

## **General**

- [How long do wood buildings last?](#)
- [How long do wood decks, shingles and fences last?](#)
- [I'm building in the rain – what happens if wood gets wet during construction?](#)
- [OSB and moisture – what's the real story?](#)
- [What's the durability of alternatives like plastic wood?](#)

### **HOW LONG DO WOOD BUILDINGS LAST?**

Wood buildings can last as long as needed. In fact, wood can endure for centuries if it is installed within a protected environment, i.e. a well-designed and built structure that follows protection by design principles. There's no reason a good wood building couldn't last indefinitely. In North America, we have countless houses still occupied that are well over 100 years old. There are many more surviving wood buildings world-wide that are far older than that, including temples in Japan built 1300 years ago. Please see [Wood's Heritage](#) for more examples of historic wood buildings and for data on the longevity of modern wood buildings.

### **HOW LONG DO WOOD DECKS, SHINGLES AND FENCES LAST?**

When wood is exposed to the elements, its life span depends on the wood species, the degree of decay hazard, the maintenance activities, and the nature of the preservative treatment, if any. Shingles made of naturally durable western red cedar typically last 15-25 years. A well-designed and ventilated cedar deck will have a similar life, as will fence boards. A fence post made of untreated wood and put into direct contact with the ground is one example of a high hazard situation that will lead to a shorter life span. Properly treated wood can last at least 40 years.

### **I'M BUILDING IN THE RAIN – WHAT HAPPENS IF WOOD GETS WET DURING CONSTRUCTION?**

The wood will not be damaged by the water, but if the wood is too wet when it is enclosed into an assembly it will be at risk of decay, particularly if it cannot dry out quickly. The National Building Code of Canada specifies that wood be at no more than 19% moisture content before enclosure – this is to provide a good safety margin against decay. How much water gets taken up by the wood depends on the circumstances.

Wood does not absorb water very rapidly from surfaces parallel to its linear cells – in other words, rain falling on the face of lumber or a panel will generally only wet the surface of the piece, and this moisture can dry readily. However, water is taken up more quickly through the ends of pieces. If possible, ends of lumber and panels should be more carefully protected from water uptake. Any wood sitting in a pool of water, or with water pooling on top will eventually absorb some of it through any face, and this is a particular problem for sill plates.

The sooner a wood frame structure can be enclosed, and the roof can be installed, the better the chance for reducing this risk and increasing the time allowed for the wet elements to dry out. Wood that is over 19% MC needs time to dry before being enclosed. If the weather-resistant membrane (building paper or "housewrap") can be installed as soon as practical, then the wood will be protected from further wetting as it dries while the rest of construction proceeds.

### **OSB AND MOISTURE - WHAT'S THE REAL STORY?**

Oriented Strand Board (OSB) is a wood-based structural panel product commonly used in wall sheathing and floor underlayment. We are often asked to comment on popular opinions regarding any special sensitivity of OSB to water.

### **What Happens When OSB Gets Wet?**

OSB is rated **Exposure 1** for durability. Panels with this designation are intended for enclosed protected construction, i.e. not permanently exposed to the weather. It is manufactured to resist moisture due to construction delays, or other conditions of similar severity. In order to be marked Exposure 1 OSB panels must meet specific (i.e. moisture cycling) bond strength and durability requirements. Technological advances in resin and wax formulation over the past few years have resulted in panels that are much more resistant to the effects of moisture and to swelling. For most applications, OSB panels with Exposure 1 durability will offer excellent performance, even when subjected to normal moisture conditions during construction. Today's OSB has a degree of inherent moisture resistance, imparted by the resin and wax formulation contained in the product. Panels are also treated with a sealant on the edges to retard moisture penetration. In addition, OSB is bonded with waterproof adhesives. In summary, OSB is not very sensitive to small amounts of transient water, and it absorbs water slowly, but since it is densified, it will swell more once water does get in. In the event that you need a panel with superior moisture resistance and durability, specialty OSB panels are now manufactured and available. Careful decisions in design, construction and maintenance will ensure you continue to get the performance you expect from OSB.

### **Preservative Treatment for OSB**

When marginal moisture conditions are anticipated, the addition of low levels of a preservative can help improve the durability of OSB. Zinc borate is most commonly used to protect OSB against decay and termites. Preservative-treated OSB and wood composite siding are now available in the marketplace.

### **Proper Handling of OSB on the Job Site**

Panels should be protected from excessive wetting during storage and construction. The panel edges are especially vulnerable and therefore manufacturers protect the edges with paint or a special sealer. This sealer is usually coloured. If a field cut of a panel slices away a sealed edge, take extra care to protect this now vulnerable side during construction. Manufacturers also recommend a 2mm (1/8") gap be left between panels during installation to accommodate expansion. Do not allow panels to sit in pools of water. Store panels indoors or under cover, with enough support to keep panels flat. Schedule delivery as close as possible to time of use and close in the structure from the weather as quickly as practical.

### **Appropriate OSB Applications**

Conventional OSB is suitable for all dry sheathing applications and treated, stabilised OSB should be used where higher moisture tolerance may be required. There are some applications where OSB is not advised by manufacturers. OSB is not recommended for use where it would be in sustained contact with a moisture source, such as soil or concrete within 150mm of soil level. Like most other wood products, OSB is designed for use under dry service conditions. OSB is manufactured dry and should be transported, stored and, ideally, installed dry. Installing dry is difficult in rainy climates, however, brief periods of wetting should not cause decay problems, provided OSB dries before the air barrier and cladding are installed. Interestingly, in above-ground field tests of small boards, OSB fully exposed to drying on both sides remains free from decay for many years. Once the building is closed in, the ability of the wall to dry is dramatically reduced. This means the OSB - and all other components of the framing - should be kept dry over the life of the wall. This is true no matter what the choice of construction materials.

### **WHAT'S THE DURABILITY OF ALTERNATIVES LIKE PLASTIC WOOD?**

Manufacturers of wood alternatives are quick to claim the durability benefits of their

products over wood. Sometimes they're right – wood isn't always the best choice for every application. However, be wary of durability claims that aren't backed up with long-term field test data. Plastic-wood composites may be more at risk of decay than advertised, or compared with naturally durable or preserved solid wood installed and maintained correctly.