TECHNICAL BULLETIN

TUFF INDUSTRIES INCORPORATED

WATERPROOFING SOLUTIONS

TUFDEK ECONODEK TUFF-SHIELD

NORTH AMERICAN PLYWOOD SIZES AND GRADES

Douglas fir plywood (DFP) and Canadian softwood plywood (CSP), and APA Rated Sturdi-Floor are the most common types of plywood used in construction applications throughout North America, whereas poplar plywood is less common.

DFP is produced to the manufacturing standard CSA O121 Douglas fir plywood, where front and back faces are Douglas Fir. Veneer for inner plies can be any one of 21 listed species, including Douglas fir, western hemlock, and most spruce, pine and fir species in Canada. APA Plywood complies to standard PRP-108.

Plywood containing other selected Canadian softwood species in face and back plies is labelled CSP and is manufactured to comply with CSA O151 Canadian softwood plywood. Most species that are only permitted as inner plies for DFP may be used as face or back plies for CSP. Balsam poplar, trembling aspen and cottonwood, three hardwood species are restricted to use as inner plies in DFP and CSP.

The CSA O121 and CSA O151, and APA PRP-108 standards specify minimum requirements for sizes, grades, specialty panels, manufacturing tolerances and glue bond quality.

Both DFP and CSP are manufactured in several grades. The grades are dependent upon the appearance and the quality of the veneers used for the outer plies. The three qualities of veneer are designated by the letter A (best appearance), B, and C (the lowest appearance grade). Grade A represents a high quality surface and restricts any type of open defect in Douglas fir veneer to pin knots not more than 5 mm (1/4 in) in diameter. There are also restrictions on the use of filler for splits, and the type of split and patches. These restrictions are relaxed for a B-grade veneer. C-grade veneer permits the presence of certain sizes of knots and knot holes, which can be up to 50 mm (2 in) in size measured across the grain. The manufacturer, using these veneer grades in various combinations, can produce panels suitable for a variety of applications, as shown in Table 1.

Sheathing grades, which are not specified for appearance, usually carry the grade stamp on one of the faces, and the grades such as Good Two Sides carry the stamp on the edge so that it does not mar the appearance. The strength values published in CSA O86 are for Sheathing Grade panels based on lay-ups containing only C-grade veneers. These strength values can also be used safely for plywood grades of higher quality. APA Rated sheets are stamped with the construction type, maximum span and Bond Classification such as Exterior, or Exposure 1 for very short term exposure to the outdoor elements.

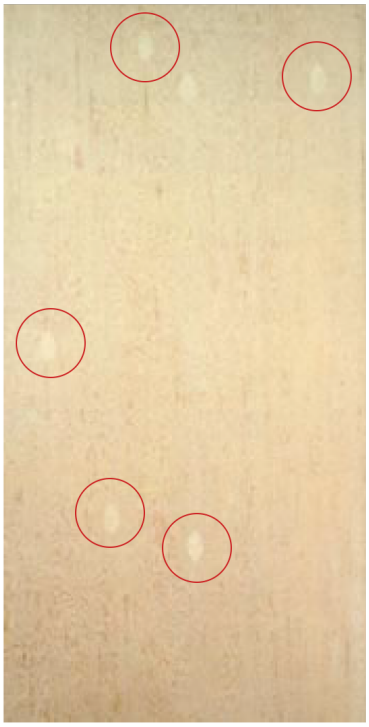
Two species types; unsanded Douglas Fir Plywood (DFP) and unsanded Canadian Softwood Plywood (CSP), which are available in several different grades, are assigned specified engineering strength values under CSA O86. The specified strengths for unsanded plywood are based on test results, with manufacturing and quality control done in accordance with CSA O121 and CSA O151& APA PRP-108.

Other common grades of DFP and CSP include sanded grades which are used primarily in concrete formwork or non-structural applications and Select and Select Tight Face grades which are mainly utilized in floor underlayment applications where a smooth and solid surface is required. Plywood can also be manufactured from Poplar, including both unsanded and sanded type grades.

The appearance of both sides of various grades of plywood is shown in the colour photographs below.

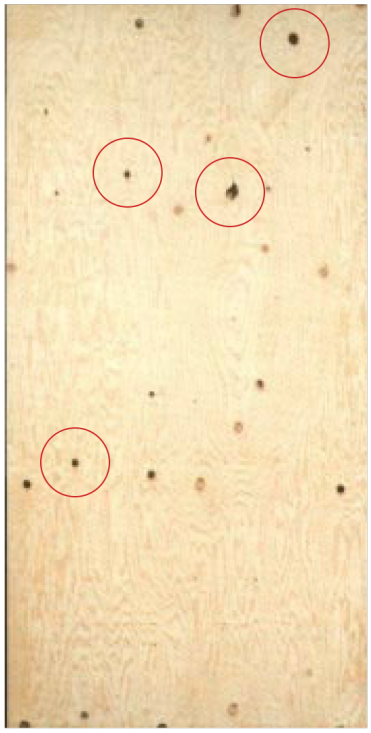
Grade A

O - Synthetic Filler



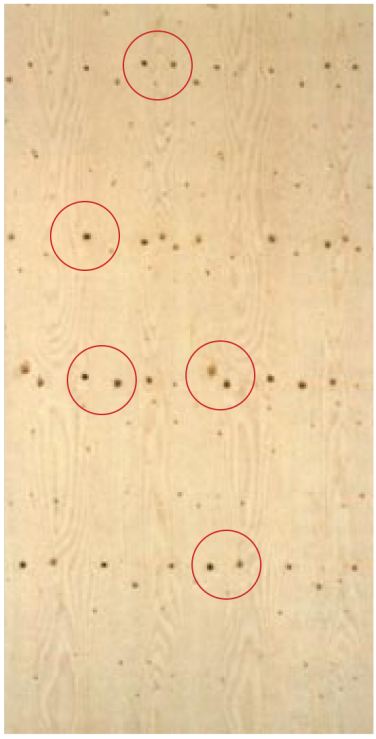
Grade B

O - Dark Knots



Grade C

O - Dark Knots



Modified construction varies from standard plywood, in that the grain direction of the plies, the number of plies, or the thickness of the panel is modified. Standard plywood, symmetrical about the centre ply, is used for most structural sheathing applications. Modified plywood is used for most formwork and for non-engineered sheathing applications.

Table 1: Plywood - Standard Grades						
Grade	Governing Canadian Standard	Individual Veneer Grades			Characteristics	Typical Applications
		Face	Inner Plies	Back		
Good Two Sides (G2S)	CSA O121 (DFP)	A	C	A	Sanded. Best appearance both faces. May contain neat wood patches, inlays or synthetic patching material. ***see warning / T&G Only**	Used where appearances of both sides is important. Furniture, cabinet doors, partitions, shelving, and concrete formwork.
Sanded	Poplar					
Good One Side (G1S)	CSA O121 (DFP)	A	C	C	Sanded. Best appearance one side only. May contain neat wood patches, inlays or synthetic patching material. ***see warning / T&G Only**	Used where appearance on one side is important. Furniture, cabinet doors, partitions, shelving, and concrete formwork.
Select-Tight Face (SEL TF)	CSA O121 (DFP) or CSA O151 (CSP)	B+	C	C	Unsanded. Permissible face openings filled. May be Cleaned and Sized (C&S). **T&G Only**	Underlayment, combined subfloor and underlayment, sheathing, and hoarding.
Select (SEL)	CSA O121 (DFP) or CSA O151 (CSP) or Poplar	B	C	C	Unsanded. Uniform surface with minor open splits. May be Cleaned and Sized (C&S). **T&G Only**	Underlayment, combined subfloor and underlayment, sheathing, hoarding and packaging.
Sheathing (SHG)	CSA O121 (DFP) or CSA O151 (CSP)	C	C	C	Unsanded. Face may contain limited size knots and other defects. **T&G Only**	Roof, wall, and floor sheathing.
Medium Density Overlay (MDO)	CSA O121 (DFP) or CSA O151 (CSP) or Poplar				Smooth, resin-fibre overlaid surface. Best paint base. **Do Not Use**	Siding, soffits, paneling, built-in fitments, signs, or any use requiring a superior paint surface.
MDO 1 Side		C[1]	C	C	**Do Not Use**	
MDO 2 Side		C[1]	C	C[1]	**Do Not Use**	

Notes:

1. Permissible openings filled with wood patches or putty.
2. All grades are bonded with waterproof phenolic glue.
3. Veneer grades: A: highest appearance grade; B: medium appearance grade; and C: low appearance grade.

WARNING: **Some plywood grades such as G2S (good two side) and G1S (good one side) contain artificial / synthetic filler material which must be removed prior to installing Tuff vinyl membranes. Also Remove loose knots and pitch pockets then fill all knotholes, depressions or damaged areas of the plywood with Tuff Industries "Deck Patch". Pay particular attention to darker colored knots as they can cause discoloration of the vinyl membrane due to pitch and / or adhesive bleeding up into the vinyl. If removal of synthetic filler or darker knots is not an option then they must be covered with two coats of Zinsser Bin Shellac Based Primer Sealer.**