AWI 300 – Materials

3.3 Panel Products

a) The use of species other than those identified within this standard that display unusual characteristics desirable for aesthetic and design reasons shall be as agreed upon between buyer and seller.

b) Panel grain direction is indicated by its size listing; for example, 1219 mm x 2438 mm [48" x 96"] means the grain direction runs with the 2438 mm [96'] direction, whereas a 2438 mm x 1219 mm [96" x 48"] panel's grain direction runs with the 1219 mm [48"] dimension.

c) Core shall be of manufacturer/supplier's choice.

3.3.1 Reference Standards

a) The standards referenced below, adopted for the performance, fabrication, and appearance of face veneers, laminates, overlays, backers, and cores, serve as the basis for evaluation of natural characteristics, defects, and other properties:

Material	Acronym	Reference Standard
Hardwood plywood and veneers		ANSI/HPVA HP-1 (latest edition)
Softwood veneers		ANSI/HPVA HP-1 (latest edition)
Medium Density Overlay	MDO	US Plywood Standard APA PS-1 (latest edition)
High Density Overlay	HDO	US Plywood Standard APA PS-1 (latest edition)
Thermally-fused Laminates (Melamine or polyester)	TFL/MCP	Composite Panel Association 2009 Voluntary Compendium of Standards for Decorative Overlay

High Pressure Laminate	HPDL	ISO 4586 (latest edition)
Vinyl Film		Composite Panel Association 2009 Voluntary Compendium of Standard for decorative
Hardboard		ANSI A135.4 (latest edition)
Particleboard	PTB	ANSI A208.1 (latest edition): Grade M-2 or better.
Medium Density Fiberboard	MDF	Medium Density Fiberboard MDF ANSI A208.2 (latest edition)
Oriented Strand Board	OSB	APA PS-2 (latest edition)
Veneer core		ANSI/HPVA HP-1 (latest edition)

3.3.2 Cores

a) Core materials shall follow standards referenced in **3.3.1 Table 1**. Alternative core materials not listed shall be as agreed upon by buyer and seller.

b) Fire retardant and moisture resistant core shall be color tinted or otherwise documented.

c) Core shall be manufacturer/supplier's choice within the provisions of this standard.

d) MDO and HDO products shall be of balanced construction.

e) Veneer, OSB, or lumber cores are not guaranteed against warping, telegraphing, or delamination.

3.3.3 Surfaces

a) Panel layup shall be for interior use (unless specified otherwise) and shall be constructed with an odd number of plies.

b) Panel layup requires balanced construction of faces, thickness, and moisture content to produce a warp-free panel suitable for its intended use.

c) Panel layup shall have a rigid glue line. Delamination or separation is not permitted.

d) Panel layup shall not use contact adhesive unless otherwise indicated in this standard.

e) Panel layup requires cores of veneer, lumber, particleboard, MDF, or a combination thereof. Veneer core shall not be used for cabinet door or drawer front components.

f) Surface distortions or defects, such as bubbling, blistering, cracking, crazing or ridges in the exposed face veneer, shall not occur.

g) Telegraphing shall not exceed .1 mm [.004"] in any 76.2 mm [3"] span.

h) Lamination over existing laminate surfaces is not permitted.

3.3.3.1 Surfaces, HPDL

a) HPDL is available in a wide range of surface textures and glosses. This standard does not differentiate between these surface characteristics. It is the responsibility of the design professional to stipulate the surface characteristics of the HPDL to be used.

b) High gloss HPDL will highlight minor core and surface imperfections. Use of high gloss HPDL shall be as agreed to between owner/design professional and manufacturer/supplier.

3.3.3.2 Surfaces, Veneer Material Requirements

a) Veneer shall be of sufficient thickness to prevent exposure of core after sanding or finishing.

b) Edges of multi-leaf faces shall appear parallel.

c) Backing species shall be manufacturer/supplier's choice.

d) Figure is independent of species and aesthetic grade. Special requirements shall be so specified.

e) Rift grain oak may have up to twenty-five percent of the exposed area containing medullary ray (often referred to as fleck).

f) Core shall be manufacturer/supplier's choice, within the provisions of this standard.

3.3.3.3 Surfaces, Balance Material

a) Where required within the AWI Standards, shall include:

Face Material	Balance Material	Thickness
HPDL	Compatible with face material	Same as face material
TFL	Compatible with face material	Same as face material

Wood veneer	Compatible species with face veneer	Same as face veneer

b) Or any independently-tested (See AWI's Balance Material Test Methodologies) material that maintains panel flatness and meets AWI's Aesthetic Standards as required.

3.3.3.4 Surfaces, Backer Material

a) Where required within AWI Standards, may include the following:

b) Laminate conforming to ISO 4586 (latest edition) .5 mm [.020"] min. thickness.

c) Man-made wood fiber veneers, impregnated with acrylic melamine, fortified, high load resin system, .5 mm [.020"] min thickness.

d) Synthetic polymer-treated backing sheet designed for use with HPDL .43 mm - .48 mm [.017" - .019"] nominal thickness.

e) Thermoset resin-treated wood fiber, 3-ply construction, .5 mm [.020"] min. thickness.

f) Phenolic resin impregnated kraft paper .4 mm [.016"] nominal thickness.

g) Polyester or melamine overlay.

3.3.4 Other Materials

3.3.4.1 Epoxy Resin

a) Epoxy resin shall be a panel produced from a composite of epoxy resin, silica, inert fillers, and organic hardeners cast and cured in ovens at elevated temperatures, homogeneous throughout, and nonabsorbent.

b) Epoxy resin shall conform to the following minimum performance properties:

Property	Value	Test Procedure
Compressive strength	30,000 psi minimum	ASTM-D-695
Density	1992 kg/m³ [120 lbs/ft.³]	ASTM-D-792
Flexural strength	11,000 psi minimum	ASTM-D-790
Hardness (Rockwell M)	100 minimum	ASTM-D-785
Water absorption	0.05% minimum	ASTM-D-570

3.3.4.2 Natural Stone

a) Natural stone shall not be subject to minimum performance properties established by this standard because it is a natural product.

3.3.4.3 Engineered Stone

a) Engineered stone shall be subject to the manufacturer/supplier's documented instructions

3.3.4.4 Solid Surface

a) Solid Surface shall be subject to the manufacturer/supplier's documented instructions.

3.3.4.5 Solid Phenolic

a) Solid phenolic shall be composed of melamine-impregnated decorative surface papers superimposed over a varying number of kraft phenolic core sheets to achieve a desired thickness.

b) Solid phenolic shall conform to the following minimum performance properties:

Property	Value	Test Procedure
Compressive strength	24,000 psi minimum	ASTM-D-695
Density	1442 kg/m³ [90 lbs./ft.³]	ASTM-D-792
Flame test	Self-extinguishing	ASTM-D-635
Flexural strength	15,000 psi minimum	ASTM-D-790
High temperature resistance	No visible effect	ISO 4586-2
Impact resistance (.227kg [.5 lb.] ball at 3658 mm [120"])	No effect	ISO 4586-2
Modulus of elasticity	1,400,000 psi minimum	ASTM-D-790
Screw withdrawal (footnote)	154kg [340 lbs.] minimum at 9.5 mm [.0375"] penetration 308kg [680 lbs] at 19.1 mm [.750"] penetration	
Shear strength	2,000 psi minimum	
Tensile strength	15,000 psi minimum	ASTM-D-638
Thickness tolerance	+/-.8 mm [.031"] minimum	
Water absorption	3% maximum	ASTM-D-570

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