

CHAPTER 10

WOOD-SHINGLE ROOFING

Section I. DESCRIPTION AND GENERAL DISCUSSION

10.1.1 General

Wood shingles are sawed. Wood shakes are split. Shingles have relatively smooth sides whereas shakes have at least one natural grain split surface. This chapter deals only with shingles since this type is most commonly used.

10.1.2 Description

Wood-shingle roofs are usually of red cedar, cypress or redwood shingles. Wood shingles are available in three "Grades"; however, the description that follows applies only to the No.1 Grade. Only heartwood should be used in making wood shingles, cut so that the annual or growth rings form an angle no greater than 45° from the perpendicular when a shingle is laid flat. This defines "edge-grain" shingles and distinguishes them from flat-grain shingles which are less resistant to splitting and warping than the edge-grain shingles. Thickness is the most important dimension of wood shingles. It is measured at the butt ends and is designated according to the number of pieces that are necessary to constitute a specific unit of thickness. Thus, 5/2 indicates that the butts of five shingles measured together will give a total thickness of 2 inches. Wood shingles should be not less than 16 inches long. Maximum width is 14 inches; minimum width of shingles less than 24 inches long is 3 inches and for those 24 inches long and longer, it is 4 inches. Wood shingles are sold in bundles, with shingles packed flat in courses, the butts of shingles in alternate courses facing in opposite directions, giving a "square pack." The number of courses at each end

of a bundle are indicated so that a bundle designated 13/14 means one with 13 courses at one end and 14 at the other. Each course of shingles in a bundle averages 18½"running inches," that is, the actual width of the shingles in a course in a bundle. Given this information and the desired exposure, it is easy to calculate the number of bundles of shingles that will be required to cover a square of roof surface.

10.1.3 Preservative Treatment

The treatment of wood shingles with creosote preservative materially lengthens the life of a wood-shingle roof. The creosote tends to exclude moisture; to prevent warping and splitting of the shingles; to retard rot or decay and to decrease surface weathering. In addition, shingle nails last longer with shingles that have been given a creosote treatment. Several manufacturers produce wood shingles which are pressure-treated with fire-retardant chemicals to meet Underwriters Laboratories, Inc. Class C requirements.

10.1.4 Specification

Commercial Standard 31-52, Wood shingles (Red Cedar, Tidewater Red Cypress, California Redwood) available from Clearing House for Federal Scientific and Technical Information, US Department of Commerce, NBS Institute of Applied Technology, Springfield, Virginia 22151, discusses general and detail requirements for No.1 Grade wood shingles and gives a glossary of terms used in connection with wood shingles.

Section II. ROOF DECKS FOR WOOD-SHINGLE ROOFS

Roof decks for wood-shingle roofs may be of solid or open sheathing. Solid decks of well-seasoned sheathing lumber should be, nominal 1 inch in thickness, either tongued-and-grooved or with straight sides, or of plywood with exterior glue, not less than ½ inch thick. When open or spaced, sheathing is used, the sheathing boards (1 by 3, 1 by 4, or 1 by 6 inches) are spaced the same distance as

the anticipated shingle exposure and each course of shingles is nailed to a separate sheathing board; or 1 by 6 inch boards are spaced twice the distance of the anticipated shingle exposure. By the latter method, two courses of shingles are nailed to each sheathing board. No underlay material is required for wood shingles.

Section III. STORAGE AND HANDLING OF WOOD SHINGLES

Wood shingles should preferably be stored under cover to maintain a uniform moisture content. If outdoor storage is necessary, bundles should be

piled on planks to prevent contact with the ground and they should be covered to protect them from the weather.

Section IV. DETERMINING TREATMENT FOR WOOD-SHINGLE ROOFS

Wood-shingle roofs of good quality shingles applied correctly normally render long and satisfactory service. Failures in wood-shingle roofs usually occur because of warping or splitting of the shingles, decay, normal weathering, or failure of the shingle nails. Warping and splitting are found most frequently with flat-grain shingles. They occur usually on the portion of the shingle that is exposed to the weather. Neither warping or splitting is likely to affect the waterproofness of the roof because a wood-shingle roof should have three layers of shingles throughout. Splits in shingles, however, may shorten the life of a roof by permitting water to reach the nails in the shingles underneath and hasten their deterioration. Decay in wood is caused by minute organisms that thrive best in moist wood. Therefore, it is found most frequently in low-

pitched and shaded roofs that remain moist for long periods. Normal weathering proceeds slowly in wood shingles. Factors in normal weathering are wind-driven rain, snow, hail or sand and alternate freezing and thawing in winter. Very old wood-shingle roofs usually shown the exposed shingle butt just below the area protected by the overlaying shingle much thinner than the protected area. Failure of shingle nails is most frequently caused by the splitting of shingles or the improper placement of nails. The effects of all of the deteriorating factors mentioned are lessened appreciably by impregnating the shingles with creosote oil. Impregnation by dipping or by pressure process before the shingles are applied is much more effective than treatment after application.

Section V. MAINTENANCE AND REPAIR METHODS—WOOD SHINGLE ROOFS

Maintenance and repair work for wood-shingle roofs is treated under the same heading.

10.5.1 Warped Shingles

Warped shingles do not usually cause leaks and, except for appearance are not immediately objectionable. Warped shingles will probably crack eventually, in which case they should be removed. Warped shingles should never be face nailed except in preparation for reroofing. The nailing is likely to crack the shingles and the nails will work loose, permitting the roof to leak.

10.5.2 Removing Cracked or Rotted Shingles and Applying New Ones

Broken wood shingles can be removed by the methods described for removing broken slates (para 8.5) except that at least four nails must be cut. After the broken shingle is removed, insert a new one of the same size and nail it through the exposed butt, preferably with thin copper nails.

Also nail the shingle immediately above through the exposed butt.

10.5.3 Treating Shingles With Creosote or Shingle Stain

Creosote, Technical, Wood Preservative, (for) Brush, Spray or Open-Tank Treatment, under Federal Specification TT-C-655, is an excellent preservative for wood shingle roofs. Application by brush, while more laborious, is likely to be more effective than application by spray because of better penetration. If a colored roof is desired, pigmented stains containing creosote oil or its derivatives should be used in preference to those without creosote. The frequency of treatment varies with the kind of wood, pitch of the roof and any pretreatment the shingles may have been given prior to application. Drying-oil paints should not be used on wood-shingle roofs because unequal absorption and subsequent drying of the paint may cause the shingles to warp and curl.

Section VI. REROOFING WITH WOOD SHINGLES

10.6.1 General

Wood shingles may be used for reroofing over wood and asphalt-shingle roofs and over smooth-and-surfaced asphalt roofing. However, as with other materials, the better practice is to remove the existing roof covering. Reroofing of wood-shingle roofs is usually required when:

- a. Evidence of leaks show in more than a single localized area after the roof has been exposed to no more than the usual local rainfall.
- b. It has been determined that the leaks result from shingle failure, and not from defective flashings. By reroofing only one exposure, roof failure may sometimes be corrected. Because of difficulties in nailing, no attempt should be made to apply wood shingles over metal, slate or asbestos-cement roofs.

10.6.2 Preparing Deck for Reroofing With Wood Shingles

10.6.2.1 When Existing Roofing is Removed. Proceed as described in paragraph 5.6.2.1.

10.6.2.2 When Existing Roofing Remains.

10.6.2.2.1 Reroofing Over Wood Shingles. Remove all loose and protruding nails. Replace decayed or missing shingles with new ones. Nail down or cut off corners of curled and warped shingles and re-nail loose shingles. Cut back shingles at eaves and rakes far enough to apply 1- by 4-inch strips securely nailed. Remove weathered shingles at the ridge and replace them with a strip of beveled siding, thin edge down, to provide a solid base for nailing the ridge shingles. Treat hips the same as ridges. Fill open valleys with wooden strips level with the shingle surface. Install new non-ferrous metal valley flashings. Install new non-ferrous metal base and counter flashings in accordance with new construction specifications where necessary. Sweep all loose debris from the roof deck.

10.6.2.2.2 Reroofing Over Asphalt Roll Roofing. Inspect carefully all sheathing boards at the eaves and replace rotted boards with new ones. Remove all loose or protruding nails. Cut all blisters and buckles and nail cut edges to the roof deck. Repaint ferrous metal flashings that are in good condition. Install new nonferrous metal base

flashings and new metal counter flashings in accordance with new construction specifications, where necessary. Install new nonferrous metal valley flashings. Sweep all loose debris from the roof.

10.6.2.2.3 Reroofing Over Asphalt Shingles. Proceed as described in paragraph 10.6.2.2.2, "Reroofing Over Asphalt Roll Roofing" and in addition, nail down or cut away the butts of all curled or lifted shingles.

10.6.3 Applying Wood Shingle Roof

Apply a double course of wood shingles at the eaves, with the butts of the shingles overhanging the eaves 1½-inches. Space all shingles in the same course ¼ inch to allow for expansion due to moisture absorption. Nail each shingle in these and subsequent courses with two nails placed 1 to 1½-inches above the butt line of the succeeding course of shingles and not more than ¾ inch from the edge of the shingle on each side. Break the joints between the shingles in successive courses at least 1½-inches and apply the shingles so that the joints in alternate courses are not in line. The exposure of wood shingles depends on the slope of the roof and on the length of the shingles. For slopes of 5 inches per foot and greater, the standard exposures are as follows:

<i>Length of shingle, inches</i>	<i>Exposure, inches</i>
16	5
18	5½
24	7½

For slopes less than 5 inches per foot, these exposures should be 3¾, 4¼, and 5¾ inches respectively. Use only hot-dipped galvanized nails, either round or square cut, for applying wood shingles. Use 1 ¼ inch nails for 16 and 18 inch shingles and 1 ½ inch nails for 24 inch shingles in new construction. When wood shingles are applied over an existing roof, use 1¾ inch nails for 16 and 18 inch shingles and 2 inch nails for 24 inch shingles. Nail heads should not be driven into the wood. Remove weathered shingles at the ridge and replace them with a strip of beveled siding, thin edge down, to provide a solid base for nailing the ridge shingles. Treat hips the same as ridges.