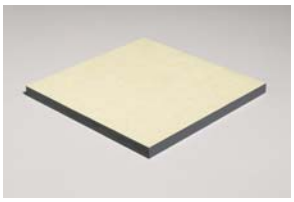
CLASSIC® HDO CONCRETE FORM

OLYMPIC PANEL Products

Product Description:
Classic HDO™ is a High Density Overlaid plywood with good surface durability for semi gloss concrete finishes. It produces a smooth finish with minimal grain transfer and high number of uses.

Panel Construction/Moisture Resistance:
Classic HDO™ is constructed of proprietary, 2 part, high density overlay on dense hardwood faced plywood with Douglas Fir/Hemlock inner plys. It is produced with a 1 Step layup, has a waterproof glue bond and meets APA PS 1-07. All Olympic products are made in the USA.



Features and Benefits:
- For smooth coated concrete; Excellent for engineered systems
- Enhanced alkalinity resistance vs. Douglas Fir faced HDO
- Dense hardwood face produces uniform concrete surface/color
- Controlled hydration reduces Tiger Striping
- Balanced construction ensures panel stability
- Minimal wood grain transfer & no patch transfer
- Increased # of pours & reduced cost/pour

Working Faces/Treatment:
- Classic HDO™ is available with 1 or 2 working faces. Panels with a single working face are provided with an HDO backer sheet.
- Gloss level of Concrete Surface: Semi-gloss
- Wood Grain Transfer to Concrete Surface: Slight
- Wood Defect Transfer to Concrete: Minimal – No football patches
- Sugaring: None
- Maintenance: Very little

Working Edges/Treatment:
- Factory sawn and sealed with special, gray, Styrene Acrylic sealer.
- Seal all exposed wood (edges and holes) with Edge Flex 235 by Nox-Crete, Olympic Form Seal by Willamette Valley Co. or equivalent to prevent concrete staining from the wood sugars.

Alkalinity Resistance after Chemical Exposure

The Abrasion and Chemical Resistance Test reflects the expected panel life in the field. The higher the index number, the more resistant to alkalinity/abrasion.

Structural/Load Performance Summary
Classic HDO™ is available in the equivalent of Struct 1 or Class 1.
Allowable pressure ℓ/270 ¾" @ 12" OC (face gain across supports):
- Struct 1: 1105 PSF
- Class 1: 885 PSF

Pour Ranges:
- Engineered systems: up to 150
- Gang forms: Up to 50
- Job built: UP to 30
- Number of pours may vary due to jobsite handling and panel maintenance, vertical or horizontal use, form release agent, concrete mix design/strength, alkalinity & pour rate and other factors.

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.

Release Coating:
- Release agent: Not Factory Treated
- Coating required: light, before first and each subsequent pour.
- Recommended release agent: Nox-Crete PCE/PCS or equivalent.

Do not use release agents containing a petroleum based derivative.

Other Applications:
- Pallets, bins, totes, crates, reels.
- Tanks, vats, freezer liners, storage lockers, trunks and shelving.
- Animal enclosures, farm buildings & equipment.

Limitations:
Do not exceed design limitations imposed by the load span table. Conform to concrete form design procedures based on American Concrete Institute (ACI) standard 347-04. Release agents are required. Do not employ used concrete form for structural applications. Do not paint or laminate this panel without surface preparation.

Thicknesses & Sizes:
Classic HDO™ is available in: 1/2", 5/8", 3/4" & 1-1/8". Standard panel sizes are 2' & 4' X 8' & 10'. 10' HDO is only available with a fir face. Properties shown apply to 8' Classic HDO™ only. Please inquire for availability and specific 10' properties. Non standard thicknesses, widths and lengths meeting volume requirements are available.

Technical Data Applicable Standards
All panels are manufactured by Olympic Panel Products per Product Standard PS1-07. This standard is available at **www.apawood.org**.

Physical Properties	3/8" to 1/2"	5/8" to 1-1/8"
Check Resistance – APA test #6	2.3 mm	2.3 mm
Moisture Resistance (Cobb) 8 hour soak	2.78 g/sq. ft.	2.78 g/sq. ft.
Alkalinity Resistance after chemical exposure D/T	221	221
Formaldehyde level ASTM E-1333	< 0.01 parts/million	

Panel Tolerances	3/8" to 3/4"	1" & Greater
Thickness Tolerance	+/- 1/32" (.031")	+/- 5%
Length & Width Tolerance	+0, -1/16" (.062")	+0, -1/16" (.062")
Squareness	1/16" (.062")	1/16" (.062")
Straightness	1/16" (.062")	1/16" (.062")

Note: All tolerances and specifications apply at the time of manufacture.
Note: Product averages vary for individual thicknesses.

Standard Packaging:

Thickness	Classic HDO™ 1 Face, HDO Back Average Weight* lbs./SF	Classic HDO™ 2 Face Average Weight* lbs./SF	Pieces per Unit
1/2"	1.665	1.740	66
5/8"	1.960	1.990	50
3/4"	2.444	2.340	44
1-1/8"	3.450	3.685	30

*Average product weights may vary +/- 10%

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.

- **Excellent for engineered systems**
- **Enhanced alkalinity resistance vs. D. Fir**
- **Minimal wood grain & no patch transfer**
- **Increased pours & reduced cost/pour**

Stress and Load Span Tables

These stress and load span tables simulate actual wet form conditions Dry load span values are overstated and should not be used. Canadian (COFI) design values for Douglas Fir are 25% higher than APA

Stress Tables: Tables 1 & 2 are based on APA & PS-1 criteria.

Stress Table – Dry, Working Stress Wet Design Capacities – 4' X 8' Only					
	Struct 1		Class 1		Wet Adjust Factor
Nominal Thickness	1/2"	3/4"	1/2"	3/4"	
Number of Plys	5	7	5	7	
Table 1: Face Grain *Perpendicular* to Supports[1]					
Bending Stiffness[1]	142,562	429,452	142,310	423,697	.85
Bending Resistance[2]	525.6	1,034.7	524.6	1,024.8	.75
Planar Shear[3]	277.8	363.3	207.6	275.0	.75
Table 2: Face Grain *Parallel* to Supports[1]					
Bending Stiffness[1]	56,820	247,726	48,022	208,310	.85
Bending Resistance[2]	266.6	667.7	194.8	486.9	.75
Planar Shear[3]	159.2	311.1	159.7	311.2	.75

[1]Bending Stiffness = EI* (lb-in^2/ft); [2]Bending Resistance = M or F_bS (lb-in/ft; [3]Planar Shear Capacity: V or F_sIb/Q (lb/ft)) There is no DOL (Duration of Load) or experience factor applied to EI. FbS and FsIb/Q.

Load Span Tables: Tables 3 to 6 are based on APA & PS-1 criteria.

Struct 1 LOAD SPAN TABLES – WET CONDITIONS
Recommended Maximum PSF on Struct 1 Panels or Equivalent (V405)

Table 3: Face Grain *Perpendicular* to Supports[1]

Support Spacing	Plywood Thickness – Allowable Pressure (PSF)							
	1/2"		5/8"		3/4"		1-1/8"	
(in.)	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270
8"	1,405	1,405	1.970	1,970	2,050	2,050	3,095	3,095
12"	485	620	745	875	1,060	1,105	1,845	1,845
16"	205	275	350	450	505	575	1,335	1,335
19.2"	120	160	195	265	305	405	1,015	1,015
24"			100	135	160	210	625	650

Table 4: Face Grain *Parallel* to Supports[1]

Support Spacing	Plywood Thickness – Allowable Pressure (PSF)							
	1/2"		5/8"		3/4"		1-1/8"	
(in.)	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270
8"	550	610	1,115	1,115	1,685	1,685	2,525	2,525
12"	155	210	430	575	715	810	1,560	1,560
16"			180	240	310	415	1,000	1,000
19.2"			125	170	220	250	555	555
24"					110	150	355	355

Notes: [1]Plywood continuous across two or more spans
These are total loads (weight of panel should be considered in horizontal applications)
DOL (Duration of Load) 1.25 and Experience factor of 1.30 used in load tables.

Class 1 LOAD SPAN TABLES – WET CONDITIONS
Recommended Maximum PSF on Class 1 Panels or Equivalent (V412)

Table 5: Face Grain *Perpendicular* to Supports[1]

Support Spacing	Plywood Thickness – Allowable Pressure (PSF)							
	1/2"		5/8"		3/4"		1-1/8"	
(in.)	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270
8"	1,000	1,000	1,320	1,320	1,580	1,580	2,230	2,230
12"	455	495	710	710	885	885	1,380	1,380
16"	195	260	325	400	445	505	1,000	1,000
19.2"	110	150	190	255	270	350	740	820
24"			100	130	145	190	425	530

Table 6: Face Grain *Parallel* to Supports[1]

Support Spacing	Plywood Thickness – Allowable Pressure (PSF)							
	1/2"		5/8"		3/4"		1-1/8"	
(in.)	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270	ℓ/360	ℓ/270
8"	392	434	747	747	1,175	1,175	1,819	1,819
12"	145	167	409	466	596	648	1,167	1,167
16"			167	213	273	364	749	749
19.2"			121	163	194	216	404	448
24"					100	135	241	289

Notes: [1]Plywood continuous across two or more spans
These are total loads (weight of panel should be considered in horizontal applications)
DOL (Duration of Load) 1.25 and Experience factor of 1.30 used in load tables.

Form Panel Thickness: For more detailed design information, refer to APA publication "Plywood For Concrete Forming" and to American Concrete Institute publication "Formwork for Concrete."

Edge Support: In high moisture/sustained load conditions, edges may have a greater deflection than the panel center and may exceed calculated deflection.

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 the sales office for a copy of the complete Olympic Terms and Conditions of Sale.

Jobsite Care and Handling

1. **Product preparation:** OPP's HDO panels are not factory release coated. Lightly coat panels prior to first use and each subsequent use with Nox-Crete PCE/PCS or equivalent agent that will not bond with, stain, or adversely affect concrete surfaces. Follow the manufacturer's recommendations for application
2. **Pouring and Vibrating:** While panels are highly resistant to abrasion and impact, they can be damaged through improper use. Follow the rate of pour to reduce excessive pressure that can cause panel damage. Use rubber tipped vibrators and exercise care not to damage form faces.
3. **Stripping:** Prolong panel life with proper stripping and handling. Use wood wedges, rather than metal bars or pries, to separate the form from the concrete. Form panels must be lowered, not thrown or dropped, to avoid face and edge damage.
4. **Cleaning:** Storage and Edge Sealing: Clean panels after each use, employing burlap or flat, non-scratching tools such as plastic or wood scrapers. Reseal cut edges or exposed wood at holes or openings with two coats of a Styrene acrylic sealer. Stack panels flat and remove fasteners to prevent damage and warping. Store panels in a protected area and avoid direct sunlight
5. **Surface Repairs:** Clean all concrete and release agent from the damaged area, using a putty knife. Apply an epoxy gel, such as Evercoat Fiberglass Epoxy, PC Products PC 11 White Epoxy Paste, Aquamend Epoxy Repair Putty or W.R. Meadows Rezi-Weld Gel Paste. Sand the patch so it is flush with the surrounding area, being careful to not sand the overlay off of the adjacent section.

Environmental Impact

Olympic Panel produces overlaid plywood from veneer peeled at the Olympic plant and from purchased veneer. All veneer and plywood panels are manufactured in accordance with the following principals:

- Logs and veneer originate in sustainable, secondary growth forests, which are managed according to Federal and State laws and regulations.
- Olympic Panel uses energy efficient, environmental control technology to reduce emissions to levels below federal and state guidelines.
- Olympic Panel uses process by-products to produce energy.
- Olympic's products are renewable, biodegradable and recyclable.

Warnings

This product contains < 0.01 parts/million of residual formaldehyde from manufacturing. This product will generate wood dust from sawing, sanding, or shaping. Material Safety Data Sheets are available on Olympic's Web site at www.olypanel.com and upon request.

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

Olympic Panel's Concrete Form Product Family

- **Premium Concrete Form:**
  - **Barrier Film™ -** inert to alkalinity for harsh concrete mixes
  - **MultiPour® Plus** – (PSF) – vertical applications only
  - **MultiPour®** - Architectural finish & high re-use
  - **Classic™ HDO** - Alkalinity resistance exceeds Doug fir HDO
- **Industry Standard Concrete Form**
  - **Basic™ HDO -** Economical Doug fir HDO 100/30
  - **B-Matte® 333® MDO -** Matte finish with high re-use
  - **Basic™ MDO -** Economical, utility panel with matte finish

Olympic Panel Technical/Sales Information

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www.olypanel.com

SUSTAINABLE RENEWABLE RECYCLABLE MADE IN THE USA

OLYMPIC PANEL Products