



SIGNAL[®] MDO

Sign Board



- Ideal for cutout letters and quality signs
- Minimal wood grain & no patch show through
- Long term, smooth surface for paint & coatings
- Enhanced panel stability using "Swan Peel"[™] Technology
- Waterproof bond for exceptional machinability and weatherability
- High face/edge screwholding
- NAUF - meets CARB requirements

Swanson Group[®] provides the highest proven performance in panel solutions. Customers recognize our exceptional history of performance, exhibited in our panel solutions, including the first high gloss UV coated MDO panel in North America.

We are now enhancing our capability to provide superior panel performance. "Swan Peel"[™] Technology provides a smoother surface: less grain show through, and improved glue and overlay bond. "Swan Peel"[™] Technology reduces thickness variability: resulting in an enhanced balanced construction, tighter core lines, and dimensional stability.

Swanson is manufacturing overlay panels in a new state-of-the-art facility - the most technologically advanced operation in North America.

Product Description:

Signal[®] MDO is a medium density overlaid, hardwood faced plywood with tight core for superb machinability and weatherability. It is ideal for cutout letters and quality signs.

Panel Construction/Moisture Resistance:

Signal[®] MDO is constructed of an MDO overlay on hardwood faced plywood with Douglas Fir/Hemlock inner plys. It is manufactured with a two-step[®] layup with minimal core voids using our Swan Peel[™] Technology, has a waterproof glue bond and meets APA PS 1-09. All Swanson products are made in the USA.

Working Faces/Treatment:

- Signal[®] MDO is available with two working faces only consisting of natural (brown) overlays.

Working Edges/Treatment:

- Edges are factory sawn without edge treatment.
- Fill, prime and top coat all exposed wood with at least two coats of acrylic, polyurethane or polyurethane-acrylic.

Applications:

- Exterior letters, signage and billboards.
- Cabinet, display, fixture, shelving and workbench tops.
- Pallets, bins, totes, crates & reels.
- Agricultural & industrial wall lining; soffit & fascia, noise barrier
- Truck body & trailer liners and doors; boat seats.
- Theatre/movie set scenery.

Limitations:

Signal[®] MDO is not a finished product. It requires priming, two top coats and two edge coats for prolonged exposure in exterior applications.

Thicknesses & Sizes: Signal[®] MDO is available in 3/8", 1/2", 5/8", & 3/4" thickness. Standard panel sizes are 4' X 8' and 10' only.

Sign Board:

- Highway[®] HDO - Premium sign panel, prepped for reflective film.
- SignReady UV[™] - Prefinished, high gloss, paint/vinyl letter ready, 5-yr. limited warranty.
- Prefinished UV[™] - Prefinished, satin gloss, paint/vinyl letter ready, 2-yr. limited warranty.
- Signal[®] MDO - Two-step[®], hardwood faced, tightly laid core, ideal for cutout letters.
- Pre-Primed MDO - Exclusive, primed overlay, Two-step[®].
- Crezon Two-Step[®] MDO - Premium paint grade.
- Guardian[®] One-Step MDO - Standard paint grade.

Technical Data Applicable Standards

All panels are manufactured by Swanson Group[®] per product standard PS1-09. This standard is available at www.apawood.org.

Physical Properties	3/8" to 1/2"	5/8" to 3/4"
Modulus of Rupture ^{2,3}	6,905 psi	7,544 psi
Modulus of Elasticity ^{2,3}	846,890 psi	879,603 psi
Lineal Expansion ^{2,3}	0.045%	0.042%
Thickness Swell	3.4%	3.4%
Water Absorption (24-Hours)	6.0%	6.0%
Internal Bond ²	173 psi	206 psi
Shelf Stiffness EI ASTM D-3043 C	68,280 lb-in ² /ft ⁶	322,465 lb-in ² /ft ⁶
Shelf Bending FbS ASTM D-3043 C	1,625 lb-in/ft ⁶	4,785 lb-in/ft ⁶
Face Screw Holding ²	414 lbs.	454 lbs.
Edge Screw Holding ²	Not Applicable	422 lbs.
Moisture Content ² ASTM D-1037	6-9%	6-9%
Specific Gravity ² ASTM D-1037	.572	.592
Density ² ASTM D-1037	35.6 lbs./ft. ³	36.9 lbs./ft. ³
Flame Spread ASTM E-84	76 - 200 ⁵	76 - 200 ⁵
Smoke Developed ASTM E-84	25 - 270 ⁵	25 - 270 ⁵
Flame/Smoke Spread Rating E-84	Class C	
Formaldehyde Level E-1333	<0.01 parts/million	

Panel Tolerances ²	3/8" to 3/4"
Thickness Tolerance	+/- 1/64" (.016")
Length & Width Tolerance	+0, -1/16" (.062")
Squareness	1/16" (.062")
Straightness	1/16" (.062")

¹5-panel average. Product averages vary for individual thicknesses, consult sales or technical staff for exact properties.² All tolerances and specifications apply at the time of manufacture.

²ANSI 208.1 test result.

³Calculations based on test averages of along and across grain.

⁴Shelving physical properties based on engineering calculations.

⁵Flame and smoke spread properties based on engineering calculations.

⁶Shelving stiffness/bending properties are based on a limited 5-panel average.

Note: All tolerances and specifications apply at the time of manufacture.

Note: Product averages vary for individual thicknesses. Consult sales or technical offices for exact properties.

Product Grade: Standard product is shipped on grade only. Special product is shipped allowing up to 10% total Good One Side (G1S) and/or Shop, identified & priced separately. Shipments of G1S and shop may be available.

Weatherability:

Signal® MDO					
EMMAQUA® Outdoor Accelerated Weathering Test Simulates 3.4 years in Florida and 2.9 years in Arizona					
Test	CHALK UNWSH	COLOR CHNGE UNWSH	CRACK UNWSH	BLIST UNWSH	CHECK UNWSH
ASTM #	D 4214-97	D1729-96 (2003)	D661-93 (2000)	D 714-02	D660-93 (2000)
Cromatic	Barely Traceable	Moderate Bleaching	NONE	NONE	NONE
Oil Alkyd	Moderate	Moderate Bleaching	Moderately Severe Long Line	NONE	NONE
Acrylic Latex	Trace	None	Barely Traceable Irregular	NONE	NONE

*Equatorial Mount with Mirrors for Acceleration with Water.

CHALK UNWSH = Chalking, unwashed area: ASTM D4214-97 - Test methods for evaluation degree of chalking of exterior paint films (Method A/Cloth Method).

COLOR CHNGE UNWSH = Visual color, unwashed area: ASTM D1729-96 (2003) - Practice for visual appraisal of color and color difference of diffusely-illuminated opaque materials.

CRACK UNWSH = Cracking, unwashed area: ASTM D661-93 (2000) - Method for evaluating degree of cracking of exterior paints.

BLIST UNWSH = Blistering, unwashed area: ASTM D714-02 - Method for evaluating degree of blistering paints.

CHECK UNWSH = Check, unwashed area: ASTM D660-93 (2000) - Method for evaluating degree of checking of exterior paints.

Standard Packaging:

Thickness	Signal® MDO Average Weight* lbs./Panel	Pieces per Unit
3/8"	40.0	88
1/2"	49.5	66
5/8"	57.6	50
3/4"	71.4	44

*Average product weights may vary +/- 10%

Signal® MDO Finishing Instructions

General: Do not use interior grade paints, water base vinyl-acrylic, solvent based alkyd flat or alkyd solid color stains.

1. **Coating System:** Use a high quality exterior industrial enamel:

- Water Based: All-Acrylic semi-gloss or gloss enamel system or:
- Solvent Based: Industrial semi-gloss or gloss enamel system.
- Sign Chromatic Based: Semi-gloss or gloss system.

Application: Follow overcoat recommendations. Use good painting practices. Perform a tape pull test (ASTM D3359) before lettering.

2. **Prime Coat:** For good performance, 2 coats of primer should yield about 1 mil dry film thickness. Latex primers are recommended. Follow the spreading rate recommended by the manufacturer.

3. **Top Coat:** Once properly primed, panels must be top-coated with 2 coats of a variety of finishes, including solvent-thinned and water-thinned paints and enamels. Both primer and topcoat should be obtained from the same manufacturer to ensure compatibility. Follow manufacturer's application instructions. Do not apply automotive primers and enamels, lacquer undercoats and topcoats directly to overlaid plywood.

4. **Edge Coating:** Fill, prime and top coat all exposed wood with at least two coats of acrylic, polyurethane or polyurethane-acrylic primers and paints or exterior grade caulking.

Suitability for Use and Warranty: Nothing herein constitutes a warranty express or implied, including any warranty of merchantability or fitness for use, nor is protection from any law or patent to be inferred. The exclusive remedy for all claims is replacement of materials. Contact Swanson Group® for a copy of the complete Swanson Terms and Conditions of Sale.

Warehouse Storage and Handling

- Store in a dry, clean, well-ventilated area indoors
- Avoid temperatures and moisture extremes. Allow panels to equalize for 72 hours or more before use
- Pieces must not be stored in contact with the ground
- Limit the stacking height to four or five units. Separate units with clean, dry spacers of uniform thickness, aligned carefully. Use three spacers for panels 8' long, four or five spacers for longer panels.

Environmental Impact

- Swanson Group® uses process by-products to produce energy
- Swanson products are renewable, biodegradable and recyclable

Warnings: This product will generate wood dust from sawing, sanding, or shaping. Safety data sheets are available on Swanson's website at www.swansongroup.biz and upon request.

Structural panels (PS-1) are exempt from California Air Resources Board regulations, however, this product is below CARB limits for all uses.

Find out more at www.swansongroup.biz

Signal® MDO Shelving Load Span Table:

Table 1 - Face Grain Across Supports - Multiple Spans ¹						
Span ¹	1/2"		5/8"		3/4"	
	ℓ/240	ℓ/180	ℓ/240	ℓ/180	ℓ/240	ℓ/180
4"	1,899	1,899	2,340	2,340	2,870	2,870
8"	730	730	900	900	1,104	1,104
12"	414	414	557	557	683	683
16"	233	233	367	367	495	495
19.2"	155	162	255	255	405	405
24"	80	104	163	163	307	307
30"	41	54	85	104	170	196
32"	33	44	70	92	141	173
36"	23	31	49	66	100	133
40"		22	36	48	73	98
48"			24	32	49	65
60"					24	32

Table 2 - Face Grain Parallel to Supports - Multiple Spans ¹						
Span ¹	1/2"		5/8"		3/4"	
	ℓ/240	ℓ/180	ℓ/240	ℓ/180	ℓ/240	ℓ/180
4"	1,457	1,457	1,811	1,811	2,208	2,208
8"	560	560	696	696	849	849
12"	307	307	431	431	526	526
16"	173	173	289	289	381	381
19.2"	111	120	201	201	312	312
24"	55	74	128	128	230	230
30"	28	27	82	82	129	147
32"	23	30	71	72	106	129
36"		21	50	57	74	99
40"			36	46	54	72
48"			24	32	35	47
60"					23	23

Table 3 - Face Grain Across Supports - Single Spans ²						
Span ²	1/2"		5/8"		3/4"	
	ℓ/240	ℓ/180	ℓ/240	ℓ/180	ℓ/240	ℓ/180
4"	2,374	2,374	2,926	2,926	3,588	3,588
8"	913	913	1,125	1,125	1,380	1,380
12"	307	410	609	652	854	854
16"	125	167	257	343	507	619
19.2"	71	94	147	197	296	394
24"	35	47	74	99	151	202
30"		23	37	50	77	102
32"			31	41	63	84
36"			21	28	44	59
40"				20	32	42
48"					21	28

Table 4 - Face Grain Parallel to Supports - Single Spans ²						
Span ²	1/2"		5/8"		3/4"	
	ℓ/240	ℓ/180	ℓ/240	ℓ/180	ℓ/240	ℓ/180
4"	1,822	1,822	2,263	2,263	2,760	2,760
8"	690	690	870	870	1,062	1,062
12"	221	295	514	514	657	657
16"	87	116	270	289	395	476
19.2"	48	64	152	201	224	299
24"	24	32	75	100	112	149
30"			37	50	56	74
32"			30	41	46	61
36"			21	28	32	42
40"				20	23	30

Maximum allowable loads are psf. Uniform loading is assumed. Loads are for dry conditions. For wet conditions, reduce loads approximately 25%. Inquire for precise data. Basic allowable stresses (bending F_b and shear F_v) increase 15% for shelving use per the APA experience factor. Pallet design normally is based on higher allowable loads than given. NOTES: ¹Spans are center-to-center of supports. ²Span is out-to-out of supports. Allow for 1-1/2" supports on each end.



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