ECONOMY ◆ EXCELLENCE ◆ ETHICS

MERINO FR+ LAMINATES TECHNICAL GUIDE

Contents

1 INTRODUCTION

Merino Fire Retardant Laminates, or FR+ laminates are intended for application in areas that require enhanced protection against the threat of fire and smoke.

FR+ laminates are classified as HGF or VGF grade laminates as per EN438 and other applicable standards. Please follow the technical guide to ensure best performance of the laminate.

2 PRE-FABRICATION

To maintain the fire rating of the laminate in the final panel assembly, it is crucial to choose other components that match or exceed the fire rating of the laminate. Please follow the pre-fabrication guide closely.

2.1 TRANSPORT, STORAGE & HANDLING

- **TRANSPORT**

  FR+ laminates can be transported rolled up or laid flat.

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

  Merino recommends that laminate sheets over 1 mm are transported flat, instead of being rolled up.

- **HANDLING**

  FR+ laminates should be handled carefully to avoid damage to the product- especially the edges. Decorative faces may get damaged on sliding over other surfaces, including other laminate sheets. Therefore, sliding the sheets IS NOT recommended, the sheets need to be lifted instead.

  Merino 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 laminates 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.

- **STORAGE**

  FR+ sheets should be gently stacked over each other in a horizontal manner, in a back-to-back configuration. The sheet at the bottom of the stack must have the decorative face downwards, with a flat, protective layer.

  A board with similar size may be placed over the topmost sheet of the stack, to maintain a uniform pressure on the underlying sheets and prevent any warpage in bulk stock. In case such a board is not readily available, the topmost sheet may be placed with the sanded side upwards instead.

  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.

2.2 PRECONDITIONING & THE ENVIRONMENT

Preconditioning is one of the most important considerations for achieving a quality product installation.

Follow the preconditioning guidelines as laid down in the document for standard grade High Pressure Laminates. The best approach is to make sure both sides of the laminate panel as well as the substrate experience the exact same conditions. In most cases the recommended conditions are storing the entire stock (liner, backer, adhesives, substrate) at 24C temperature and 55% relative humidity for 48 hours. These numbers may vary slightly depending on general environment conditions in the geographical area.

Stored stock of laminate should be rotated such that older sheets are used first. The place of storage should be well ventilated and protected from moisture. FR+ Laminates should never be in direct contact with the floor or outside walls. All preconditioning should be performed at the fabrication site.

2.3 SUBSTRATES & ADHESIVES GUIDANCE

Most substrates and adhesives are available in a fire-rated variant, depending on the market and the location.

Choose a suitable adhesive for bonding by always following the adhesive manufacturer's guidelines and documentation.

- Generally, contact adhesives should not be used for FR+ laminates that are thinner than 0.8mm. When a Fire Rated Particleboard is used as a substrate, better fire performance may be achieved using contact adhesives than PVAC based adhesives. Also, in dry and arid conditions (Relative humidity < 30% for long duration), restrict the final size of the laminate to not more than 2.5 feet.

  Do not adhere FR+ laminates to non-recommended substrates such as plaster, gypsum or cement.

  In addition, care should be taken to ensure proper balancing of the final panel by opting for a fire-retardant HPL sheet on the other side of the substrate.

3 FABRICATION

While most fabrication processes for Fire Retardant laminates remain the same, there are some important considerations to keep in mind.

3.1 CUTTING

Merino FR+ laminates can be cut with cutting tools recommended for Merino's standard -grade decorative laminates. Most woodworking equipment can be used, keeping in account the slightly higher hardness of laminates.

Some guidelines to get best results and prolong tool life-

- Circular saws are recommended for cutting laminate sheets. Use sharp, TCT blades with a low or negative hook angle. High tool speeds and low feed speeds are recommended.
- FR+ laminates should always be cut slightly oversized. Keeping a margin helps achieve a better result while edge trimming.
- 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 laminates 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. 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 ensure that the blade cuts cleanly through the surface, and that the blade doesn't become too hot.
- 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. Such a scoring blade is smaller in size than the main blade, cuts to limited depth and rotates in opposite direction (along the direction of the feed) to that of the main blade. Care must be taken to prevent kickback or backlash.

3.2 BONDING AND TRIMMING ADVICE

Always follow the Prefabrication checklist for choosing the appropriate substrate and adhesives for the project.

Some key points for bonding-

- Use dowels or separators to line up coated surfaces before allowing them to bond together.
- In case plywood is used as a substrate for laminates, check to see if the first coat of adhesives has been mostly absorbed by the plywood. In such a scenario, apply a second coat.
- If using a liquid adhesive, ensure that the adhesive is homogenous. Always apply an even layer of adhesive, using a roller or brush. In case a spray adhesive is used, ensure an even spray all over the surface in a controlled fashion.
- When using contact adhesive, don't allow the coated surfaces to touch until both the surfaces have dried.
- Always lay the laminate onto the substrate with even pressure. Applying too much pressure may damage the surface or the bond.
- Complete the bond by using a J roller to force any air bubbles from between the two surfaces.

If adhesives come in contact with the decorative surface, remove them carefully using adhesive removers or hexane (only for contact adhesive). Use of thinner is not recommended.

Once bonding of the panel assembly is complete, trimming is needed to remove the oversized edges of the assembled panel. Follow the trimming advice of standard, decorative HPL.

Always trim the edges flush with the laminate surface. The tools used for trimming must be sharp and well maintained.

Routers are commonly used to trim the edges, though a hand trimer such as a bevel cutter can also be used. Generous bevels and radii up to 2.5 mm may be produced at the arrises, but it should be remembered that such large bevels and radii require more finishing to blend with the surrounding surface.

Following the trimming process, edges must be routed smooth.

3.3 CUT-OUTS, HOLES AND ADDING FASTENERS

Do not use square-cut inside corners. All internal corners and cut-outs should be rounded as far as possible. A radius of 3 mm (1/8") or larger in the corners is recommended to minimize stress cracking. 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, elastomeric adhesives such as contact adhesives may cause stress cracking. When contact adhesives are used, the minimum radius for inside corners must be 5mm.

All cut-outs should be routed or filed to ensure smooth edges.

All attachments that are damaged or prone to damage/accelerated wear can be detrimental to the user and the laminate as well. Ensure that only high-quality fasteners and attachments are used.

3.4 DRILLING

- When it comes to tool selection, an electric drill with HSS bits is the tool of choice for most kinds of drilling applications. Another important selection to be made is the type of bits used in the drill. While TCT bits may prove to be economical due to their long life, Rectified HSS bits are sharper. Longer tool life helps improve reproducibility while sharper blades improve the quality of the cuts.
- In case of non-stationary drills, it is important to ensure the appropriate pressure is applied. Pressure should be scaled up and down in a gradual manner, especially during entering and exiting the laminate. By controlling the feed speed of the drill, the panel is less likely to be damaged.
- At least 1.5mm of material should be left while blind drilling. When drilling into the edge, at least 3mm clearance should remain on all sides of the hole.
- Screws and bolts should be slightly countersunk. Use a lower rotational speed to make countersunk holes. Drill oversize holes (at least 0.5 mm or 0.02" larger in diameter) for screws and bolts. This allows the screw to adjust with the slight dimensional movements of both the laminate and the screw, preventing cracks around the hole.
- When drilling through-holes, ensure a hardwood panel is placed at the exit face. This prevents any splintering or shocks to the material surface when the drill exits the material.

- Edges of the hole should be smooth and cleaned after drilling. Otherwise stress cracking may occur.

3.5 EDGE PROFILING & FINISHING

FR+ laminates are commonly installed in school and hospitals. Given the nature of these spaces, it is recommended that sharp edges be avoided as far as possible. All corners should be rounded.

An unprotected edge also exposes the substrate and is not very aesthetic. Unfinished edges can become a source of nicks, cracks and chips for the laminate. If the edge is sharp, it can lead to an unergonomic design, especially in a common application area such as kid's rooms.

FR+ Laminates with a flush edge need to be bonded to fire rated substrate and edge banding materials. Therefore, ensure that any edge banding used is also compliant with fire retardant material norms.

For filing the edges, please refer to the guidelines mentioned for standard laminates.

4 POST FABRICATION

Once the fabrication of FR+ laminates is completed, it is safe to remove the protective film. Please ensure the film doesn't stay on the surface beyond a few months as it may leave a residue on the surface that can become hard to remove with time.

5 MAINTENANCE & CARE

Merino FR+ Laminates require the same level of Maintenance & Care as standard grade Decorative Laminates. Please keep the following guidelines in mind-

- Care
  FR+ laminates are not meant to be used in environments with high moisture. The fire retardant additives are hygroscopic in nature and therefore will absorb moisture at a higher rate. This may not be favourable for the panel installation.

  Do not use in periphery of furnaces or other heat generating sources that are capable of increasing the surface temperatures above 130C.

- Cleaning
  In case of ordinary stains, Merino recommends cleaning the surface gently with a clean, damp, soft cloth. For persistent stains like coffee or tea, use a mild cleaner/detergent followed by wiping with a clean cloth.
  Do not use brushes or scourers at any time.