

High Pressure Laminate

Three standard grades of high pressure laminate are suitable for most applications:

General Purpose Type G48 is most often used in horizontal applications where high impact resistance and a durable, decorative surface is required.

Postforming Type F39 is designed for manufacturing countertops and other horizontal surfaces where the laminate may be heated and rolled over the substrate edge to eliminate seams.

Type F28 is designed for applications where impact resistance is less critical. Type F28 can also be postformed.

Product Description

High pressure laminate is manufactured in a flat press by combining decorative papers saturated in melamine resin with phenolic-impregnated kraft layers at pressures exceeding 1000 psi (6.9 MPa) and temperatures approaching 300 °F (150 °C). The panels are trimmed to size and the backs are sanded to facilitate bonding. The thickness of the laminate is determined by the number of kraft layers used. The laminating process combines the durability of melamine resins with the aesthetics of decorative papers creating a surfacing material that has been the standard for many years.

Product Description

Standard Nominal Sizes

Type	Thickness*	Width*	Length	Colors
G48 (in.) (mm)	0.045 ± 0.005 1.14 ± 0.13	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All solids, patterns & woodgrains
F39 (in.) (mm)	0.036 ± 0.005 0.91 ± 0.13	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All solids, patterns & woodgrains
F28 (in.) (mm)	0.028 + 0.001 - 0.004 0.71 + 0.03 - 0.10	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All solids, patterns & woodgrains

*Other widths and thicknesses available upon request.

Finish Options

Please refer to HPL Finishes Chart on the web site to confirm available finishes for this product.

Typical Uses

Standard laminate is designed for either horizontal, vertical, or postforming applications.

This laminate is seen on countertops, tables, vanities, interior doors, cabinets, contract furniture, and retail store fixtures.

Fabrication Tips

When working with HPL, these techniques will produce a quality application.

1. Proper conditioning of the laminate, substrate, and backing sheet minimizes possible warping, shrinking, or expansion of assembled panels. Ideally, all components should be conditioned at 70 °F to 75 °F (21 °C to 25 °C) and 45 to 50 percent relative humidity for 48 hours prior to assembly.
2. Always bond laminate to a suitable substrate such as medium to high density fiberboard, particleboard, or metals. It should not be glued directly to plaster walls, gypsum wallboard, or concrete.
3. Recommended adhesives include solvent or water-based contact cement, white glue (PVA), epoxy, and hot melt glue. Consult your adhesive supplier for specific application requirements.
4. The use of a backing sheet is recommended to minimize warpage. The thickness of the backing sheet should be relatively equal to the thickness of the decorative laminate on the face of the assembly.
5. All saw blades and router bits used for cutting should be carbide tipped. Feed rate should be slow and tool speed should be high.

6. All edges of laminate should be filed smooth with file direction towards substrate to help prevent stress cracks and to minimize chipping.
7. Inside corners of cutouts for electrical outlets, sinks, etc., should have a minimum radius of 1/8" (3 mm) and be filed smooth. This reduces the likelihood of stress cracks.
8. When fasteners are required, it is advisable to first drill an oversized hole through the laminate. This reduces the likelihood of stress cracks.
9. See the Postforming Technical Bulletin for postforming application tips.
10. All laminate is intended for interior use only, and should not be exposed to extreme humidity, continuous sunlight, or temperatures above 275 °F (135 °C) for extended periods of time.

Technical Information

Physical Properties

TEST		NEMA LD 3-2005 TEST METHOD	TYPICAL VALUES G48	NEMA STD. HGS	TYPICAL VALUES F39	NEMA STD. HGP	TYPICAL VALUES F28	NEMA STD. VGP
Thickness	(in.)		0.045 ± 0.005		0.036 ± 0.005		0.028 + 0.001 - 0.004	
	(mm)		1.14 ± 0.13		0.91 ± 0.13		0.71 + 0.03 - 0.10	
Appearance		3.1	Complies		Complies		Complies	
Light Resistance		3.3	Slight Effect	Slight Effect	Slight Effect	Slight Effect	Slight Effect	Slight Effect
Cleanability		3.4	13	20 (max.)	13	20 (max.)	8	20 (max.)
Stain 1 - 10			No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
Stain 11 - 15			No Effect	Moderate Effect	No Effect	Moderate Effect	No Effect	Moderate Effect
Boiling Water Resistance		3.5	No Effect	No Effect	No Effect	Slight Effect	No Effect	Slight Effect
Hight Temperature Resistance		3.6	No Effect	Slight Effect	No Effect	Slight Effect	No Effect	Slight Effect
Ball Impact Resistance	(in.)	3.8	55	50 (min.)	35	30 (min.)	30	20 (min.)
	(mm)		1397	1270 (min.)	889	762 (min.)	762	508 (min.)
Radiant Heat Resistance	(sec.)	3.10	200	125 (min.)	165	100 (min.)	155	80 (min.)
Dimensional Change		3.11						
Machine Direction	(%)		0.25	0.50 (max.)	0.40	1.1 (max.)	0.40	1.1 (max.)
Cross Direction	(%)		0.70	0.90 (max.)	0.80	1.4 max.)	0.80	1.4 (max.)
Room Temperature		3.12						
Dimensional Stability								
Machine Direction	(%)		0.15	0.5 (max.)	0.16	1.0 (max.)	0.18	1.0 (max.)
Cross Direction	(%)		0.40	0.8 (max.)	0.48	1.3 (max.)	0.37	1.3 (max.)
Wear Resistance	(cycles)	3.13	700	400 (min.)	700	400 (min.)	700	400 (min.)
Formability	(in.)	3.14	Not Applicable	Not Applicable	9/16	5/8 (min.)	7/16	1/2 (min.)
	(mm)		Not Applicable	Not Applicable	14	16 (min.)	11	13 (min.)
Blister Resistance	(sec.)	3.15	80	Not Applicable	65	55 (min.)	50	40 (min.)

Fire Test Data

High pressure decorative laminate is frequently used in installations governed by local fire codes. Burning characteristics of laminate are greatly influenced by the adhesive and substrate used. Listed below are typical flame spread index and smoke developed values for standard grade laminate. When specifying Class I or A rated laminate, refer to Fire Rated Technical Bulletin.

ASTM E-84/UL723

“Standard Test Method for Surface Burning Characteristics of Building Materials”

Type	Sample Configuration	Flame Spread Index	Smoke Developed Values
G48	Unbonded	40	120
F39		40	65
F28		35	35
G48	Bonded* to	55	85
F39	Inorganic	55	105
F28	Cement Board	35	40
G48	Bonded* to 5/8”	95	95
F39	Particleboard	235	140
F28		160	160
G48	Bonded* to 5/8”	160	110
F39	Fire Rated	110	130
F28	Particleboard	80	75

*Bonded with Pioneer P19NF contact cement. All work should be designed, assembled, and installed in compliance with pertinent local fire codes.

CAN/ULC-S102M

Laminated Plastic Surface Burning Characteristics

Sample Type	Flame Configuration	Smoke Spread Index	Developed Values
G48	Bonded* to	40	120
F39	Inorganic	40	65
F28	Cement Board	35	35

*Bonded with N® Sodium Silicate Sealer and Wonderbond® WB-104A with M-172L. All work should be designed, assembled, and installed in compliance with pertinent local fire codes.

Codes and Certifications

1. U.S. Federal Motor Vehicle Safety Standard #302 “Flammability of Interior Materials.” Type G48, F39, and F28 comply.
2. The City of New York, Dept. of Buildings, Materials and Equipment Acceptance Division approval codes are as follows:
G48 - MEA 205-93-M
F39 - MEA 206-93-M
F28 - MEA 208-93-M
3. NSF-International Standard 35, “Laminated Plastics for Surfacing Food Service Equipment.” Type G48, F39, and F28 comply.
4. American National Standards Institute/National Electrical Manufacturers Association (ANSI/NEMA), LD3-1995, “High- Pressure Decorative Laminate.” Type

G48, F39, and F28 comply.

5. MIL-P-17171E(SH), “High Pressure Decorative Laminate.” G48 complies with Type I.
6. U.S. Federal Specification L-P-508H, “Plastic Sheet, Laminated, Decorative and Nondecorative.” Type G48, F39, and F28 comply.
7. International Organization for Standardization, ISO-4586, “Decorative High Pressure Laminates (HPL).” Type G48, F39, and F28 comply.

Care and Maintenance

Decorative laminate provides a durable surface that is easy to maintain using ordinary care.

To maintain the laminate’s lasting beauty, cleaning with a solution of warm water and liquid dishwashing detergent is all that should be required in most cases.

Stains may be removed with most non-abrasive household cleaners such as FORMULA 409®, GLASS PLUS® or WINDEX® with AMMONIA D®. Light scrubbing with a soft bristled brush may be necessary to remove stains from the depth of the structure on some textured surfaces.

If the stain persists, use a paste of baking soda and water and apply with a soft bristled brush. Light scrubbing for 10-20 strokes should remove most stains. Although baking soda is a low abrasive, excessive scrubbing or exerting too much force may damage the decorative surface, especially if it has a gloss finish.

Stubborn stains that resist any of the above cleaning methods may require the use of undiluted household bleach. Apply the bleach to the stain and let stand no longer than 1 1/2 minutes. Rinse thoroughly with warm water and wipe dry. This step may be repeated if the stain appears to be going away and the color of the laminate has not been affected. **WARNING:** Prolonged exposure of the laminate surface to bleach will cause discoloration.

Many commercially available products contain substances that may damage or discolor a laminate surface. **ABRASIVE CLEANERS SHOULD NOT BE USED.** Particular care should be used with any products labeled **CAUTION** or **WARNING**. Do not allow harsh materials to remain in contact with the laminate surface. Examples of these are as follows:

Formula 409 is a registered trademark for The Clorox Company of Oakland, CA 94612; Glass Plus is a registered trademark for The Dow Chemical Company of Indianapolis, IN 46268-0511; Windex is a registered trademark for S.C. Johnson & Sons INC. of Racine, WI 53403-5011.

- Toilet bowl cleaners
- Chlorine bleach
- Hydrogen Peroxide
- Coffee pot cleaners
- Oven cleaners
- Hard water stain removers
- Drain cleaners
- Fruit and berry juice
- Metal cleaners and polishes
- Tub and tile cleaners