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# High Pressure Laminate

Contract Specifications

# **SPECIFICATIONS FOR EXTERIOR GRADE HIGH-PRESSURE LAMINATE SIGN MATERIAL**

This specification represents the combined experiences of the current manufacturers and testing institutions. While new and important improvements will be offered as they are tested and proven, these specifications represent a commonly agreed upon definition and standard for workmanship, performance, manufacture and supply of high pressure laminate signs as of this date.

## **PART I - GENERAL SPECIFICATIONS**

### **1.1 DOCUMENTS**

This section of the specification forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts of the document.

### **1.2 SCOPE**

The specification applies only to the manufacture and supply of signs and graphic images in high pressure laminate.

### **1.3 DEFINITIONS**

#### **1.3.1 HIGH PRESSURE OUTDOOR GRADE LAMINATES**

High pressure laminate graphic sign material is composed of several layers of phenolic resin impregnated kraft filler paper, surfaced by a layer of melamine graphic image substrate, imaged with UV resistant, pigment based process color inks, and translucent UV overlay, and a UV resistant melamine clear overlay, plus an optical coating that will resist no less that 99% of all sunlight and U.V. rays, as well as provide a graffiti resistant coating. In lamination grades, the back must be sanded to assure even bonding during the lamination process.

#### **1.3.2 MANUFACTURE**

For purposes of this specification, layers of material described in 1.3.1 are to be assembled, and heat / pressure consolidated at approximately 1200 PSI at temperatures exceeding 275° Fahrenheit.

#### **1.3.3 IMAGING / ARTWORK**

The graphic material and images as supplied by or directed under the supervision of the architect, designer or end user on this project. To include mechanicals, text, photographs, transparencies, film and other graphic source materials. All graphics must be assembled by computer designers familiar with and experienced in the process of digital printing.

#### **1.3.4 APPROVALS**

Approvals are the responsibility of the owner, designer or architect at every stage of process and production as submitted by the supplier to the above. Work shall not proceed without their written and signed-off authorizations.

## **PART II - GENERAL REQUIREMENTS**

Supply high pressure laminate sign panels as specified and shown on the drawings and supplemental specifications, as approved by the architect or designer before fabrication.

### **2.1 REFERENCES**

Supplier shall provide references of at least 4 clients who have used their service to satisfaction of owner / architect / designer.

### **2.2 RELATED WORK**

Related work shall be carried out by a qualified contractor as approved by the architect / designer.

### **2.3 INSTALLATION**

Shall be performed in a workmanlike fashion consistent with general sign requirements. Manufacturing sign company shall provide instructions.

### **2.4 INSTALLATION MATERIALS**

As specified and detailed in drawings.

### **2.5 QUALIFICATION**

Two years previous experience with projects of this scope.

### **2.6 SUBMITTALS AND SAMPLES**

High pressure laminate company must supply project specific samples and colors with bid from art work and specifications as provided by architect / designer.

### **2.7 QUALITY ASSURANCE**

Quality of entire project must conform to specification and bid submittals as approved by architect / designer.

#### **2.7.1 Experience**

Craftsmen shall have a minimum of two years proven experience in this type of work and be approved by the architect / designer for this type of work.

#### **2.7.2 Evidence**

Submit evidence of having successfully completed two projects of similar scope to this bid within the preceding two years.

#### **2.7.3 Specific Submittal**

Construct project specific submittal for approval by architect / designer with this bid to indicate color matching and graphic resolution capability. All technical details contained in the submittal and color proposal to be treated as strictly confidential.

### **2.8 ENVIRONMENTAL**

Supplier must be able to demonstrate that he is in compliance with all worker's safety and environmental regulations at his location of manufacture.

### **2.9 WARRANTY**

Provide a written warranty issued in the name of the owner and signed by the supplier stating that the sign panels have a guaranteed life of ten years against fading, delaminating, discoloration, staining, or cracking from date of substantial performance.

## 2.10 ACCEPTABLE SUPPLIERS

KVO Industries  
1825 Empire Industrial Ct. Ste A  
Santa Rosa, CA 95403  
Tel: 707-573-6868  
Fax: 707-573-6888

**KVO Industries is an authorized reseller of iZone**

## 2.11 SUBMITTAL AND SAMPLES

Submit and tender for architect's / designer's review, a sample of the graphic elements relating specifically to this project as a condition of qualification.

## **PART III - FABRICATION AND PROCESS**

### 3.1 CUTTING AND SHAPING

All fabrication tools used in shaping and cutting of high pressure laminates must be carbide-tipped. Saw blades must be no less than 10" diameter, hollow ground, 60-80 tooth, carbide tipped, running at a minimum of 3600 rpm.

### 3.2 POST FORMING AND LAMINATING

All work done shall be performed in accordance with approved shop techniques currently used in the cabinet manufacturing industry. Adhesives used must be approved types for the industry, and include semi-rigid (Pvac) or rigid (Lokweld) or cabinet grade liquid contact adhesive.

### 3.3 LAMINATION SUBSTRATES

Acceptable substrates for lamination of high pressure laminates are 45 lb. density particle board, Type 1, Grade B, Class 2 (CS 236-66) particleboard, premium Grade A or Sound Grade 1 hardwood veneer plywood.

### 3.4 FINISH

Continuity of coating: Visual inspection of each unit shall reveal no visible nicks or cuts, hairline cracks or surface defects in the surface of the finished sign. The finished product will be smooth on all edges, and cut within a tolerance of 1/32" to size required for final installation.

## **PART IV - ART AND IMAGING**

### 4.1 ART PREPARATION

Supplier shall produce digital art files as required from mechanical art work or other design materials as supplied by the architect / designer. If designer or architect is supplying files, supplier will review files and prepare as necessary for digital image processing. Art work submitted to supplier shall be in a commonly available file format, and stored on a commonly available removable media, such as Zip, or CD Rom or may be e-mailed if small enough.

### 4.2 ART APPROVALS

All files to be reproduced shall be submitted to the architect/ designer for approval before it is reproduced in high pressure laminate.

#### 4.3 ART WORK

Original artwork shall not be harmed in any way (writing, cutting, etc.) and will be returned to the client upon successful completion and acceptance of the project.

#### 4.4 IMAGING

Digital imaging shall be printed on melamine substrate for laminating and will be of even consistency throughout the image. All imaging shall be reproduced using UV pigmented inks at a resolution of no less than 2400 DPI. (Dots per Inch).

#### 4.5 IMAGING INKS

Inks used in the printing process shall be UV resistant and opaque. The ink shall be pigment based to assure maximum durability.

#### 4.6 TECHNICAL PROFICIENCY

Supplier shall be proficient in industry standard imaging techniques and be able to demonstrate capabilities in photographic reproduction, including halftones, duotones, four color process and line art.

#### 4.7 COLOR MATCHING

Supplier shall be able to match nearly the entire range of colors as represented by the Pantone Matching System (PMS) and Toyo Inks, etc. Color samples are to be provided at no extra charge on any project over \$1,000 in value.

## PART V - ASTM - MECHANICAL PERFORMANCE PROPERTIES

These standards represent the minimum acceptable qualities as tested for high pressure laminate materials.

<b>Mechanical Properties</b>	<b>ASTM Test</b>	<b>Solid Grade</b>
Compressive Strength	D695-84	1.800 x 10 <sup>4</sup> psi
Flexural Strength	D790-84a	1.877 x 10 <sup>4</sup> psi
Ultimate Modulus		1.690 x 10 <sup>4</sup> psi
Impact Strength	D256-84	0.64 ft-lbs/inch
Tensile Strength	D638-84	1.637 x 10 <sup>4</sup> psi
Ultimate Modulus		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 Absorption	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

## **PART VI - DELIVERY, TRANSPORT, AND RELATED**

### **6.1 INSPECTION**

Prior to crating, finished panels shall be inspected for blemishes, chips and flatness. Any panel not meeting the requirements of this specification shall be rejected and promptly replaced.

### **6.2 CLEANING**

All panels shall be cleaned in advance of packaging / crating.

### **6.3 CRATING**

Sign panels shall be packaged in a manner which completely enclose the panels from exposure to the environment or equipment. The crates shall be lined with packing material to prevent movement of panels within the crates.

### **6.4 DELIVERY**

Delivery shall be the responsibility of the supplier and all materials will be insured for the total value of the contents. The receiver must report any damage claims to the supplier within 48 hours of receiving the crated panels.

## **PART VII - MAINTENANCE AND SERVICEABILITY**

### **7.1 MAINTENANCE**

Submit manufacturer's documentation covering the care, cleaning and maintenance of materials for incorporation into maintenance manuals.

## **PART VIII - INSTALLATION**

### **8.1 INSTALLATION**

Installation shall be the responsibility of the owner, subcontractor or general contractor as spelled out in the contract, based on supplier recommendations.

### **8.2 ADHESIVES**

Apply silicone or other adhesive as shown on drawings provided by supplier.

### **8.3 INSPECTION - SIGN PANELS**

Inspect completed signage for general workmanship including clarity of images, proper alignment of images on color separations, clean backgrounds, correct colors, appropriate thickness and verify all surfaces are free from blemishes and defects.

### **8.4 CLEANING**

Clean completed sign unit surface with a soft cloth and any good quality glass cleaner. Abrasive cleaners should be avoided for long term usage.

### **8.5 INSPECTION - INSTALLATION**

Inspect installation site and coordinate installation schedule with owner representative.

#### 8.6 STORAGE AND PROTECTION

Store signage units and related materials in an orderly and systemized fashion and in a manner to prevent damage or theft of products. Protect high pressure laminate signage units by storing in areas not exposed to dust, extreme changes in temperature or humidity. Top most sign should be turned face down and plywood placed on the top to protect from possible impact damage.

#### 8.7 TRANSPORT PROTECTION

Protect all signage units during transportation of signs to installation site by wrapping all signage units individually in a soft, non-abrasive material.

#### 8.8 WORKMANSHIP

Install completed sign units square, plumb and accurately level in accordance with the drawings and specifications for the appropriate sign unit type.

#### 8.9 FINAL CLEANING

Clean completed, installed sign unit with any good quality glass cleaner, ensuring removal of all fingerprints , silicone, dirt, shavings, adhesive, dust particles, etc.