



## Advanced Housing Research Center



Forest Products Laboratory  
Madison, Wisconsin

Tips and  
Techniques

### Wood Shakes and Shingles: Tips for Longer Life

**Shingles** are sawn from wood blocks; they are tapered and generally have a relatively smooth surface. **Shakes** are split from wood blocks; they are less uniform in thickness than shingles, are sometimes grooved, and frequently have little taper. Shakes may be split, then sawn to provide taper as well as a relatively flat side, which is turned away from the weather during installation. Shingles and shakes can also be used on side-walls, but only roofs are addressed here. In this circular, the term shingles includes shingles and shakes.

- **Select Durable and/or Treated Wood**

The most important factor to consider when buying shingles is **durability**—its resistance to decay.

Some woods have natural durability. The heartwood of old-growth western redcedar is rated as extremely durable. However, the generally small amount of sapwood associated with this species is not durable. There is general consensus that some second-growth timber, even from a decay-resistant species, is not as durable as the old-growth timber. Nevertheless, the durability of any wood decreases as rain or other sources

of moisture leach extractives from the wood. For these reasons, the use of a “durable and treated” wood for shingles is increasing.

The most commonly used wood for shingles is western redcedar. Treated southern yellow pine taper-sawn shingles are also available. Other woods can also be used, if the shingles are properly treated. Using preservative-treated or naturally durable wood for shingles should result in a roof free of decay for 25 to 30 years.

**Weathering** is erosion from sun, wind, debris, and precipitation. All wood is subject to weathering. Shingles are often left to weather naturally and, depending on climatic conditions, the wood turns silver, dark gray, or dark brown. Weathering can be reduced by applying finishes, especially those with pigment. Some treatments retard both decay (preservatives) and weathering (finishes).

Select only the top grade of shingles manufactured with edge-grained heartwood (or treated sapwood). A lower grade of shingles can be used on sidewalls or areas that require an undercourse.

Shingles rapidly absorb moisture. The swelling and shrinking of the wood results in cracks, which can

increase the entry of moisture. Decay occurs when nondurable, untreated wood remains wet for long periods.

In warm, humid climates and on heavily shaded roofs, mildew, moss, algae, and lichens can grow. Because these organisms retain moisture, the wood will decay with time. In some cases, particularly where warm, humid conditions persist for substantial parts of the year, it is desirable to extend the life of wood shingles with special preservative treatments. For maximum effectiveness and long life, purchase shingles pressure treated in the factory. Chromated copper arsenate (CCA, Type C), copper–8–quinolinolate, and copper naphthenate are effective wood preservatives when applied at the recommended levels. A CCA treatment on shingles will also decrease weathering. Note: Pigments may be desired if the green stain from the copper is objectionable.

- **Apply Appropriate Finish**

Weathering rapidly deteriorates any finishing system. You can apply various finishes and preservatives to shingles to reduce weathering and decay and to obtain a particular color. Prefinishing shingles is not difficult and is well worth the effort. Note: Some fin-

shes may increase flammability. Application of fire retardants may be required by local ordinances.

**Film-forming finishes**, such as paint, solid-color stains, or varnish, should never be used on roofs. Such finishes do not tolerate shrinking and swelling and will crack, providing a site for water to enter; the areas of intact film will later restrict moisture release. A transparent finish, such as varnish, will deteriorate within a few months, and a pigmented finish, such as paint, will last only a few years. The result will be an unsightly appearance, and the wood will be difficult to refinish.

**Semitransparent penetrating oil-based stains** are the most effective finishes for roofs. These stains provide color without entirely concealing the grain and texture of the wood, and they can last for several years on roofs. Semitransparent stains last longer on rough-textured edge-grained surfaces than on smooth surfaces. The stain should contain a wood preservative and a water repellent. Some stains are specially formulated for use on shingles. Stains with the highest concentration of pigment will probably give the longest service life and provide the most protection from surface erosion.

**Water-repellent preservatives** can also be used on roofs, although their life expectancy is less than that of semitransparent stains. Water-repellent preservatives contain a wax or water repellent, a preservative, and a solvent or carrier.

The first coat of finish is best applied before shingles are installed so that the back, butt-end, and face of each shingle are thoroughly

coated. The finish may be applied by dipping the shingles to at least two-thirds their length, then standing them vertically until the finish has dried. An alternative to dipping is to apply the finish by brushing, rolling, or spraying. Dipping is the most effective method and brushing is the next best. If a light-colored finish has been applied, the butt-end and edge of the shingle will eventually discolor as a result of leaching of water-soluble extractives from the wood.

#### • Install Shingles Properly

How shingles are installed influences the moisture condition of the roof; moisture buildup greatly affects service life.

Before and during the 19th century, wood shingles were fastened to widely spaced nailing strips without the use of tarred or asphalted felts as a secondary barrier. Today, asphalted felt is used as a secondary barrier over sheathing, so wood shingles typically dry less quickly. Providing an airspace between the shingles and the felt-covered sheathing vastly improves drying. The airspace can be created by attaching furring strips to the felted roof deck parallel to the trusses or rafters, then attaching widely spaced nailers perpendicular to the furring strips. Water that gets past the shingles drains away, and the airspace allows drying. Alternatively, a commercial thick plastic mesh called “Cedar Breather” can be applied over roofing felt, creating some airspace between the shingles and the felt-covered sheathing.

The most important way to prevent moss from developing on roofs is to use zinc, galvanized, or copper flashings. Copper flashings that change color (turn green) over time are better than copper flash-

ings that presumably do not change color. Normal corrosion from these metals provides some control of moss (plus mold and mildew) for 15 ft or more down slope from the metal. The metal can be used as a ridge cap, or strips can be placed under the top course with at least 1 inch exposed. Additional strips may be necessary further down the roof.

#### • Perform Maintenance

Leaves and other debris that accumulate on roofs, particularly in the valleys and gutters, trap moisture in shingles, increasing the likelihood of decay. Therefore, clean loose debris from roofs and gutters routinely. Overhanging limbs and vines that provide excessive shade keep the shingles wet for longer periods, encourage moss growth, and may encourage decay.

Periodically check the roof for moss or lichen growth and apply a chemical treatment if necessary. A solution of 1 quart household bleach, 1 ounce detergent, and 3 quarts warm water can be used to clean the roof.

Surface treatment of the roof with selected chemicals can also provide some protection. A solution of copper naphthenate with 3% to 4% metal content, copper octoate with 1% to 2% metal content, and copper-8-quinolinate with about 1% active ingredient content can be used to control moss, lichens, and surface decay. You can also purchase commercial treating solutions. All solutions are best applied by brushing or dipping. Even if the roof is surface treated, serious decay problems can still occur within the shingled or unexposed parts of the roof that are not treated. Nevertheless, surface treatment helps to lengthen the life of a wood roof by preventing the growth of moss and lichens.