

OSB Frequently Asked Questions

Q: What is OSB?

A: Oriented strand board (OSB) is a performance-rated structural panel engineered for uniformity, strength, versatility and workability. It is utilized internationally in a wide array of applications including commercial and residential construction and renovation, packaging/crating, furniture and shelving, and do-it-yourself projects.

Because it is engineered, OSB can be custom manufactured to meet specific requirements in thickness, density, panel size, surface texture, strength, and rigidity. This engineering process makes OSB the most widely accepted and preferred structural panel among architects, specifiers and contractors.

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Q: How is OSB made?

A: OSB is manufactured from sustainable, fast-growing trees such as aspen poplar, southern yellow pine, mixed hardwoods, and other suitable species.

Logs are cut to length, debarked, and processed into precise strands ranging from 3 1/2" to 6" (90 to 150 mm) long and approximately 1" wide (25 mm).

The strands are dried, sorted, and mixed with wax and a waterproof exterior-type binder and formed into large continuous mats. These mats are oriented in cross directional layers for increased strength, and then pressed at a high temperature and pressure to form panels.

Throughout this highly automated and fully engineered process, panels are monitored, tested, and certified to meet stringent quality standards for strength and uniformity.

Q: Does OSB come with a performance guarantee/warranty?

A: Absolutely. Each member of the Structural Board Association guarantees that its panels are manufactured in accordance with one or more of the following applicable standards:

- CSA 0325 and/or CSA 0437 (for Canada)
- PS2-04 (for the U.S.A)
- EN 300 and HEN13986 (for Europe)
- JAS for Structural Panels (Notification 360 and 1604, MAFF) (for Japan)

- TECO, APA or PSI/PTL Performance Standards (respectively NER-133, NER-PRP108 or NER-231).

This guarantee means that panels will perform as specified for the intended use when installed in accordance with the Installation Instructions published by the manufacturer.

Q: How does OSB perform in comparison to other structural panels?

A: OSB is equivalent to other structural panels in its strength and rigidity, panel size and thickness, fastener performance and paintability. As a performance-rated structural panel, it meets specific end use requirements in all major building codes.

In addition, span ratings are stamped on each panel. (These ratings denote maximum recommended spacing of supports for load-bearing conditions.).

OSB also is Exposure 1 rated for durability, which means that it is designed to perform in applications where construction delays may occur. It requires no special treatment, only the same degree-of-care as other wood products. As with other structural wood panels, prolonged direct contact with rain or standing water should be avoided.

Q: Is OSB economical to use?

A: OSB's engineered manufacturing process makes it extremely economical for several reasons:

- Only trees from sustainable, fast-growing forests or woodlot thinning are required in the manufacturing process, so there is always an abundant supply of convenient, high-quality raw materials.
- The panel is engineered for uniformity, eliminating costly surprises like core voids and knotholes, so you can use what you buy and get what you pay for.
- OSB is manufactured worldwide, meaning its abundant supply and easy access ensures economical purchasing and shipping methods.
- OSB is a better value than other structural panels.
- OSB also offers increased flexibility in selecting panel thicknesses and sizes.

Q: Is OSB environmentally safe?

A: Millions of dollars have been invested to ensure that OSB is one of the safest and most environmentally friendly structural panels available. Consider some the facts:

As the only truly renewable building material, wood is increasing its reserves every year.

- OSB uses selectively prepared new wood strands during its manufacturing process and is recyclable into other products.

- The fiber for OSB is grown in sustainable forests and tree farms.
- OSB is safe to use.
- Resin binders and waxes are completely cured and stabilized, so there is no measurable off-gassing from panels.
- The manufacturing process uses nearly 90% of the log, with the balance used to supply energy.
- It takes far more energy and resources to produce steel, concrete or other building materials than to manufacture a structural wood panel.
- Modern mills -- costing more than US\$ 100 million -- are scientifically designed to meet or exceed strict standards for environmental compliance, set by regulatory authorities.

Q: Does disposal of OSB in a landfill harm the environment?

A: Land filling of typical OSB is a safe practice which consumers and contractors should engage in freely if no other alternatives for disposal or recycling are available, based on present information and manufacturing technology.

Typically, OSB is 95 to 97 percent wood, and 3 to 5 percent additives like wax and resin. The characteristics of a well-managed landfill will mitigate any adverse effects to health or the environment.

Q: What is OSB's fire performance?

A: Independent studies conducted to obtain flame-spread ratings in OSB found that uncoated panels meet or exceed the minimum flame-spread requirements of The National Building Code of Canada.

Other tests were conducted by Forintek Canada Corporation, a major independent Canadian research firm. The tests used OSB panels coated with latex interior paint and two fire-retardant paints, which improved their flame spread ratings.

The model building codes also recognize the equivalent performance of OSB and plywood panels in many wall or floor assemblies requiring a minimum fire rating.

Q: Is OSB roof sheathing slippery to walk on during roof applications?

A: OSB structural panels - with a textured surface - provide a safe, secure, nonslip surface for roofing installers wearing rubber-soled boots, according to comprehensive testing conducted by Forintek Canada Corp., a major Canadian independent research firm.

Tests were conducted under both wet and dry climatic conditions using OSB panels from a variety of SBA-member mills.

Q: Are there any gaseous emissions from OSB?

A: A two-phase study demonstrated that formaldehyde emissions from OSB were at or below the lower limit of sensitivity of test methods, meaning formaldehyde emissions from OSB are negligible or nonexistent.

Tests on OSB panels have also been proven to meet the requirements of the European and Japanese emission criteria.

Q: How vapor permeable is OSB? Should it be used with a special vapor barrier?

A: The permeability of a wood panel is the rate that moisture passes through the panel under stated conditions of moisture vapor pressure. It is influenced by the density, degree of orientation, and thickness of the panel.

OSB compares favorably with other structural panels. Panels with a permeability of 1.0 perm (60 ng/Pa.s.m²) or less are considered to act as vapor barriers and panels with a permeability of 2.0 perms (120 ng/Pa.s.m²) or more are considered to pass sufficient water vapor that a wall cavity will dry out when constructed with green lumber.

For example, 5/8" (15.5mm) panels can be installed as a floor over unheated well ventilated spaces without the need of a vapor barrier, while 7/16" (11 mm), when installed as wall sheathing, will allow a wall cavity containing saturated stud lumber and glass fiber insulation to reach an equilibrium moisture content below 19 percent in approximately 60 days.

Sheathing membranes, although not always specifically mandated in some building codes under some types of claddings are recommended over OSB wall sheathing.

Q: What are OSB's performance standards?

A: OSB panels are manufactured to meet U. S. Department of Commerce Voluntary Performance Standard PS 2-92 "Performance Standard for Wood Based Structural Panels" and/or Canadian performance standard CSA 0325 "Construction Sheathing" (and/or CSA Standard 0437.0 "OSB & Wafer board").

OSB is certified to meet these standards by APA - the Engineered Wood Association, TECO (or PFS), PSI, or other major wood certification organizations. In addition, OSB is regulated in all model building code organizations - ICC, BOCA, ICBO, NBCC, CABO, and SBCCI. OSB is manufactured to meet the Exposure 1 durability classification, meaning panels are appropriate for use where construction delays may occur.

In Europe, OSB panels are manufactured to meet EN-300, Oriented Strand Boards and are certified by national certification agencies.

For Japan, OSB panels must meet JAS requirements and can be certified by recognized North American certification agencies.

Q: How do I install OSB as roof sheathing?

A: Select the correct thickness or span rating for the application as per local building code requirements. Make sure the rafters or upper truss chords are in alignment, even and straight. (Curved or uneven rafters and upper chords affect the finished roof appearance.).

Panels should be installed textured side up with their long direction across the rafters or truss chords. Long panel edges should be supported or joined with edge clips where specified by the drawings or installation instructions. Leave a 1/8" (3 mm) gap at panel edges or ends to allow for movement due to changes in humidity.

Panels should be staggered at least two supports, and end joints must lie over supports. Use 2 1/2" (63 mm) common (8d) or 2" (50 mm) deformed shank or ring thread nails at 6" (150 mm) o.c. on panel edges, at 12" (300 mm) o.c. along intermediate supports and 3/8" (10 mm) minimum from panel edge. Staples may be used instead of nails - please consult your local building code for size and spacing. Stand over the trusses or rafters when nailing.

The roof should be dry prior to shingling and should be shingled as soon as possible after installation of sheathing. It is essential that the area under a roof system is adequately vented with 50 percent of the venting at the ridge and 50 percent around the eaves. Vent roof as specified in the appropriate building code or as shown on the approved drawings.

Q: How do I install OSB as wall sheathing?

A: Select the correct thickness or span rating for the wall application as per the local building code requirements.

Ensure that wall framing is complete and ready to accept the sheathing. OSB wall sheathing panels may be installed either horizontally (across the supports) or vertically (parallel to the supports).

Leave 1/8" (3 mm) gaps between panels, and 1/8" (3 mm) gaps around openings for windows and doors. Fasten panels with 2" (50 mm) common (6d) or 1 3/4" (45 mm) deformed shank nails at 6" (150 mm) o.c. along the panel edges, and at 12" (300 mm) o.c. along the intermediate supports. Keep nails 3/8" (10 mm) away from panel edges.

Blocking or diagonal bracing is not required unless specified. (Special provisions apply for OSB sheathing used in shear walls. Please consult the manufacturer or the Structural Board Association).

Q: How do I install OSB as floor sheathing?

A: Select the correct thickness or span rating for the application as per local building code requirements, either a single layer combination subfloor/underlayment or a subfloor to be covered with underlayment, hardwood flooring, or light weight concrete.

Lay panels across three or more supports, keeping the side marked "This Side Down" on the supports when using T&G panels. End joints must be made over the supports and should be staggered at least two supports.

Lightly butt tongue and groove panel sides together and leave 1/8" (3 mm) gap at panel ends. Panel ends of single layer combination subfloor/underlayment should be lightly butted.

Use 2" (50 mm) or 6d deformed shank nails, 1-3/4" (45 mm) No. 10 screws or 2-1/2" (63 mm) or 8d common nails at 6" (150 mm) o.c. along panel edges keeping fasteners 3/8" (10 mm) away from panel edges. (Drywall screws are not recommended.) Space fasteners at 10" (250 mm) o.c. on intermediate supports for single layer floors and 12" (300 mm) o.c. for subfloors. (Special instructions for fastening glued and nailed subfloors are available from manufacturers or the Structural Board Association).

Q: How does OSB perform under high humidity conditions?

A: OSB like all wood products reacts to changes in moisture and humidity conditions. OSB is required by North American Standards to maintain its strength and stiffness performance under normal humidity conditions, also referred to as "standard conditions," which are represented by a temperature of 68 degrees Fahrenheit and 65 percent relative humidity. This condition is typical of protected construction.

In addition, OSB is required to maintain its strength and stiffness performance when exposed to weather during long construction delays. OSB panels intended for construction are marked Exposure 1 for durability in accordance with voluntary product standard PS 2-92 (or Exterior Bond if stamped to meet CSA 0325).

Remember to gap OSB panels to allow for possible expansion.

Q: How does OSB perform as floor sheathing?

A: Sheathing grade OSB subfloors are well suited for most floors and are intended to have an additional layer of flooring material such as an OSB underlayment panel, wood strip flooring or concrete topping.

Single Floor grade panels used as combination subfloor/underlayment do not require an additional layer. The edges of Sheathing or Single Floor panels must be supported with approved tongue and groove joints or solid blocking.

Performance of OSB floor systems can be enhanced, if in addition to nailing, sheathing is glued to the joists with elastomeric glue and the tongue and groove edges are glued together.

Use of thicker subfloors or reduced fastener spacing will also enhance the performance of OSB floors.