</tr>
<tr>
<td>350</td>
<td>25</td>
</tr>
<tr>
<td>400</td>
<td>25 – 35</td>
</tr>
<tr>
<td>450</td>
<td>28 – 35</td>
</tr>
</tbody>
</table>

(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

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

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.

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

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

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Designation</th>
<th>Number of teeth Z</th>
<th>Tool material</th>
<th>Ident-Nr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 x 43,8 x 40 x 30</td>
<td>p-system jointing cutters MEC</td>
<td>3+3</td>
<td>Diamant</td>
<td>184071</td>
</tr>
<tr>
<td>125 x 43,8 x 40 x 30</td>
<td>p-system jointing cutters MAN</td>
<td>2+2</td>
<td>Diamant</td>
<td>184333</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Designation</th>
<th>Number of teeth Z</th>
<th>Tool material</th>
<th>Ident-Nr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 x 14,5 x 23 x 80</td>
<td>Power Tec III topline</td>
<td>20+20+5</td>
<td>Diamant</td>
<td>184610</td>
</tr>
</tbody>
</table>

Other PowerTec-Cutters with different dimensions 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.

<table>
<thead>
<tr>
<th>Material: Span- / MDF-boards</th>
<th>Tool-diameter [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 – 10</td>
</tr>
<tr>
<td>recommended fz [mm]</td>
<td>0,03 – 0,10</td>
</tr>
</tbody>
</table>

CNC end mills

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

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

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

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 ≥ 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)"

- 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).

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.

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).
General notes

- PerfectSense boards made of wood-based material should be stored and processed in a closed storage/workshop space with stable climate (Ta10°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.

Further documents

Technical datasheet: PerfectSense Gloss / Matt