

CanPly EXTERIOR Plywood Glue/Bond Characteristics

TN02-2003
(Supersedes TN02-99)

The Product > CanPly EXTERIOR plywood is manufactured by member companies of the Canadian Plywood Association (CanPly), and is identified by the following certification mark (face stamp on unsanded grades) or a CanPly EXTERIOR edge stamp on sanded grades:



* CSP, DFP, ASPEN or POPLAR

**CSA 0151, CSA 0121M or CSA 0153M

All panels certified as CanPly EXTERIOR plywood employ an adhesive, phenol formaldehyde, that meets the requirements for an Exterior Type bond suitable for exposure to extreme conditions of moisture and temperature specified in CSA Standard O121 *Douglas Fir Plywood*, CSA O151 *Canadian Softwood Plywood*, and CSA 0153 *Poplar Plywood*.

Glue/Bond Information > Phenol Formaldehyde is a two component synthetic glue. Phenol (with the chemical formula C_6H_5OH) is reacted with formaldehyde (CH_2O) under controlled temperature conditions to produce a thermosetting (heat hardening) resin. This resin is a new chemical entity which possesses properties that are completely distinct from those of either phenol or formaldehyde, with the formaldehyde converted to stable methylene linkages which do not break down under exterior end use conditions. Phenolic resin is typically supplied to plywood manufacturers in a water solution premixed with a catalyst (caustic soda). Soda Ash and bulking ingredients called fillers and extenders (bark and wheat flours, for example) are added to improve gluing characteristics of the mix.

Plywood is manufactured by bonding layers of wood veneers with the phenolic resin glue mix, and polymerizing (curing or hardening) the glue in a "hot press". The hot press subjects panels to an approximate temperature of 150°C (300°F) and a pressure of about 1.4 MPa (200 psi), resulting in an inert water and boil-proof bond.

Formaldehyde Emission > Information developed by numerous organizations have consistently shown that formaldehyde emission associated with phenolic resin-bonded plywood is extremely low. This is attributable to characteristics of the adhesive, and polymerization of the resin during the manufacturing process (described above). Formaldehyde emission testing of CanPly EXTERIOR plywood has been conducted by various accredited laboratories, using internationally accepted test procedures such as:

- ASTM E1333-90 "Large Chamber"
- Japanese JAS "Desiccator"
- European Standard EN 120 "Perforator"
- DIN 52368/EN 717 "Gas-analysis"

Results have shown that formaldehyde emissions are near the minimum levels detectable by the tests, and that CanPly EXTERIOR plywood qualifies for the most stringent classification levels that have been established (e.g. JAS F★★★★, DIN E1, or EN Release Class A).

Specify CanPly EXTERIOR Plywood > Not all panel products utilize phenol formaldehyde glue, and other adhesives or products may emit higher formaldehyde levels. However, all panels certified as CanPly EXTERIOR plywood are manufactured using only phenol formaldehyde glue, and undergo extensive quality control and testing during manufacture and in the CanPly laboratory to meet stringent requirements. The CanPly mark is an assurance to buyers that panels meet the high standards established by the industry and that they will perform in a satisfactory and predictable manner.

For further Information, contact:

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