

## **When to Use Structural I Sheathing**

### **What is Structural I?**

Structural I, also referred to as “STRUC I,” may be OSB or plywood and is, essentially, a subcategory of APA Rated Sheathing. Panels designated Structural I must meet all of the manufacturing and performance standards of Rated Sheathing, as well as certain additional requirements. These additional requirements relate to increased racking performance related to shear wall and diaphragm values and increased cross panel strength and stiffness properties, which are important when panels are applied with the strength axis parallel to support, as is typical in panelized roofs.

The advantages of Structural I Rated Sheathing over standard Rated Sheathing panels of the same Performance Category are realized in certain specialized engineered applications such as engineered shear walls and engineered horizontal diaphragms. Specialized construction situations requiring installation of roof sheathing panels with the strength axis parallel to supporting structure also benefit from the use of Structural I Sheathing. Structural I is of no additional benefit for other traditional construction applications.

### **Sourcing Structural I**

First and foremost, is it truly necessary to specify Structural I? For most applications that don’t necessitate maximizing shear walls, diaphragms, or similar engineered structural components, regular Rated Sheathing is sufficient. Structural I lends no additional benefits for traditional construction applications. Structural I Rated Sheathing panels carry the same Span Ratings as Rated Sheathing panels of the same thickness, e.g., 15/32 Performance Category (PERF CAT) Structural I and 15/32 PERF CAT Rated Sheathing are both Span Rated at 32/16 and deliver the same capacity for most applications.

Regional availability also comes into play. Before specifying Structural I, check with your supplier to ensure it is available in your region. Although common in western states, Structural I may be challenging to source in other regions. If availability of Structural I in your area is problematic, use of thicker Rated Sheathing usually provides an equivalent load capacity (although at thicknesses over 19/32 PERF CAT, the distinction is probably moot). In many applications, a substitution of Rated Sheathing that is 1/8 PERF CAT thicker than the specified Structural I will result in comparable performance.

### **Avoiding Confusion**

Structural I is unrelated to the bond classifications, also known as exposure durability classifications, Exposure 1 and Exterior. These two designations signify only the moisture resistance of the panel adhesive bond appropriate to its intended end use. Structural I Rated Sheathing may carry either an Exterior or an Exposure 1 designation.

Bond classification relates to moisture resistance of the glue bond, and thus to the structural integrity of the panel. Exterior panels have bonds capable of withstanding

repeated wetting and redrying or long-term exposure to weather or other conditions of similar severity, provided they are properly finished and maintained. Examples of panel applications with Exterior bond classification are signs, siding and closed soffits. Exposure 1 panels are suitable for uses not involving long-term exposure to the weather but are intended to resist the effects of moisture due to construction delays, or other condition of similar severity.

Also, Structural I is not to be confused with the more general terms “structural-use panels” or “structural panels,” which refer to all of the grades of plywood and OSB manufactured under U.S. Voluntary Product Standards PS 1 and PS 2.

And although it’s a small distinction, note that Structural I uses the Roman numeral for one, as opposed to Exposure 1’s use of the more familiar Arabic numeral 1.

#### **More details on Structural I**

Tabulated values for specialized applications where Structural I is of benefit are provided in Tables 29, 33, and 38 of APA’s *Engineered Wood Construction Guide*, Form E30. Design capacities of Structural I and Rated Sheathing panels are provided in [APA Panel Design Specification](#), Form D510. For more detailed information on engineering diaphragms and shear walls, consult *APA Design/Construction Guide: Diaphragms and Shear Walls*, Form L350.

#### **Writing Panel Specs**

Panels are specified in the following order: PERF CAT, APA trademark, Panel Grade, Span Rating, Exposure Durability Classification, and additional information as needed (optional). For example: 15/32 PERF CAT APA Rated Sheathing 32/16 Exposure 1. The PERF CAT refers to the panel thickness, or Performance Category.