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**ABSTRACT:**

Why does the code require trademarks to distinguish the various plywood types? All plywood is not the same. Panels may be suitable for specific applications. The trademarks give basic information about expected performance and allowable use. Know and specify the requirements. Check the trademarks for compliance.

**FILING:**

UniFormat™  
B1010 - Floor Construction  
B1020 - Roof Construction  
B2010 - Exterior Walls

**MasterFormat®**

06 10 00 - Rough Carpentry  
06 12 00 - Structural Panels

**KEYWORDS:**

Plywood, Structural Wood Panel, Bond Classification, Exposure 1, Exterior, Species Group, Veneer Grade, Panel Grade, Span Rated

**REFERENCES:**

PS 1-09 - Structural Plywood  
PS 2-10 - Performance Standard for Wood-Based Structural-Use Panels  
International Building Code, 2009 edition.

## Plywood Structural Panels

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### What Plywood is Right?

The construction is underway. The building wood framing and plywood sheathing are being installed. Is the right sheathing installed at the right location? Each sheathing panel bears a trademark. What do those trademarks mean?

### The Codes

The IBC requires wood structural panels to comply with PS 1 or PS 2. Each standard relies on the other for particular requirements. The code also requires each panel to be identified by a trademark from an approved testing and inspection agency. The APA trademark (see examples on page 2) from the Engineered Wood Association serves this purpose.

The following discussion explains the content of the required trademarks.

### Bond Classification

Plywood panels are manufactured with as one of two different bond classifications - Exposure 1 or Exterior. Historically, Exposure 1 was called Interior with Exterior Glue. The bond classification is dependent on the wood veneer grade and the adhesive performance.

Exterior plywood is designed to resist repeated wetting and drying and prolonged exposure to the elements. Exposure 1 is intended for applications not exposed to the elements. Exposure 1 panels are often used for sheathing because they are protected from the weather exposure in the final construction by wall cladding and roofing materials.

### Species Groups

Wood species used in plywood are

classified as **Group 1, 2, 3, 4, or 5** representing the structural capacity of the species. Group 1 is the strongest. Group 5 the weakest. PS 1 includes primarily North American wood species, but does allow for some other species - most notably lauan, often used for underlayment. Douglas-fir is included in both Group 1 and Group 2. The Group classification depends on where the trees are grown.

### Veneer Grade

Plywood grade are based on the quality of the face ply, back ply and Inner plies. Faces and backs are available in Grades **A, B, C, C Plugged, and D**. Grade A is the highest grade (fewest defects). The higher grades - A, B, and C Plugged - are improved by removing defects and replacing them with wood patches and synthetic fillers - the footballs visible in the panel face and back. Grade C and D faces will have voids in the veneer. Overlays can be applied to the panel face and back to enhance the surface appearance. Overlays include Medium Density Overlay (MDO) and High Density Overlay (HDO). These are used when a smooth, painted exposed surface is required. Structural I panels are available for engineered applications such as shear walls or diaphragms where the panel structural properties are important. This grade is limited to Group 1 species to ensure the best structural performance. Structural I panels are available in C-D Exposure 1 panels and all grades for Exterior panels.

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Group 1 species to ensure the best structural performance. Structural I panels are available in C-D Exposure 1 panels and all grades for Exterior panels.

Marine grade plywood is available. Note this is a panel grade, not a bond classification. See [Marine Grade Plywood Explained](#) for more information about this special grade.

### Sanded Panel Grades

Panels with Grade A and B faces are sanded smooth both sides. Grade C Plugged face panels are touch sanded, so some surface irregularities may remain. Panels constructed from these veneers are identified by the face and back veneer grade. Sanded Panel Grades include **A-A, A-B, A-C, B-B, B-C, and C-C Plugged**. The left letter is the panel face, the right letter is the panel back.

### Unsanded Span Rated Panel Grades

Span rated sheathing panels are unsanded to preserve full structural capacity. Span rated panel grades include Rated Sheathing, Rated Sheathing Structural I, and Rated Sturd-I-Floor.

Plywood panels may be rated for roof span and for floor span using a paired

number such as 32/16. The left number is the rated roof span and the right number is the rated floor span.

When plywood is span rated with a single number such as 24 o.c., the rating is for single floor panels. Wall panels are not span rated.

Span ratings are framing spacing in inches. Roof span ratings range from 12 to 48 inches and floor span ratings range from 0 to 48 inches.

Span ratings are dependent on the panel thickness, veneer group, and veneer thickness. PS 1 sets the minimum ultimate load, minimum impact load, and maximum deflection to determine the span ratings. The required performance varies depending on application and span rating.

Sturd-I-Floor is a special sheathing designed to eliminate the need for underlayment for carpeting.

Underlayment is recommended when resilient flooring is installed over Sturd-I-Floor.

### Edges

Plywood edges are available square or tongue and groove (T&G) milled after the panel is fabricated. The 48 inch wide panel net width is 47-1/2 inches. Beware, when installed, the

panels no longer align with 16 or 24 inch framing spacing. T&G edges are often used for Sturd-I-Floor underlayment grade panels.

### Recommendations

Understand the reference standards and grading trademarks to know what must be specified for each type of plywood panel. Then confirm the right panel is use in the right location.

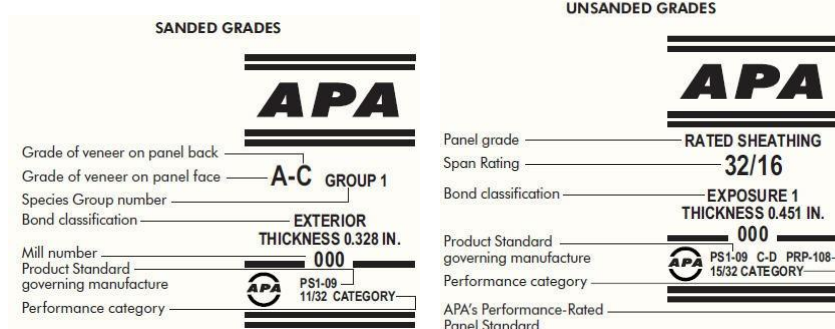
Sanded Panels:

- Face and back veneer grade
- Species group
- Bond classification
- Thickness

Unsanded Panels:

- Panel grade
- Span rating
- Bond classification
- Thickness

## Typical APA Plywood Panel Trademarks



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