Plywood Grades

Douglas fir plywood (DFP) and Canadian so wood plywood (CSP) are the most common types of plywood used in construction applications throughout Canada, 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.

Plywood containing other selected Canadian so wood species in face and back plies is labelled CSP and is manufactured to comply with CSA O151 *Canadian so wood 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 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 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.) and 40 mm (1.6 in.) in size, respectively 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 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.

Two species types; unsanded Douglas Fir Plywood (DFP) and unsanded Canadian So wood 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, and manufacturing and quality control are done in accordance with CSA O121 and CSA O151.

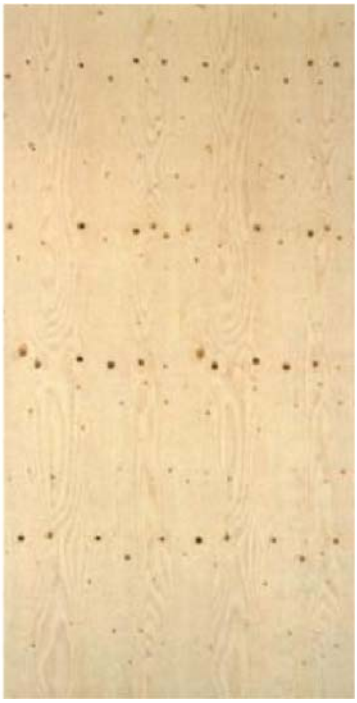
Other common grades of DFP and CSP include sanded grades which are used primarily in concrete formwork or non-structural applications and Select and Select Tight Face grades which are mainly utilized in floor underlayment applications where a smooth and solid surface is required. Plywood can also be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

Grade B

Grade C



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						
		Individual Veneer Grades				
Grade	Governing Canadian Standard	Face	Inner Plies	Back	Characteristics	Typical Applications
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.	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.	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[1]	C	C	Unsanded. Permissible face openings filled. May be Cleaned and Sized (C&S).	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).	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.	Roof, wall, and floor sheathing.
Medium Density Overlaid (MDO)	CSA O121 (DFP) or CSA O151 (CSP) or Poplar				Smooth, resin-fibre overlaid surface. Best paint base.	Siding, soffits, paneling, built-in fitments, signs, or any use requiring a superior paint surface.
MDO 1 Side		C[1]	C	C		
MDO 2 Side		C[1]	C	C[1]		

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.

Table 2: Veneer Characteristics and Defects				
Characteristic or Defect	**Veneer Grade**			
	C Inner	**C Face/Back**	**B**	**A**
Bark/Resin Pocket	40 x 200 mm	25 mm	Open: 5 mm Solid: 25 mm	Not Permitted
Borer Hole	25 x 100 mm	15 x 40 mm	5 mm	Not Permitted
Discoloration	Permitted	Permitted	Permitted	Permitted
Grain Irregularities				
Rough Grain	Permitted	Permitted	Permitted	Permitted
Torn Grain	Permitted	Permitted	Permitted	Permitted
Feather Grain	Permitted	Permitted	Permitted	-
Knot	50 mm	Tight Knots: 50 mm, max 9 Other Knots: 40 mm	Tight Knots: 40 mm Other Knots: 5 mm	Tight Knots: 5 mm, max 6 per Face
Knot Cluster	300 mm	200 mm	200 mm	Not Permitted
Knot Hole	40 mm	32 mm: 40 mm, max 9 per Veneer	5 mm	Not Permitted
Repair	Wood Patch or Shim: 100 x 200 mm or 50 x 300 mm	Wood Patch: 100 mm	Wood Patch: 100 mm	Single Wood Patch: 60 mm Two Overlapping Patches: 100 mm, max 3 per Face
Rot	Not Permitted	Not Permitted	Not Permitted	Not Permitted
Splits	-	-	-	-
Open Splits	10 mm x Panel Length or 15 x 610 mm	10 mm x Panel Length or 15 x 610 mm or 6 mm within 25 mm of Edge	5 mm	Not Permitted
Tight Splits	Permitted	Permitted	Permitted	Permitted
Wane	40 x 75 mm	30 x 40 mm	5 mm	Not Permitted