

Converting from Laminates to Thermoplastics

High Pressure Laminates—Established History

High Pressure Laminates (HPL) have been used in interior design as a decorative and protective surface finish since the 1930s. HPL are available in a range of colours and a variety of surface designs and patterns. Over the years, various grades of HPL have been developed to increase chemical and wear resistance. These innovative features have made HPL the traditional choice for countertops, cabinets, retail displays, and furniture.

High pressure laminates are manufactured by saturating layers of kraft paper with resin. A decorative printed layer is placed on top of the kraft paper, then fused together under heat and pressure. The curing process transforms the resin into a plastic, converting the various layers into a single, laminated sheet.

Thermoplastics—Proven Reliability

Thermoplastics offer manufacturers an alternative to HPL while providing high chemical and wear resistance. They have evolved to meet the needs of designers seeking more aesthetic options, including custom colour matching, wood grains, and surface finish effects. Increased regulatory requirements have led to the development of thermoplastic materials that meet smoke, fire, and toxicity regulations.

The Evolution of Fixture and Display Design

The fusion of retail and entertainment requires store fixtures and displays to become multi-functional. Interior designers are looking for the ability to develop more intricate designs with compound corners, contoured edges and dimensional elements. This requires materials that support new, innovative concepts with additional creative elements. Thermoplastics provide the ability to incorporate 3D features, including logos, while providing a robust and durable surface.

Thermoplastics elevate designs from two dimensions—where the primary concern is matching seams and ensuring appropriate bonding—to three, incorporating depth and detail. Unlike HPL, thermoplastics do not chip, fracture, delaminate, or peel. The forming process allows the thermoplastics to be molded with precise part details, including wire management access holes and contoured edges without the need for edge banding, which is typically necessary with HPL.

Thermoplastics Provide Enhanced Design Options



Today's thermoplastics come in a wide range of standard colours and finishes, and can be matched to complement nearly any design. Since the colour is integral to the part, scratches are virtually unnoticeable. New processes allow designers to develop integrated patterns and textures to enhance the look and feel of the finished part.

Thermoplastics are robust, wear-resistant, and will not chip or crack. Parts laminated with thermoplastics retain their mechanical properties and durability, resulting in reduced maintenance and increased service life.

Thermoplastics are recyclable and contain no VOCs, making them an environmentally sound solution that supports end-of-life recyclability and life-cycle design. The thermoforming manufacturing processes do not outgas VOCs or create hazardous waste.

Superior Durability and Advanced Capabilities from Thermoplastics



Thermoplastics provide a more robust surface finish and, as a result of the forming process, reduce the chance of edges peeling or cracking. Thermoplastics are typically applied to MDF or wood backing to provide rigidity and structural support. MDF can be milled with traditional woodworking equipment to provide the required aesthetic design details.

One forming process, called membrane pressing, involves heating the thermoplastic sheet and forming it over the backing material. The thermoplastic sheet is inserted into the press and heated until formable.

[CONTINUED >](#)

Converting from Laminates to Thermoplastics

After the milled part is inserted into the press, pressure and vacuum are applied to form the thermoplastic to the part. The force of the pressure and vacuum pushes or pulls the thermoplastic into the details of the contoured part or wraps it around the edges as required. The heat activates an applied adhesive, ensuring a tight bond with the substrate.

Benefits of membrane pressing:

- Superior aesthetics with choice of colours, textures, and finishes
- Ability to conform to complex geometries
- Surface is formed from a single sheet
- VOC-free and recyclable

In addition to membrane pressing, thermoplastics can be laminated to flat surfaces and miter folded to form 90-degree exterior corners. By routing a V-groove in the MDF or other backing material and applying a small amount of heat, the thermoplastic easily bends to form a tight corner without cracking or deforming.

When to Consider Thermoplastics

Thermoplastics can help you reimagine designs, replace less flexible alternative materials, and improve the overall aesthetics of the finished design. Thermoplastic materials provide excellent resistance to impact, graffiti, chemicals and staining, and can be cleaned without discoloration. Thermoplastics exceed regulatory compliance for fire and smoke standards, making them ideal for many retail fixture and furniture applications that require:

- Custom colours and finishes
- Improved durability
- Enhanced design detail and aesthetics

SEKISUI KYDEX

SEKISUI KYDEX offers a range of thermoplastic materials manufactured in nearly any colour to match your design and application. Our designLab® and FSTLab™ are available to help you enhance your designs, ensuring they meet regulatory compliance and safety standards.

For more information on how to convert your design to thermoplastics using our appLab™, or to learn more about SEKISUI KYDEX and our line of KYDEX® and ALLEN® Thermoplastics, contact your local representative or visit us at www.kydex.com.