TECHNICAL GUIDE

ONEDTL
THERMOLAMINATE

TRANSPORT, STORAGE & HANDLING

1. INTRODUCTION

ONEDTL Thermolaminate is an innovative decorative surface invented by DesignTree.

2. PRE - FABRICATION

Please follow the Pre-fabrication guidelines to ensure the best-in class super smooth matt finish of Feather Touch laminates does not get damaged prior to fabrication.

2.1 TRANSPORT, STORAGE & HANDLING

2.1.1 TRANSPORT

ONEDTL Thermolaminate can be transported rolled up or laid flat. DesignTree recommends transporting the sheets in a vertical position.

When rolled up, the decorative surface must remain on the inside. For laminates that are being transported in rolls, please ensure that the rolled-up cylinder is at least 550 mm in diameter.

Tie the roll using good quality material, ensuring that the material used to tie the roll down is applied at least at two points that are equally close to the end of the roll. A foam, insulating pad or corrugated cardboard needs to be used between the ties and the laminate.

During Transportation, **the sheets should not be exposed to direct sunlight or high heat zones. Do not stack heavy loads on top of the laminate.**

2.1.2 HANDLING

Thermolaminates should be handled carefully to avoid damage to the product, especially the surface and the edges. Decorative faces may get damaged on sliding over other surfaces, including other thermolaminate sheets. Therefore, sliding the sheets IS NOT recommended; the sheets need to be lifted instead.

DesignTree recommends the use of 2 workmen to lift the sheet, especially if the sheets are sized over 3.5 feet. Always ensure the workmen walk at a steady pace, holding the sheet with limited slack, as excessive bowing can strain the surface of the laminate.

Never allow the thermolaminates to touch the ground or the walls while they are being carried.

If forklifts and similar mechanized vehicles are used to load or unload a vehicle, ensure that the pallets are clean and structurally sound.

2.1.3 STORAGE

Horizontal Storage
Thermolaminate sheets should be stacked in pairs, in a back-to-back configuration. The sheet at the bottom of the stack must be placed with the decorative face downwards, and a flat, protective board placed below it. The topmost sheet of the stack should preferably be placed with the decorative side downwards. Additionally, a similar-sized board may be placed over the topmost sheet to maintain a uniform pressure on the underlying sheets and prevent any warpage in bulk stock.

Vertical Storage
If space constraints don't allow for horizontal storage, laminates may be stacked at an angle close to the perpendicular. A heavy board should be used on the free end to prevent any slippage and damage.

STORAGE RECOMMENDATIONS

- Avoid dusty or unclean areas.
- **Keep away from direct sunlight and high-heat zones.**
- Store in a well-ventilated room, away from direct sunlight with stable temperature and humidity.
- Rotate stock: Use older sheets first to avoid long-term stress on any particular stack.
- Always store with decorative face down and ensure no weight stress or bending is applied to the sheets during storage.

2.2 PRECONDITIONING & THE ENVIRONMENT

Proper pre-conditioning is essential for ensuring optimum performance and a flawless installation of ONEDTL Thermolaminate.

Unlike cellulose-heavy HPL laminates, ONEDTL Thermolaminate is composed of a proprietary co-polymer blend with low moisture sensitivity and high dimensional stability. However, it is still recommended to equalize the temperature and environmental exposure of the laminate, substrate, and other fabrication materials before processing.

Pre-conditioning involves allowing the laminate sheets, substrates, adhesives, and any edge bands or liners to rest in the same environment as the intended installation area for a minimum of 24–48 hours. This ensures all materials achieve thermal and dimensional equilibrium.

Recommended conditioning conditions:
- Temperature: 24°C ± 2°C
- Relative Humidity: 50–60%
- Duration: Minimum 24–48 hours (may vary based on climate and region)

Adhering to these guidelines will ensure optimal handling, preserve material integrity, and support the best performance of ONEDTL Thermolaminate in all applications.

SUBSTRATES & ADHESIVE GUIDANCE

2.3 SUBSTRATES & ADHESIVE GUIDANCE

2.3.1 SUBSTRATE

High Pressure Laminates are a surfacing material that are required to be bonded to a substrate for their final application. There are many types of substrates available to the specifier and the customer, with the final choice dependent on a variety of factors.

EXPECTION	EXPLANATION
Mechanical Backing	Laminates are a homogenous material. Therefore, a rigid, flat, material with a uniform thickness is recommended for use with laminates
Surface Compatibility	To ensure proper adhesion between the substrate and the laminate, there must be compatibility between both surfaces. An appropriate amount of roughness and minimal undulations, bumps, ridges and knots would help in the adhesion process.
Dimensional Compatibility	Expansion across length and width remains nearly uniform, reducing the risk of warping or misalignment after installation.

Other factors when choosing a substrate may include performance points such as water resistance, fire retarding properties), costs etc.

The recommended substrates for best application are :

- HDHMR
- MDF
- plywood
- foamboard.

For detailed guidance, please get in touch with your nearest ONEDTL Thermolaminate Distributor or our Technical Team.

2.3.2 ADHESIVES

There is a wide variety of substrates available in the market for use with laminates. Selecting the appropriate adhesive depends on the specific substrate, surrounding environmental conditions, and any additional performance requirements—such as moisture resistance or fire-retardant properties—needed for the intended application.

RECOMMENDED ADHESIVES:

Pro Bond (for normal setting)
HeatX (for fast setting)

FABRICATION

3. FABRICATION

ONEDTL Thermolaminate can be fabricated using both power tools and manual tools.

For best results, please follow these guidelines closely. The general fabrication process includes:

- Cutting
- Bonding & Trimming
- Inlays, Cutouts & Holes
- Edge Profiling & Finishing

3.1 POWER TOOLS

Most fabrication tasks are ideally performed using power tools. Both handheld and stationary (table-mounted) tools can be used. Tools commonly used include: saws, routers, trimmers, drills, etc. note these general guidelines for using power tools-

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- Most tools and accessories that are used for woodworking can be used for thermolaminates.
- Cutters and saws should be TCT (Tungsten Carbide Tipped) or PCD (Polycrystalline) based whenever possible.
- As far as possible, the tools should remain stationary while worktops are allowed to move. In case the worktop is fixed, take care to prevent thermolaminates and substrate from sliding while being processed.
- When cutting the laminate to size using a stationary or table saw, ensure the sheet is flat on the saw table. The decorative face should face up, and the material should be aligned in same running direction.
- The use of a scoring blade in a climb cut configuration can help improve the quality of the cut and reduce the possibility of damage to the laminate.
- Always ensure that the finished side is facing upwards and pay close attention during
- fabrication. Most mishaps occur during moments of carelessness and overconfidence.

3.1.1 CUTTING

Always start by cutting the largest size required from the laminate stock. Edging and backsplash sizes are cut later, as this helps reduce wastage. To cut a laminate, any of the following tools can be used-

- Saws
- Routers
- Laminate Trimmers
- Laminate Scissors

SAWS
Saws come in several varieties:

- Depending on the form factor- Stationary saws (or table saw), portable hand saws (or hand saws)
- Depending on the blade- circular saw, jigsaw, bandsaw.

Two important factors to remember while using any form of saw are the saw blade choice and the feed speed. The choice of saw for cutting a laminate depends on the project considerations as well as the fabricator's familiarity and tooling. A band saw is recommended for making curved or straight cuts, with a higher likelihood of chipping. Choose the widest blade possible based on the cuts being made. When cutting curves, the width of the blade will determine the smallest radius that may be cut. Smaller-width blades
are used for smaller radius cuts, allowing for making curves on the laminate. To smooth edges on curved cuts, cut oversized parts and finish the edges using a combination of routing and filing. Feed speed for bandsaws can range from 5000-8000 surface feet/minute. Use a fine-tooth blade, with a suggested pitch of 18 teeth per inch. Straight cuts require a blade width of 1 inch or above. Teeth with options to cut straight lines as well as contours are recommended. Avoid using band saws on bonded laminates.
Circular saws can also be used to make cuts into the laminate sheets. Both bench saws and portable saws can be used, though bench saws may produce better results and higher reproducibility. Keep in mind the following specifications for cutting using circular saws:
Feed Speed: 20-30m/min
Tool Speed: 3,000 to 4,000 rpm
Tooth Pitch: 10 to 15mm
Tip Speed: 60 to 100m/ s

Saw blades should be fine-toothed and close-pitched, with blades that have alternative teeth top bevelled (ATB). Another option is HiATB, which is a modified ATB blade with higher bevel angles. The higher bevel angles create a scoring effect on the surface, producing clean cuts. However, these blades dull the fastest and are difficult to sharpen. The blades should be of adequate thickness, otherwise, they lose stability in operation and can cause improper cuts.
As a flat tooth saw blade may cause splintering on thicker laminates, a Trapezoid Flat Tooth blade can be used in such cases. For thin laminates, a flat tooth blade may be used, keeping in mind the chances of average finish quality. If cutting double-sided sheets, a scoring blade is also highly recommended. Such a scoring blade is smaller in size than the main blade, cuts to a limited depth and rotates in the opposite direction
(along the direction of the feed) to that of the main blade. Care must be taken to prevent kickback or backlash. The height of the saw plate is important, as
Larger height creates a favourable entrance angle, and can lead to a cleaner cut. Use a sacrificial board and add a guide to serve as a fence, this helps reduce flutter during movement of the sheet through the saw blade. Always make sure the decorative side faces away from the rotation of the blade. On most table saws, this means that the decorative face should face upwards. Always ensure that the blade cuts cleanly through the surface and that the blade doesn't become too hot. Ensure that saw blade teeth cut smoothly into the decorative face, and at least 3 teeth are always in contact during each pass. There are also several special saws now that are manufactured exclusively for cutting laminates, check with the manufacturer.

ROUTERS
Routers can be used to cut as well as mill the laminate. Recommended router speeds range from
16000 rpm to 22000 rpm. Always choose a router with adequate horsepower. The sharpness of router cutters should be maintained. Use a router with a guide when cutting large lengths of laminate.

LAMINATE TRIMMERS

Laminate trimmers are specifically designed for quick and easy laminate trimming. With a smaller footprint compared to routers, they also spin at a higher rpm, varying between 25,000-30,000 rpm, though typically smaller-sized bits are used. Their low footprint allows for easy carrying to the job site along with easy handling,
such as one-hand operation and use in tight corners. An important distinction from a router is the use of an isolated bearing, which is attached to the router base instead of being on the router bit. This design takes the movement of the router to the router base, and not so much to the laminate, reducing chatter and flutter. The bearing doesn't spin with the bit and doesn't damage the surface that it is pressed against. Since the bearing doesn't need to spin at high rpm like the router bit, it also lasts much longer, reducing tool wear.

3.1.2 BONDING AND TRIMMING

Always follow the Prefabrication checklist for choosing the appropriate substrate and adhesives for the project. Prior to bonding, laminates must be prepared by sanding and cleaning to remove dust, grease and any contamination, especially around the cuts on the edge.

Application Guidelines-

The two key steps to a good bond are Surface Preparation and proper application.

To prepare the surface, the substrate must be as clean as possible, and the bonding process must be carried out in a clean environment. The presence of dust, oil or particles between the laminate and the substrate may cause issues later. Ensure proper application of the adhesive, and make sure the adhesive has been processed as per the manufacturer's guidelines. Multi-part adhesives should always be stirred thoroughly and applied evenly as a proper coating on both the substrate and the laminate.

Most bonding issues result from one or more of the following-

a. Improper application

Use the appropriate pressure as recommended by the adhesive manufacturer. A rough guideline for pressing laminates for bonding to substrate is application of 30-80 psi of pressure (in comparison, veneer layers need about 200 psi pressure to bond). Pressure should be applied over the entire laminate sheet, ensuring the edges are clamped closely together. To remove any air bubbles, hand rollers or J-rollers can be used, moving them from the centre towards the edges.

Use of dowels is recommended to ensure the laminate aligns properly with the substrate.

While applying the adhesive, the adhesive needs to be uniformly applied on both surfaces. A uniform spread of adhesive will not have any marked variation in appearance. In case there is any variation in appearance of the adhesive, recoat the surface. The substrate edges can be double coated with adhesive as they have higher porosity. Glue must be applied on both surfaces—horizontally on one surface and vertically on the other—for optimal bonding.

b. Improper Environmental Conditions

Adhesives as well as laminates and are sensitive to environmental conditions. Unsuitable temperature and humidity may affect the pot life of the adhesive, and lead to adhesive being overly dry or overly wet.
For example, a combination of high temperature and humidity above 85% can cause condensation, leading to poor bonding results. In such a scenario, air-dry the surface.
Ensure the temperature and humidity of the chosen adhesive are in accordance with the environmental conditions of the fabrication and installation site.

When fabricating vertical panels onsite, limit the laminate sheet to 2.5 feet width, larger panels should be fabricated in a workshop. If contact adhesives are used, panel width should be restricted to a maximum of 600mm. If ambient conditions for the installation remain warm and dry, contact Adhesives should be avoided.
Once the rough cut laminate has been bonded to the substrate, it should be allowed to set for a few hours before attempting any further fabrication.
Trimming is needed to remove the projecting edges of the assembled panel. Routers with flush bits are recommended for this process. Stationary Routers can be used for edge trimming and even making cutouts and grooves. Portable Routers are great for edge trimming and can also be used for cutting holes and working on edges. When using a portable or hand router, always prefer conventional milling over climb milling.

Following the trimming process, edges must be routed smooth.

3.1.3 CUTOUTS, EDGE PROFILING & FINISHING

Cut-outs:
All internal corners and cut-outs should be rounded as far as possible. A radius of 1 mm or larger in the corners is recommended. For larger sized cuts, the radius must also be increased. All cut-outs should be routed or filed to ensure smooth edges.
The use of non-rigid, adhesives other than the ones recommeded by DesignTree may cause delamination.
When contact adhesives are used, the minimum radius for inside corners must be 2mm.
For making cutouts, especially in worktops and countertops, DesignTree recommends a jigsaw saw or a circular saw with the teeth pulling upward. Before starting with the jigsaw, use a drill to make pilot through-holes in each corner or use a plunge cut tool (such as a multi-tool with plunge cut blades, preferably with oscillating motion). Then, with the decorative side facing down, cut from the pilot holes using a jigsaw. Sometimes constraints of space don't allow for a full-sized jigsaw to be used. Such a scenario would be when making cutouts near the edge of a countertop, e.g. near a backsplash. In such a
case, an oscillating multitool can be used with a half-moon saw blade, followed by a plunge cut blade. Sometimes use of such a tool can cause burning of the substrate and the edges, so a Japanese style blade with large tooth can be used to create a wider kerf for a pilot scribe. In case the project involves refabricating an existing worktop, which may have naiils or other metal fixtures, we recommend using a Bimetal blade.

Edge Profiling: Designtree recommends some form of edge protection to ensure the edge remains protected. Some options to finish an edge include-

- bending the edge of the laminate over the exposed edge of the substrate at a 90° angle.
- Edge banding tape.

Sharp corners and edges should be chamfered to eliminate the chance of injury and chipping. Numerous edge profiling options are available. Check with ONEDTL Thermolaminate Distributor or our Technical Team for more details.

4. POST FABRICATION

During fabrication processes, the protective film must be left on. Once all the fabrication processes have been completed, and the worksite cleaned, it is recommended to remove the film.

90° BENDING

3. 90° BENDING

One of the defining advantages of ONEDTL Thermolaminate is its ability to achieve a seamless 90° bend without cracking, chipping, or delamination. This makes it an ideal solution for edges, corners, columns, and curved surfaces—allowing designers to create monolithic, joint-free aesthetics with ease. It is necessary to make a V - groove at the back of the laminate to ensure a perfect 90° bend.

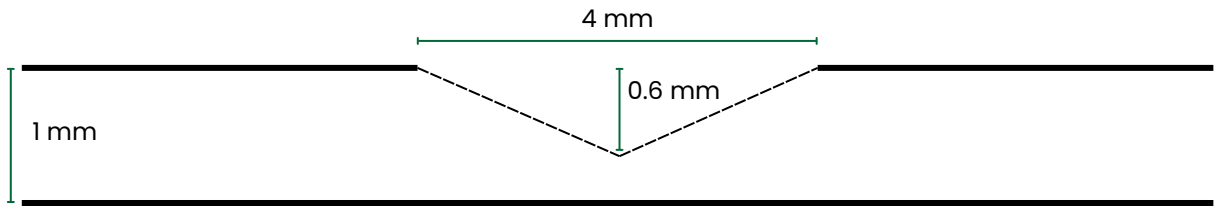
3.1 What is V-grooving?

V-grooving is a controlled method of partially cutting into the back of the laminate along the bending axis to enable it to fold cleanly at sharp angles—especially 90°.
This process helps in:

- Reducing laminate thickness along the fold line
- Concentrating the flex zone
- Preventing surface cracking or bulging

3.2 V-Groove specifications

Parameter	**Value**
Groove Type	V-shaped
Groove Width	4 mm
Groove Depth	0.5 mm – 0.6 mm
Groove Location	Back side of laminate
Groove Angle	90° (included angle)
Distance from Edge	As required based on final bent profile



4. 90º BENDING STEP - BY - STEP PROCESS

1) Begin by marking accurate measurements on the ONEDTL Thermolaminate sheet using a measuring tape and right-angle scale. Fit a base plate to the bottom of your tile/wood cutting machine for stability.

2) Using a universal V-groove cutter (75 mm diameter, 4 mm thickness), create a groove along the marked line — 0.6 mm deep and 4 mm wide.

3) Clean the MDF or plywood substrate thoroughly. Apply adhesive using a roller applicator — vertically on the board and horizontally on the back of the laminate to ensure full surface contact.

4) Carefully bend the sheet along the groove to achieve a clean 90º fold. Trim any excess material using a mini hexa blade or scissors.

5) Fix the laminate to the board, pressing out air with a soft cloth. Apply masking tape along the edges and secure the panel using a C-clamp or weighted pressure. Allow it to set for 24 hours.

6) Once cured, remove the tape, clean the edges with a hand plane, and only remove the PE protective film after the furniture is fully ready.

4.1 HOW TO PREVENT STRESS LINES?

1. Use a Proper V-Groove Cutter

- Use a universal V-groove cutter with a 4 mm thickness and 75 mm diameter.
- Maintain a groove depth of 0.6 mm and width of 4 mm to relieve material stress along the bend line.
- Ensure the blade is sharp and clean to avoid tearing or excessive friction.

2. Avoid Overbending or Forcing

- Don’t apply sudden or uneven pressure while bending.
- Gradually fold the laminate along the groove, using a bending jig or roller if necessary, for a smooth, even curve.

3. Ensure Room Temperature Flexing

- Bend at moderate room temperature (ideally between 22ºC–30ºC).
- Cold temperatures can cause brittleness and increase the risk of whitening.

4. Use a Heat Gun (If Needed)

- For tight corners or high-stress areas, gently warm the bend line using a heat gun before folding. Keep the gun 5 cm away from the edges. temperature should be between 50ºC–60ºC
- This softens the surface slightly and reduces the risk of whitening.

5. Correct Groove Alignment

- Make sure the V-groove is precisely aligned with the required bend axis.
- Misaligned grooves can lead to uneven pressure and surface strain.

6. Don’t Over-Score the Surface

- Avoid cutting too deep into the decorative layer.
- Keep the groove strictly within the core to allow flexibility without surface damage.

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