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# High Pressure Laminate

General Specifications

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## High Pressure Laminate General Specs

<b>Description</b>	High Pressure Laminate (HPL) is a combination of specially developed, digitally imaged paper which is impregnated with melamine resins, a special UV resistant overlamine, and layers of phenolic resin-impregnated kraft stock, all pressed under intense pressure and heat. This process fuses the layers together into a very durable, solid core product. HPL comes in both interior and exterior grades for a wide range of applications.
<b>Attributes</b>	<ul style="list-style-type: none"><li>• Bright, vibrant graphics</li><li>• Impervious to moisture and temperature extremes</li><li>• Excellent UV protection</li><li>• Will not delaminate</li><li>• Extreme impact resistance</li><li>• Graffiti and scratch resistant</li><li>• Comes in a variety of thicknesses</li><li>• Thick stock is self-supporting</li><li>• Can be drilled and routed</li><li>• Will not rust or deteriorate if badly vandalized</li></ul>
<b>Applications</b>	<ul style="list-style-type: none"><li>• Interpretive signs for parks, zoos, aquariums etc.</li><li>• Interactive displays</li><li>• Exhibit signage and displays, wall murals and interior design.</li><li>• Wayfinding for campuses, business parks, retail outlets etc.</li><li>• Regulatory signs</li><li>• Signs for resorts, theme parks, and recreation facilities</li><li>• Corporate identity</li><li>• Architectural signage</li><li>• POP displays</li></ul>
<b>Imaging</b>	Print Media: Specially formulated ink-jet prints with pigmented inks Input Resolution: 200 - 300 DPI Output Resolution: 2400 DPI Color Space: CMYK The quality of HPL graphics is good for a variety of applications. The colors are bright and vibrant and photography reproduces quite well. There are some limitations with small text and fine detail.
<b>Size</b>	The maximum standard size is 48"x 142", custom sizes up to 58"x 142" area also available, but require extra processing time and minimum quantity orders (call for details). Murals can be tiled to any size, with graphics indexed over the entire surface.

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## High Pressure Laminate General Specs cont.

### Standard Thicknesses and Weight

**1/16" (.035") .453 lbs/sq ft.** has a sanded back to be glued to substrates. Requires support of backer material. Typically ships untrimmed, to be adhered to the surface by the customer and then final trimmed.

**1/8" (.125") .905 lbs/sq ft.** has a smooth black back, requires support of a backer material. Can be mechanically attached to vertical surfaces, or framed for all surfaces.

**1/4" (.250") 1.81 lbs/sq ft.** has a smooth black back, requires support along the edges and back. Can be mechanically attached to vertical surfaces, or framed for all surfaces.

**1/2" (.5") 3.62 lbs/sq ft.** has a smooth black back and is self-supporting. Can be used for freestanding elements, shaped pieces, can be edge polished, can have hardware (threads) inserted directly into the material for installation.

**3/4" (.75") 5.43 lbs/sq ft.** has a smooth black back and is self-supporting. Can be used for tables, freestanding elements, shaped elements. Also takes hardware inserts.

### Non-Standard Thicknesses and Weight

**1/10" (.10") .724 lbs/sq ft.** has a smooth black back, requires support of a backer material. Can be mechanically attached to vertical surfaces, or framed for all surfaces.

**3/8" (.375") 2.72 lbs/sq ft.** Smooth black back, and is self supporting. Can be used for freestanding elements, shapes, edge polished. Too thin for insert hardware.

**1" (1.0") 7.24 lbs/sq ft.** very solid and heavy, has a smooth black back and is self-supporting. Can be used for tables, freestanding elements, shaped elements. Also takes hardware inserts.

**Note:** Non-standard thicknesses require additional production time and may require minimum quantity orders. Non-standard orders may also incur additional cost (Please contact KVO to discuss your project before specifying non-standard thicknesses.)

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## High Pressure Laminate General Specs cont.

**Finishes** **ICE** (interior and exterior grades): Semi-gloss textured surface that reduces glare and has excellent scratch and graffiti resistance.  
*ICE is our standard exterior finish.*

**Satin** (interior and exterior grades): A slightly higher gloss for use in lower light areas where glare is less of a concern. This is a very attractive surface for closely viewed graphic elements.  
*Satin is our standard interior finish but is also available as an exterior finish (additional cost and production time may apply).*

**Metal Gloss** (interior grade): Beautiful glossy finish that replicates a newly polished piece of metal. Perfect for interior architectural installations. Also can be used as dry erase boards.  
*(additional cost and production time may apply).*

**Matte** (interior grade): Low gloss finish for use in any interior environment. This finish eliminates glare in brightly lit conditions.  
*(additional cost and production time may apply).*

## High Pressure Laminate General Specs cont.

**Delivery** Color Proofing: 5 - 10 working days  
 Manufacturing Process: 2 - 3 weeks  
 Shipping: 1 week  
 Total: 4 - 6 weeks (average)  
 A color proof is highly recommended to assure the final product matches your requirements for color. A week for shipping should be allowed unless prior arrangements have been made.

**Warranty** We guarantee that the highest quality of labor, materials and proven construction techniques have been used in the manufacturing of this product. We further guarantee that for a period of ten years all surfaces and image areas, as well as all edges shall show no evidence of cracks, crazing, fading, blistering or delaminating. If any panels fail as a result of these issues, they will be replaced at no cost to the client. Other associated costs such as the time and labor to remove and reinstall the defective product is not covered.

### ASTM - Mechanical Performance Properties

Mechanical Properties	ASTM Test	Solid Grade
Compressive Strength	D65-84	1.800 x 10 <sup>4</sup> psi
Flexural Strength Ultimate Modulus	D790-84a	1.877 x 10 <sup>4</sup> psi 1.690 x 10 <sup>4</sup> psi
Impact Strength	D256-84	.64 ft-lbs / inch
Tensile Strength Ultimate Modulus	D638-84	1.637 x 10 <sup>4</sup> psi 1.650 x 10 <sup>4</sup> psi
Bond Strength	D952-84	1.460 x 10 <sup>4</sup> psi
Bearing Strength	D953-84a	1.650 x 10 <sup>4</sup> psi
Rockwell Hardness	D785-65	70 (E Scale)
Liquid Absorbtion	D570-81	1%
Coefficient of Linear Expansion	D696-79	1.670 x 10 <sup>-5</sup> in. / in. / oF
UV Resistance	ASTM G26/A	No change after 2000 hrs.
Boiling Water Resistance	LD3 Test (3,5)	No Change

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## High Pressure Laminate General Specs cont.

**Using HPL** Thin, sanded-back grades can be used for cabinetry, murals, exhibits, displays etc. Typically the material is glued to the desired substrate, and then trimmed to final dimensions. Thin grade materials are shipped raw, not trimmed to size, to allow adhesion to the substrate prior to final trimming.

Solid core grades (1/8", 1/4" and 3/8") require support when used as stand-alone graphic elements. Typically, 1/8" solid core requires a backer, should be laminated or mechanically fastened directly to a surface, or enclosed in a frame with back support. The 1/4" and 3/8" material can be used in small pieces without back support, or in a frame as long as the edges are supported.

Thick finished-back grades (1/2" - 1") can be drilled & tapped, routed to shape, and can come with polished edges. The core material is solid phenolic and will allow the use of threaded inserts. This allows the signs to be mounted in a frameless manner, with concealed hardware. Thick stocks can also be used as free-standing elements.

### **Cleaning/ Graffiti Removal**

- For simple cleaning, mild soap and water is best. Rinse with clean water after washing. Avoid the use of abrasive cleaners or acids.
- Graffiti (paint, crayon, permanent-ink markers etc) can be removed using an organic solvent, such as Goof-Off, or similar non-abrasive citrus-based cleaners.
- Very stubborn graffiti may require something stronger, such as mineral spirits. Do not use lacquer thinner or acetone, as they may damage the surface of your graphics. Always rinse with clean water.
- Minor blemishes, nicks, rub marks or burnishes, and light scratches can be concealed using a polymer-based car wax, or a polymer-based surface treatment, such as Freeman's Furniture Cream.
- Persistent stains may be removed with a 2 minute exposure to household bleach. Always rinse with clean water after this procedure.

### **Maintenance**

When using thick-stock exterior-grade graphics, an occasional coating of liquid wax or furniture polish will help keep the edges shiny and black, and will help resist moisture. To prolong the life of your exterior-grade HPL and aid in the removal of dirt, grime and graffiti, it is recommended to apply a coat of a polymer-based car wax annually.

### **For more information:**

For more information about High Pressure Laminate or any of our other products or services please contact KVO Industries at:

1825 Empire Industrial Court, Suite A  
Santa Rosa CA 95403  
p 707 573 6868  
f 707 573 6888  
kvoindustries.com