



GUARDIAN® ONE-STEP MDO

Sign Board



- Economical, industry standard MDO panel
- Enhanced panel stability using "Swan Peel™" Technology
- Easily painted using primer and compatible top coat paints
- Durable surface
- Waterproof bond
- 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:

Guardian® One-Step MDO is an economical, industry standard, paint grade plywood panel providing good surface for finishing.

Panel Construction/Moisture Resistance:

Guardian® One-Step MDO is constructed of an MDO overlay on plywood with Douglas Fir/Hemlock construction. It is produced with a one-step layup using our Swan Peel™ Technology, has a waterproof glue bond and meets APA PS 1-09 specifications. All Swanson products are made in the USA.

Working Faces/Treatment:

Guardian® One-Step MDO is available with one or two working faces and no backer. The working face consists of Kraft resin impregnated MDO overlay.

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

Limitations:

Guardian® One-Step MDO is not a finished product. It requires priming, two top coats and two edge coats for exterior applications.

Thicknesses & Sizes:

Guardian® One-Step MDO is available in 1/2", 5/8", & 3/4" thickness. Standard panel sizes are 4' X 8' 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	1/2"	5/8" to 3/4"
Modulus of Rupture ^{2,3}	6,670 psi	6,680 psi
Modulus of Elasticity ^{2,3}	795,050 psi	853,565 psi
Lineal Expansion ^{2,3}	0.056%	0.050%
Thickness Swell	3.8%	3.8%
Water Absorption (24-Hours)	6.0%	6.0%
Internal Bond ²	180 psi	134 psi
Shelf Stiffness EI ASTM D-3043 C	74,770 lb-in ² /ft ⁶	606,720 lb-in ² /ft ⁶
Shelf Bending FbS ASTM D-3043 C	1,615 lb-in/ft ⁶	6,460 lb-in/ft ⁶
Face Screw Holding ²	430 lbs.	449 lbs.
Edge Screw Holding ²	Not Applicable	408 lbs.
Moisture Content ² ASTM D-1037	6-9%	6-9%
Specific Gravity ² ASTM D-1037	.592	.527
Density ² ASTM D-1037	36.9 lbs./ft. ³	32.9 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	1/2" to 3/4"
Thickness Tolerance	+/- 1/32" (.031")
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.

³ANSI 208.1 test result.

²Calculations based on test averages of along and across grain.

³Shelving physical properties based on engineering calculations.

⁴Flame and smoke spread properties based on engineering calculations.

⁵Shelving 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:

Guardian® One-Step 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)
Chromatic	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	Guardian® One-Step MDO 1 Face, No Back, Average Weight* lbs./Panel	Guardian® MDO 2 Face Average Weight* lbs./Panel	Pieces per Unit
1/2"	50.0	51.0	66
5/8"	64.0	66.0	50
3/4"	67.0	70.0	44

*Average product weights may vary +/- 10%

Guardian® MDO Finishing Instructions

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

Coating System: Use 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, or
- Sign Chromatic Based: Semi-gloss or gloss system.

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

- Prime Coat:** For good performance, two coats of primer should yield about 1 mil dry film thickness. Latex primers are recommended. Follow the spreading rate recommended by the manufacturer.
- Top Coat:** Once properly primed, panels must be top-coated with two 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 the manufacturer's application instructions. Do not apply automotive primers and enamels, lacquer undercoats and topcoats directly to overlay plywood.
- 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

Guardian® 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"	452	452	557	557	683	683
16"	301	323	404	404	495	495
19.2"	176	225	331	331	405	405
24"	90	121	175	230	227	303
30"	46	61	91	121	120	160
32"	38	50	75	100	99	133
36"	26	35	53	70	70	94
40"		26	38	51	52	69
48"			25	34	34	46
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"	347	347	431	431	526	526
16"	229	251	280	280	381	381
19.2"	130	173	195	195	312	312
24"	65	86	125	125	230	230
30"	32	43	76	80	145	147
32"	27	35	63	70	119	129
36"		25	44	55	83	102
40"			32	42	61	81
48"			21	28	40	53

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"	349	465	652	697	814	854
16"	142	189	275	367	357	476
19.2"	80	107	158	211	208	278
24"	40	53	80	106	106	142
30"	20	26	40	53	54	72
32"		22	33	44	44	59
36"			23	30	31	41
40"				22	22	30
48"						20

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"	701	701	870	870	1,062	1,062
12"	259	345	498	498	657	657
16"	102	136	237	280	446	476
19.2"	57	75	133	177	253	337
24"	28	37	66	88	126	168
30"			33	44	63	84
32"			27	36	51	69
36"				25	36	48
40"					26	34

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_s) 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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