PROCESSING INSTRUCTIONS

EGGER LAMINATES

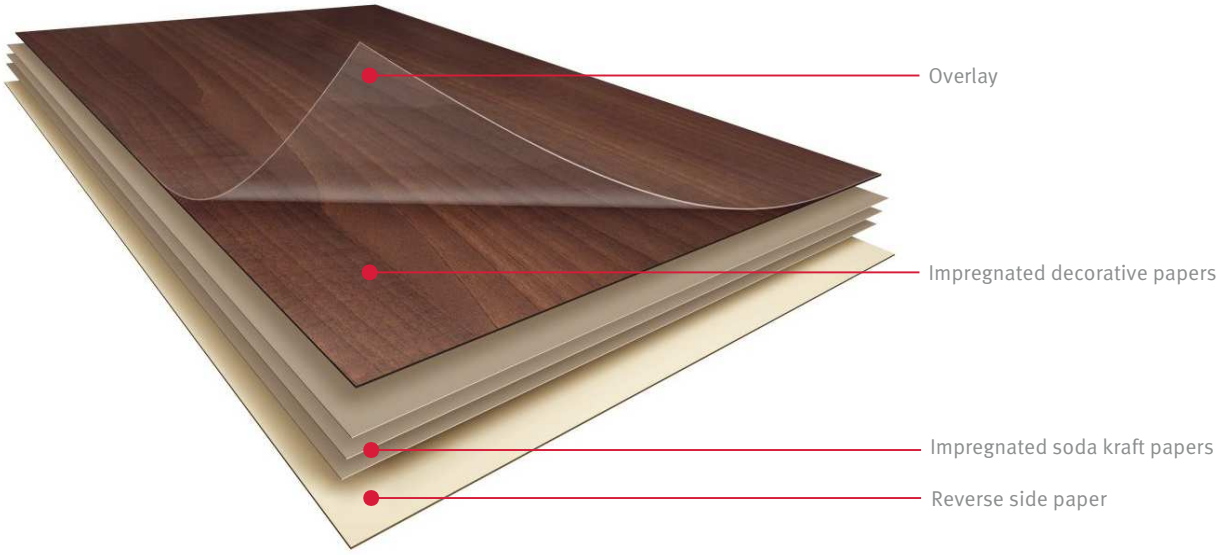
EGGER laminates are versatile materials that can be processed in combination with wood-based materials or other core boards to form what are known as composite elements. Applications for these composite elements are many and diverse, requiring different qualities of laminate appropriate to the fields in which the products will later be employed. Traditional applications and areas in which they can be used include the kitchen and door industries, the office furniture sector, exhibition stand construction, shop fitting, interior design and the shipbuilding and automotive industries.

Contents

1. Description of the material

EGGER laminates are decorative laminates based on curable resins. They have a multilayer structure and consist of melamine resin impregnated decorative paper and one or more layers of soda kraft paper impregnated with phenolic resins, which are laminated under high pressure and heat. The laminate structure, resin and paper quality, surface texture, use of special overlays and the press parameters during production determine the laminate quality and therefore the subsequent use or area of application.

Laminate composition, using EGGER laminate MED as an example



2. Quality features / Technical data

EGGER laminates essentially conform to EGGER's high quality standards as well as the applicable standards and regulations. EGGER laminates are tested according to EN 438-2:2005 with respect to all relevant quality requirements. The various laminate qualities required for particular application areas conform to these requirements. For uses/application areas, quality requirements, technical data and supply formats, please see the relevant data sheets.

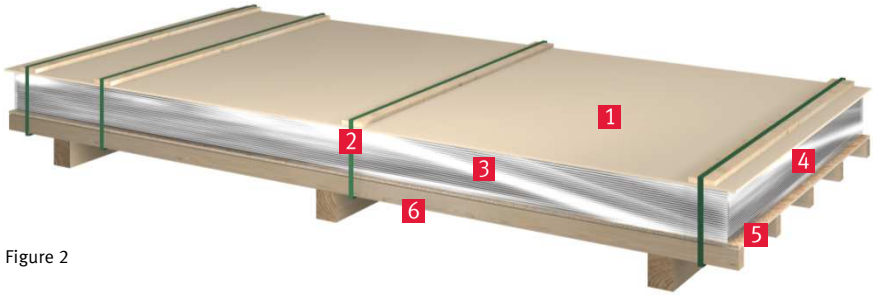
EGGER laminate qualities in overview:

Laminate qualities	Laminate type conforms to EN 438	Nominal thicknesses [mm]	Use
Laminate MED	**P -** Postformable	0.60 and 0.80	General Purpose Laminate
Laminate Flex	**P -** Postformable	0.40 – 0.60; 1.00 and 1.20	Special postforming quality
Laminate Flammex	**F** - Flame retardant	0.60 and 0.80	Flame-retardant laminate
Laminate real aluminium	**P -** Postformable	0.80	Design laminate
Coloured core laminate	**S –** Standard	0.80	Design laminate
Laminate painting grade	**P –** Postformable	0.40 – 0.80; 1.00 and 1.20	for special use for individual colour design
XL Laminate	**S –** Standard	0.80	General Purpose Laminate Laminate with synchronised pore

3. Transport, storage and handling

3.1 TRANSPORT

Laminates are generally transported on pallets (see Figure 2). The pallet is suitable for the long-term storage of the laminates.



1 Cover board
2 Plastic strap
3 Foil
4 Laminates
5 Cover board
6 Wooden pallet

Figure 2

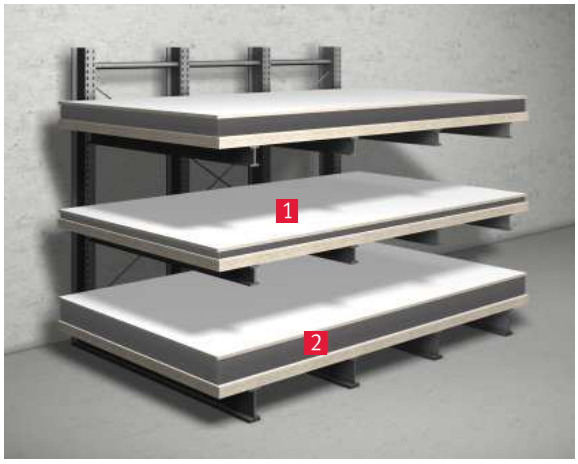
Cardboard packaging is used for minimum quantities and for deliveries via courier service (see Figure 3). We recommend unpacking the laminates after delivery and storing them according to section 3.2. Optimal conditions for the further processing of the laminates are only guaranteed under these circumstances.

Figure 3

3.2 STORAGE

Laminates must be stored in an enclosed and dry room in normal temperate environments. When the original packaging is removed, the laminate must be stored on full-surface, horizontal protective boards. Direct floor contact and/or exposure to the sun must be avoided.

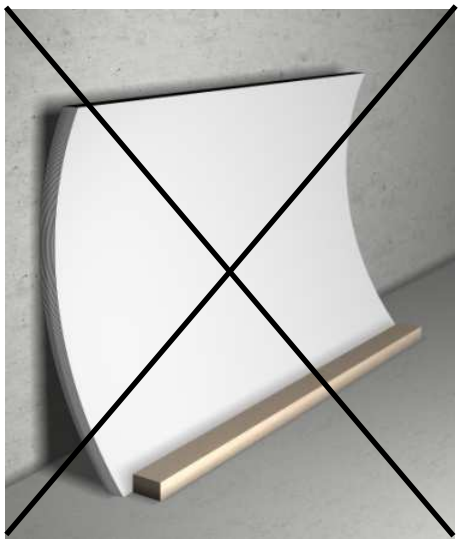
The uppermost board should be laid with its decorated side facing down and should be covered with a protective board of at least the same format (see Figure 4). Where horizontal storage is not possible, the compact laminate sheets should be stored at an angle of approximately 80°, in an inclined rack, providing support to the surface area and ends (see Figure 5). Using a protective board of at least the same format is required for this storage as well.



1 Laminate stack
2 Protective board

Figure 4

Correct!



Wrong!

Figure 5

3.3 HANDLING

The EGGER laminate must be inspected for visible damage after removing the packaging and prior to processing. In principle, those transporting and / or handling laminates should wear personal protective equipment such as gloves, safety footwear and suitable work clothing. The decor sides should never be pushed against one another or dragged over one another. The laminate boards should either be raised, or the reverse side of one can be pulled over the reverse side of another. When laminate boards are being transported or carried, the method that has proved most satisfactory is to roll them up with the decor side on the inside, avoiding any rubbing movements. A sufficient number of large, flat and stable pallets must be used for transporting laminate stacks. The stacked laminates must be secured against slipping.

4. Processing

4.1 CONDITIONING

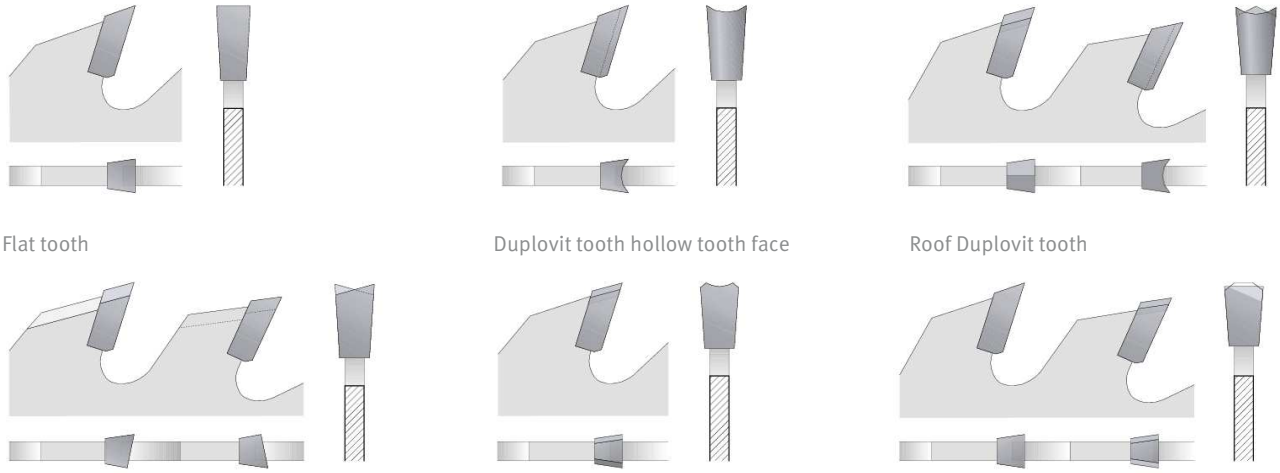
Before processing, the core board and EGGER laminate should be conditioned for at least 24 hours under normal atmospheric conditions in order for the moisture content of the two materials to become balanced. In particular, material that is too moist when it is processed not only tends to bond poorly, but is also likely to shrink which can result in warping and cracking.

4.2 CUTTING

Conventional wood processing machines such as a panel saws, table saws, circular saws or jigsaws may be used to cut laminates to size. Panel saws or bench circular saws are generally used to cut the worktops to size. Various factors such as correct saw blade projection, infeed speed, tooth shape, tooth pitch, RPM and cutting speed must be considered for good cutting results.

Example – Table circular saw:

Cutting speed: approx. 40 to 60 m/sec.
Motor speed: approx. 3,000 to 4,000 rpm.
Feed: approx. 10 to 20 m/min (manual feed)The laminate must also be held down across its surface; this is because allowing it to "flap around" will result in tiny cracks, which can later turn into notches or stress cracks. With the exception of panel saws, all cutting involves manual feed. The high-quality melamine resin used for the surface of the EGGER laminate means that the tool wear is considerably greater than with normal wood-based materials. We recommend that you use carbide metal-tipped or even diamond-tipped saws or router bits. Use the following tooth shapes depending on the standard of finish you require (coarse or fine cut):



Flat tooth | Duplovit tooth hollow tooth face | Roof Duplovit tooth

Alternate tooth | Duplovit tooth with bevel | Trapezoidal flat tooth

Figure 6

Use a cutting guide if using a hand-held circular saw or jigsaw. Cutting should be performed from the underside of the board.

4.3 BALANCER

In general, when manufacturing composite elements with laminate, tension equalisation must be ensured with a suitable balancer. In this context, we may also speak about a symmetrical structure of the joining element, i.e., the use of identical laminate on the front and reverse side. An asymmetrical structure generally leads to the element's warping or insufficient flatness, and thus the production of asymmetrical composite elements remains the fabricator's responsibility. In addition to the balancer used, flatness is also influenced by other criteria, such as: thickness of the core board, wood moisture, quantity of adhesive, etc. It is therefore recommended to verify the selection of a suitable balancer through pre-testing prior to producing the element.

4.4 GLUING

Depending on the field in which it will later be used and the challenges that will be posed, EGGER laminate can be glued to a range of different core boards using a variety of different types of adhesive. Traditional wood based products that are suitable for use as core boards include: Chipboard, MDF and HDF boards. Wood-based materials such as coreboards and veneer boards require special care and press tests should be carried out before series production.

Note that coreboards and veneer boards do not attain the same consistent structure of chipboards due to the use of veneer and/or solid wood. Constituents such as veneer and/or solid wood do not attain the uniformity of dimensional changes in fluctuating climatic conditions that can be guaranteed with chips. However, a flat and tension-free coreboard is a prerequisite for a smooth surface, therefore coreboard calibration and a wood moisture content test (indoor application ≤ 8 %) must be carried out. Materials that are worked with while they are too moist tend to shrink over time, which may lead to cracks and warping.

When using Multiplex boards, veneer boards made of softwoods (e.g. poplar, birch, okoume, abachi) are most suitable. In the case of coreboards, laminated veneer with short strips and softwood-surface layers should be used to avoid surface irregularities. The coreboard has to be under no stress with a smooth, level surface. Solid timber is not recommended as a core board to affix laminate to.

The laminate and core board must always be cleaned thoroughly before gluing. Even before the adhesive is applied the materials must be free from dust, grease, oil or spots of moisture. It is important that the composite element has a symmetrical structure and that the adhesive is applied evenly to both the front and the rear side; warping may otherwise occur.

Heavily surface-densified chipboard and HDF boards achieve better adhesion with PVAc gluing after calibration with 80-120 grain size. P3 chipboards, as well as waterproof, possibly even phenolic resin bonded materials are worse at draining the water from PVAc glues. This causes pressing intervals to be longer.

Contact adhesives are often used for producing bent elements and to glue laminates with non-absorbent materials, such as metals. Contact adhesives generally consist of polychloroprene and a solvent. Prior to assembly, the solvents must be allowed to evaporate, the adhesive film must feel dry. The adhesive force depends on the polychloroprene crystallising under pressure. For this reason, the strength of adhesion depends on the pressure to which the parts are subjected. In order to achieve good adhesion, it is necessary to put the adhesive surfaces under high pressure for a short interval.

The final strength of the adhesive joint, irrespective of the type of adhesive used, will only be reached after several hours to days. Take into account curing times. For this reason, particularly large components should be handled with care immediately following gluing, given that bending or twisting may damage the adhesive joint.

The data included in the following table refers to the use of wood-based cores. They represent reference values that are influenced by:

- The type and quality of core board
- Processing conditions
- The type of adhesive corresponding to the later degree of exposure D1, D2, D3 or D4[*1]

Adhesion under local conditions on a test basis is always advisable, and the adhesive manufacturer's instructions must always be observed.

Adhesive type	Classifier. EN 204/205 *1	Temperature resistance [°C]	Adhesive application [g/m²]	Setting time*2 [Min.]	Press pressure [bar]	Pressure temperature / time		
						20 °C	40 °C	60 °C
Dispersion adhesives								
PVAc	D2 / D3 / D4	- 20 to + 100	90 - 150 on CPL **or** core board	max. 10	approx. 3	8 - 30 Min.	4 - 12 Min.	45 - 160 Sec.
Two-part PVAc	D3 / D4	- 20 to + 120			approx. 3*3	Observe manufacturer's instructions		
Condensation resin								
Urea resin	D2 / D3	- 20 to + 150	90 - 150 on CPL **or** core board	2 - 20	approx. 3 - 5	15 - 180 Min.	5 - 30 Min.	1 - 12 Min.
Melamine / urea resin	D3					Depending on hardener system		
Phenol / resorcinol resin	D3 / D4		100 - 180 on CPL **or** core board	approx. 2 - 15				
Contact adhesives (basis polychloroprene)								
without hardener	–	- 20 to + 70	150 - 200 on CPL **and** core board	Finger test2)	min. 5	min. 1 min.		
with hardener		- 20 to + 100						
Reaction adhesives								
Epoxy, unsaturated polyester, and polyurethane adhesives	D3 / D4	- 20 to + 100	150 - 250 on CPL **or** core board	Depending on type	Stack pressure store flat	depending on type and hardener system		
Hot melt adhesive								
EVA	–	- 20 to + 80	80 - 150 on CPL **or** core board	Extremely short	Rolling pressure	160 - 220 °C		
PA / PO		- 20 to + 100						
PUR	D3 / D4	- 20 to + 120	60 -100 on CPL **or** core board			120 - 160 °C		

*1 Groups D1, D2, D3 and D4 according to EN 204 classify glue according to minimum shear strength values and conduct upon exposure to moisture and water
*2 Setting time is dependent on the ambient temperature and the adhesive type, and is defined by what is known as the finger test.
*3 Depending on ambient temperature and type of glue

In general, compression takes place with the aid of flat, short-cycle and double-band presses in a hot or cold process. Please find below a list with manufacturers of veneer presses:

- Format-4 www.format-4.com
- Höfer www.hoefer-maschinen.com
- Italpresse www.italpresse-eng.com
- Joos www.joos.de
- Langzauner www.langzauner.at
- Ott www.ottpaul.com
- Wieder www.wieder-maschinenbau.at

Figure 7

5. Postforming process

In addition to the flat laminate bonded boards, with their angular edge designs, EGGER laminates are also used for post-forming purposes. Postforming elements are characterised by their seamless laminate transition from flat surface to edge. The postforming of laminates requires the use of a **P** (Postformable) laminate type.

Because of the large number of profiles and designs and the technical requirements of different systems, it is essential that agreement be reached in advance on defining the quality parameters and the laminate dimensions. Profiles should preferably be designed in the form of convex radii and carried out using stationary postforming machinery or postforming machinery operating continuously. Concave profile designs can only be achieved with stationary equipment and require the core board to be prepared in a specific way. Experience of postforming and the subsequent machining processes is also necessary.

5.1 CORE BOARD - SELECTION AND MACHINING

The correct choice of core board, plus factors such as temperature of the board, moisture content of the wood, surface characteristics, board structure, profile design, adhesive system and adhesive application rate, etc., determine the eventual quality of the postforming elements. The EGGER Eurospan raw chipboards, with their smooth, even surface and consistent board structure, have acquitted themselves well over time. Particular care needs to be taken when using chipboards on a dense, solid middle layer; failure to do so may result in adhesion problems or so-called "pressing through" of the middle layer.

Correct core board selection must be observed already upon profile execution, i.e., depending on profile depth, the use of MDF may be necessary. Particular care must be taken when using plywood panels and veneer boards. It is most important that the moisture content of the boards is low (max. 8%) and that the different materials are properly conditioned (see sections 4.1 and 4.4). Because of the layers of glue and the changing arrangement of fibres between the layers of veneer, it is more difficult to mill a profile than it is with chipboards or MDF boards; milling these boards also results in uneven wear to the saws. Cutting should follow the direction of the fibres in the top layer of veneer.

5.2 PROFILE MILLING

The tools generally used for profiling core boards are carbide-tipped or, for large batches, diamond-tipped cutters. There are various factors that determine the milling quality, including feed speed, rotational speed, the number of cuts and the quality of the core board. The quality of profile milling (blade marks, protruding chips, etc.) can be improved by using diamond sanding disks or sanding units. The choice and design of tools should be discussed and agreed with a tool manufacturer. It is important for profiles to be milled with precision, and stepped cuts and incomplete milling should be avoided; there may otherwise be difficulties at the postforming stage. The creation of small radii in particular demands extreme milling precision. It is also important that any dust and loose chips are removed by brush, air jet or suction once the milling process is complete.

5.3 GLUING

In addition to the recommendations and the adhesives for large-area gluing detailed in section 4.4, there are also certain restrictions that apply to the postforming process. Irrespective of the postforming process, the gluing of the laminate is generally carried out in two stages:

Step 1: Gluing the surface of the laminate (front and back) on the profiled core board
Step 2: Gluing in the area of the profile (rounding) in the course of the postforming process

As a general rule the amount of adhesive applied for gluing a surface should be such that none oozes out into the profile or rounding, especially when using condensation resin adhesives (urea resin). The adhesives used for gluing in the profile area are special PVAc adhesives with rapid initial adhesion and a quick setting time. This is necessary in order to "accommodate" the aligning forces of the laminate.

Always follow the instructions of the respective adhesive manufacturer.

5.4 STATIONARY POSTFORMING PROCEDURE

There is a considerable variety of stationary postforming methods, but here only the commercial process that uses contact heat is explained in more detail. It enables convex postforming elements to be produced in small and medium batches. Before the actual postforming (forming) is started, first the following preparatory production steps must be performed:

Step 1: Gluing the surface of the laminate (front and back) on the profiled core board
Step 2: Flush-milling the laminate on the rear and/or any necessary profiling on the rear of the core board
Step 3: Applying special PVAc adhesive to protruding laminate and the profile area of the core board

In step 1, care should be taken to ensure that the laminate on the front protrudes as far as necessary beyond the core board in accordance with the core board thickness and the profile design. This is known as a laminate flag or laminate projection (see Figure 8). The postforming itself - the reshaping of the laminate and the simultaneous bonding with the core board – is carried out using a flat, heated, pressurised and movable metal bar (see Figures 9-11).

The contact heat from the heated metal bar has the effect of heating the laminate up to the required postforming temperature. The required temperature of EGGER laminates lies in the range of approx. 150 °C to 170 °C. The temperature may be influenced by the following factors:

- Laminate thickness and decor
- Type and amount of adhesive in the postforming area
- Rate of shaping

Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

The precise control of the laminate temperature in the postforming area with the help of a temperature sensor is therefore very important. Once the postforming temperature has been achieved, the metal bar, remaining under constant pressure, automatically follows the outline of the profile on the postforming element, thus joining the laminate to the core board. The speed of the sequence of movements in the postforming process can be controlled, thus enabling the temperature to be adjusted.
If the optimum temperature is exceeded the result may be delamination of the laminate (blister formation); if, on the other hand, the temperature is too low, the likely result is that cracks (fractures) will form. The speed of shaping essentially depends on the amount of energy and the laminate thickness, but also on the profiling of the core board. To prevent the laminate from drying out and heat from being lost, the laminate must be warmed through and postformed as quickly as possible. EGGER laminates should preferably be postformed in the same direction as that in which they were fabricated; this can be recognised from the direction of the sanding marks on the reverse side.

5.5 POSTFORMING IN A CONTINUOUS OPERATION

Postforming in a continuous operation is more economical than the stationary postforming process described above. It requires the production of large series and is not suitable for item production. This method is only suitable for producing convex curves. Here again, the laminate should be deformed in the same direction as that in which it was initially fabricated. Although in principle transverse deformation is possible, it does involve considerable limitations with regard to postformability (minimum radius) and the component dimensions; the postforming process is, moreover, considerably longer and more difficult. Depending on the design of the plant, the necessary production steps are carried out sectionally and/or online. It is a requirement with both machinery designs that the profile milling of the core board (see section 5.2) and the gluing together of the laminate and the core board (see section 5.3) are done before the actual postforming, and both have certain advantages and disadvantages. There follows an explanation of the postforming process with reference to EGGER model series 200, also known as L-profile.

STEP 1: Postforming element following profile milling and surface gluing of the front and back side of the laminate, also known as a pressed part (see Figure 13).

Figure 13

STEP 2: In the first section of the postforming machinery, the pressed part is progressed to its final profile shape by additional milling units. With the so-called L-profiles, only the rear side of the laminate is glued to the core board, while the front side of the laminate is milled to leave the required projection (see Figure 14).

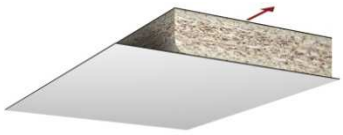


Figure 14

STEP 3: In the second section the special PVAc adhesive is applied evenly to the core board and the laminate flag using a glue roller and/or spray nozzles. To ensure good adhesion both now and in the future, it is extremely important that the glue is applied evenly to both surfaces (see Figure 15).

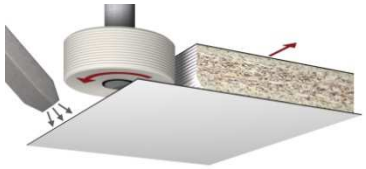


Figure 15

STEP 4: In the third section the special PVAc adhesive that has been applied is aerated, the water contained in the adhesive evaporates, thus activating it for the shaping that is to follow. At the same time the laminate is heated up by an infrared heater to prepare it for the deformation process. This is sometimes referred to as "plasticising" (see Figure 16).

Figure 16

STEP 5: In the fourth section the deformation process itself takes place. The forming rod (a.k.a. bending rod) is used to draw the laminate in the direction of the profile. In the pressure zone behind the rod the laminate is changed to its final shape using profile and pressure rollers, i.e. the profile and pressure rollers generate the compression force required for adhesion and within a short time the laminate is bonded with the core board (see Figure 17-20).

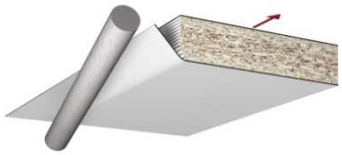


Figure 17

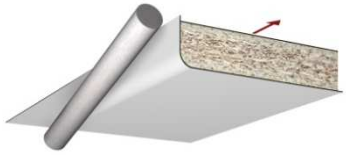


Figure 18

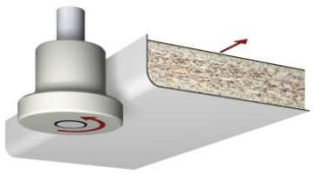


Figure 19

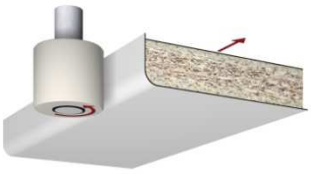


Figure 20

STEP 6: In the fifth section the final reworking of the postforming elements is carried out. With L-profiles, the projecting laminate on the front side is milled flush to the rear side of the element, and the fibre milling rebuffed as necessary. With U-profiles, such as the EGGER model series 300, a seal and/or hot-melt adhesive seal should be applied.

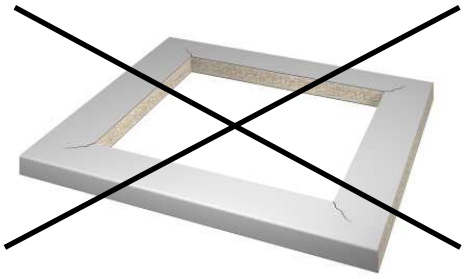
6. General processing instructions

6.1 CUT-OUTS

Cut-outs must always be rounded off with a radius of at least 5 mm, because corners with sharp edges adversely affect materials, causing them to crack (see Figures 21 and 22). This applies particularly to applications where, due to frequent exposure to heat, the laminates dry out and the shrinking tension is therefore much greater. In addition, all edges should be notch-free. The cut-outs should preferably be produced using a hand-held or CNC router. If using a jigsaw, you need to pre-drill the corners to the correct radius and saw from radius to radius. Finish off the cut edges with sandpaper, files or hand-held routers to remove chips and prevent cracking. The same careful finishing work should be done when using the tool known as a "circle cutter" for halogen spot lights. As a rule, cut-outs are only carried out after postprocessing of the laminate is complete. Before machining, ensure that the composite elements are supported securely and that sawing, drilling or milling is not likely to cause any damage. In particular, narrow joining areas in the board can break or crack if the board is not fully supported during machining. The board cut-outs should also be secured to ensure that they do not suddenly fall out or break. This could injure persons or property.

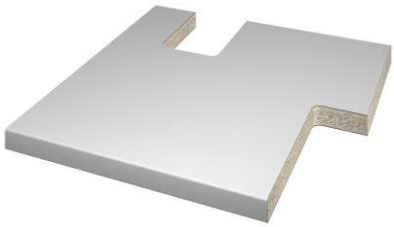
Always read through the instructions and use the assembly templates provided by the manufacturers.

Right!



Wrong!

Figure 21



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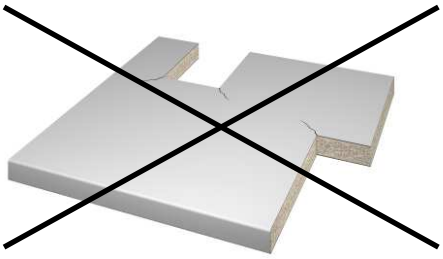

Wrong

Figure 22

6.2 SEALING EDGES, CUT-OUTS AND DRILLED HOLES

Laminate elements, such as worktops, fronts, etc., are effectively protected from moisture penetration by the laminate surface. Moisture and damp can still reach the core board, however, via unprotected edges such as cut-outs, corner joins, mitres, back edges, drill holes, screw holes and fixtures. The necessary final sealing operations should always be carried out during the final assembly phase, especially with horizontal surfaces (worktops). EGGER melamine edging or EGGER ABS security edging (thermoplastic edging) is used to seal visible cut edges.

The best products for sealing hidden cut edges have been found to be sealing profiles and self-curing sealants, such as silicon rubber, polyurethane and acrylic. When using sealants a primer also has to be applied; either one that forms a film or a cleaning primer depending on the material.

You must follow the manufacturer's instructions carefully when using these materials!

It is essential that you clean the areas you are sealing and to allow the manufacturer's specified venting time when using primer. Apply the sealant leaving no gaps or holes and the smooth over with water and detergent. Areas near joints should be masked off to prevent the surface from becoming dirty. Any pipes or cables must be centred so that a minimum distance of 2 to 3 mm is maintained on all sides of the feedthrough. Careful sealing is also required (see Figure 23).

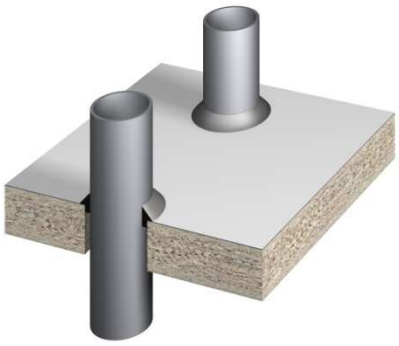

Figure 23

Cut edges can also be sealed using a two-part lacquer or two-part adhesive. Manufacturers supply sealing rings, profiles or collars with attachments such as mixer taps, sinks and hobs. Always follow the manufacturer's instructions when fitting these items.

6.3 FASTENERS

Where fittings, wall terminating strips, etc., are to be secured to the composite elements, the laminate should be pre-drilled for the screws. The bore holes must be at least 1 mm (0.04") larger than the screw diameter in order to avoid tension in the material (see Figure 24). With horizontal surfaces we also recommend protecting the inside of the screw hole with sealant before screwing.

Figure 24

7. EGGER laminate with coloured core

EGGER offers various uni decors as laminates with coloured core. These laminates are also called "solid-coloured". In addition to the papers and resins used, this laminate also differs from the laminate with brown core in its product features.

As a rule, when processing laminate with coloured core, the processing guidelines listed above apply, but the following specifications must be taken into account.

7.1 DESCRIPTION OF THE MATERIAL/APPLICATION RECOMMENDATIONS

In the case of the laminate with coloured core, the focus is on the possibility of realising solid-coloured applications and underlining the laminate edge in particular as design solution. EGGER laminate with coloured core has a multiple layer structure and consists of impregnated decor papers leading to the solid-colour look.

According to EN 438-9, EGGER laminate with coloured core is classified as BTS (Coloured core laminate, thin Laminate, standard grade). This means that horizontal applications are possible without postforming.

7.2 CUTTING

The use of special synthetic resins decreases the flexibility of the laminate with coloured core. This should be taken into account during the individual processing steps, e.g. sawing, milling, drilling, etc. Take care when using carbide- or diamond-tipped saw blades, and select an appropriate feed rate.

A good cutting result depends on different factors including whether the decor side is facing upwards, saw blade projection, feed rate, tooth shape, tooth spacing, motor speed and cutting speed. Tooth shapes such as Duplovit tooth with hollow tooth face or trapezoidal tooth have proven suitable (see Figure 6). Example: Circular saw

- Number of teeth: approx. 50 – 60
- Cutting speed: approx. 40 – 60 m/sec.
- Motor speed: approx. 3.000 – 4.000 rpm
- Feed: approx. 5 – 10 m/min (manual feed)

7.3 GLUING

The stiffness of laminates with coloured core, as well as the need to hide the adhesive joint for optical reasons, require a particular selection of adhesives. Therefore, it is recommended to coordinate the special application with the supplier of adhesives. In general, laminate with coloured core is glued onto chipboard, which is a good core material thanks to its consistency. A flat and tension-free core board is a basic requirement for the further processing of laminates with coloured core. Please note that furniture and veneer boards should not be used. In order to reach dimensionally stable elements, it is necessary under all circumstances to apply the exact same product on front and reverse – laminate with coloured core. In addition, the production direction (sanding direction reverse) must be identical on the front and the reverse side. In order to reach adhesion that is as tension-free as possible, it is recommended to press the elements exclusively at cold temperatures. Thermoplastic adhesive systems, such as PVAc adhesives, should be preferred. Recommended adhesive quantity: 120 – 150 g/m².

Please follow the machinery and adhesive suppliers' instructions.

8. EGGER laminate XL

As a rule, when processing laminate XL, the processing guidelines listed above apply, but the following specifications must be taken into account when bonding laminate XL.

For the bonding of EGGER laminate XL, unfilled dispersion glues have proved best. These glues are characterised by good adhesion properties. The glue types listed in the table can be recommended for surface bonding.

Manufacturer	Type description	Press parameters
Henkel respectively Dorus	Aquence KL0074 also known as Dorus MD074	15 minutes pressing time at 60 °C
Henkel	Ponal Classic HV710	
Jowat	Jowacoll 103.10 and 103.30	
Kleiberit	303.0	

The data included in the table refers to the use of wood-based cores. They represent reference values that are influenced by:

- The type and quality of core board
- Processing conditions

For different pressing parameters or use of alternative glues, adhesion under local conditions on a test basis is always advisable and the adhesive manufacturer's instructions must always be observed.

The final strength of the adhesive joint, irrespective of the type of adhesive used, will only be reached after several hours to days. Take into account curing times. For this reason, particularly large components should be handled with care immediately following gluing, given that bending or twisting may damage the adhesive joint.

9. EGGER laminate with protective film

As a rule, when processing laminate with protective film, the processing guidelines listed above apply, but the following specifications must be taken into account.

9.1 STORAGE

Please observe the processing instructions in section 3. Transport, storage and handling. The use of a protective board of at least the same format not only improves flatness, but also prolongs the UV resistance of the protective film.

The peel able protective film must be removed at the latest 12 months after production of the laminates, as adhesive may otherwise be left over on the surface.

9.2 PROCESSING

The temperature resistance of the protective film is at about 70°C. Therefore, the following pressing parameters must be observed:
- maximum pressing temperature 70°C for a pressing time of 3 minutes
- Press pressure 3.5 kg/cm²

Postforming is not possible, due to the low heat resistance of the films.

9.3 RECYCLING / DISPOSAL

The used protective film can be recycled. In as far as reuse is not possible, the protective film may be disposed of without hazard in a waste incineration plant.

10. Thermal properties

The use of laminate joint elements under certain temperature and moisture conditions requires the careful selection of the components used. Core material, adhesive and processing must be adjusted accordingly.

With regard to this, please observe in particular the instructions in 4.4 Gluing and 6. General processing instructions!

10.1 DRY HEAT

EGGER laminate may be exposed for a short period to surface temperatures of up to 180°C, without the surface or colour changing. Nevertheless, in a few cases, the gloss may worsen under such extreme conditions. Longer exposure to heat or higher temperatures lead to surface damage. For this reason, avoid placing hot cooking utensils, e.g. casseroles, pans, etc., that have come straight from the oven or the hob onto the laminate surface.

If the laminate is exposed to increased temperature for a longer period of time (up to 8 hours), for example in the proximity of cooktops or ovens, the temperature may not exceed 100°C. For applications with permanent heat exposure, temperatures of up to 60°C are admissible. Trapped heat must be avoided in all cases.

10.2 WATER VAPOUR

Water vapour and cooking water do not cause changes in the case of short-term exposure. The degree of gloss or the colour only change with longer exposure. Sufficient aeration and ventilation is essential, so that the surfaces are able to dry out completely after exposure to moisture. Laminates may not be exposed to trapped moisture.

10.3 COLD

Very dry cold environments do not pose problems for EGGER laminates. However, shock sensitivity is greater than under normal climate conditions.

11. Recommended approaches to cleaning and usage

Thanks to their resistant and hygienic dense laminate surface, EGGER laminates do not require special kind of care. As a general rule dirt and spilled substances such as tea, coffee and wine etc. should be cleaned immediately as the cleaning work increases if they are left to dry. When necessary, cleaning should be done with non-aggressive agents. In particular cleaning agents must not contain any abrasive components, as they may adversely affect the gloss level or scratch the surface. Given that, any type of dirt, from light, fresh to heavy, stubborn may be caused by a variety of substances, correct cleaning is essential.

The following information should be observed for daily use:

Placing burning cigarettes on the laminate surfaces causes surface damage. Always use an ashtray.

Laminate surfaces should generally not be used as a surface for cutting since knives leave cuts even in durable laminate. Always use a cutting board.

Putting hot items such as pots and pans on the laminate surface directly from the burner or out of the oven must be avoided, since the gloss level may change or surface damage may occur depending on the heat level. Always use heat protection.

Spilled liquids should always be wiped or cleaned up immediately since extended exposure to certain substances can change the gloss level of laminate surfaces. Especially in the areas around cut-outs and joints, spilled liquids should always be cleaned up quickly and thoroughly.

These recommendations apply especially to matt laminate surfaces. These have a distinctive look and feel, but have a greater tendency to show wear and tear.

You will find further information in the technical information sheets listed in the following:

- EGGER laminate with the ST9 Perfect Matt surface texture
- EGGER laminate with surface texture ST30 Gloss Finish
- EGGER Laminate Cleaning and Use Instructions
- Resistance to chemicals of EGGER laminates
- EGGER laminates with pearlescent decors
- Bonding EGGER laminate XL
- EGGER laminate with protective film