

ROOFING SHAKES AND SHINGLES

Wood shakes and shingles can provide an elegant and long-lasting roof, but it's important to select the right grades and to use a ventilating underlayment.

Grades and Types

GRADES AND TYPES

Wood shingles are sawn on both sides to produce a smooth, uniform surface. Shakes, on the other hand, are split from logs, leaving both sides rough (see **Types of Wood Shingles and Shakes**, below, for both shake and shingle types).

FIGURE: TYPES OF WOOD SHINGLES AND SHAKES

No. 1 Blue Label®

The premium grade of shingles for roofs and sidewalls. These top-grade shingles are 100% heartwood, 100% clear, and 100% edge-grain.

No. 2 Red Label

A good grade for many applications. Not less than 10" clear on 16" shingles, 11" clear on 18" shingles, and 16" clear on 24" shingles. Flat grain and limited sapwood are permitted in this grade.

No. 3 Black Label

A utility grade for economy applications and secondary buildings. Not less than 6" clear on 16" and 18" shingles, 10" clear on 24" shingles.

No. 4 Undercoursing

A utility grade for starter course undercoursing.



No. 1 Hand-split & Resawn

These shakes have split faces and sawn backs. Cedar logs are first cut into desired lengths. Blanks or boards of proper thickness are split and then run diagonally through a bandsaw to produce two tapered shakes from each blank.

No. 1 Certi-Sawn®

These shakes are sawn both sides. No. 2 and 3 are also available.

No. 1 Tapersplit

Produced largely by hand, using a sharp-bladed steel froe and a mallet. The natural shingle-like taper is achieved by reversing the block, end-for-end, with each split.

No. 1 Straightsplit

Produced by machine or in the same manner as tapersplit shakes except they are split from the same end of the block, so the shakes have the same thickness throughout.



Adapted from Cedar Shake and Shingle Bureau

Lengths and Weights

Shingles come in three lengths: 16-in. (sometimes called 5X), 18-in. (perfections), and 24-in. (royals). See **Typical Wood Shingles and Shakes**, below, for specification information.

Shakes come in 18- and 24-in. lengths, as well as in a 15-in.-long starter/finish shake. They're available in two weights: mediums have 1/2-in. butts; heavies have 3/4-in. butts on average.

FIGURE: TYPICAL WOOD SHINGLES AND SHAKES

Grades and Types

Shingles

Grade	Length	Exposure (3:12-4:12)	Exposure (4:12-beyond)	Courses per Bundle	Bundles per Square
No. 1 Blue Label	16" ⁽¹⁾	3 3/4"	5"	20/20	4 bundles
	18" ⁽²⁾	4 1/4"	5 1/2"	18/18	4 bundles
No. 2 Red Label	24" ⁽³⁾	5 3/4"	7 1/2"	13/14	4 bundles
	16" ⁽¹⁾	3" 1/2	4"	20/20	4 bundles
	18" ⁽²⁾	4"	4 1/2"	18/18	4 bundles
	24" ⁽³⁾	5 1/2"	6 1/2"	13/14	4 bundles
No. 3 Black Label	16" ⁽¹⁾	3"	3 1/2"	20/20	4 bundles
	18" ⁽²⁾	3 1/2"	4"	18/18	4 bundles
	24" ⁽³⁾	5"	5 1/2"	13/14	4 bundles
No. 4 Undercoursing	16"	N/A	N/A	14/14 or 20/20	2 bundles
	18"	N/A	N/A	14/14 or 18/18	2 bundles
No. 1 or No. 2 Rebutted/Rejointed	16" ⁽¹⁾	3 3/4"	5"	33/33	1 carton
	18" ⁽²⁾	4 1/4"	5 1/2"	28/28	1 carton
	24" ⁽³⁾	5 3/4"	7 1/2"	13/14	4 bundles

(1) 5X; (2) perfection; (3) royals

Slope: 4:12 to 12:12 is normal. 3:12 is considered minimum. For 3:12 to 4:12, reduce exposure (see exposure column). Below 3:12, create a waterproof deck.

Life Expectancy: 8 to 25 years.

Shakes

Grade	Length & Thickness	Maximum Exposure (4:12 & steeper)	Courses per Bundle	Bundles per Square	Bundles per Square
				18" pack*	
No. 1 Hand-split & Resawn	15" starter-finish	7 1/2" (for 18")	9/9	5	4 bundles
	18" x 1/2" to 3/4"		9/9	5	4 bundles
	18" x 3/4" to 1 1/4"		9/9	5	4 bundles
	24" x 3/8"*	10" (for 24")	9/9	5	4 bundles
	24" x 1/2" to 3/4"		9/9	5	4 bundles
	24" x 3/4" to 1 1/4"		9/9	5	4 bundles
No. 1 Tapersplit	24" x 1/2" to 5/8"	10"	9/9	5	4 bundles
				20" pack	
No. 1 Straightsplit	18" x 3/8" *	7 1/2"	14 straight	4	4 bundles
	18" x 3/8"	7 1/2"	19 straight	5	2 bundles
	24" x 3/8"	10"	16 straight	5	2 bundles

* True-edge (24 x 3/8" hand-split shakes limited to 5" maximum weather exposure, per U.B.C.)

Slope: 4:12 to 12:12 is normal. Below 4:12, create a waterproof deck.

Life Expectancy: 10 to 30 years.

Adapted from Cedar Shake and Shingle Bureau.

Note on life expectancy: Wood can be broken down by excessive moisture as well as by moss and other fungi, both of which are more common on north-facing surfaces. In the absence of moisture problems, however, the south side of a roof tends to degrade quicker because of its higher temperature and increased UV exposure. You can get a 30-year warranty if shingles or shakes have been pressure-treated at the factory.

ESTIMATING WOOD SHAKES AND SHINGLES

A nominal square of shingles is four bundles, and a nominal square of shakes is five bundles, but this depends on the course exposure (**Wood Shingle Coverage** and **Wood Shake Coverage**, below). The steeper the slope, the more shingle that can be exposed.

Estimating Wood
Shakes and
Shingles

- For starter courses, add one square for every 240 lin. ft. of eaves.
- For valleys, order one extra square per 100 lin. ft. of valley to account for waste.

FIGURE: WOOD SHINGLE COVERAGE

Approximate Coverage of One Square (4 bundles)

Length & Thickness ¹	Weather Exposure (in.)								
	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2
16" x 5/2" ¹	70	80	90	100 ²	—	—	—	—	—
18" x 5/2 1/4"	—	72 1/2	81 1/2	90 1/2	100 ²	—	—	—	—
24" x 4/2"	—	—	—	—	73 1/2	80	86 1/2	93	100 ²

Notes: 1: Sum of the shingles stacked; e.g., 5/2" means 5 butts = 2" thick. **2:** Maximum exposure recommended for roofs.

FIGURE: WOOD SHAKE COVERAGE

Approximate Coverage (sq. ft.) of One Square
(shakes applied with 1/2-in. spacing)

Shake type, length, and thickness	No. of bundles	Weather Exposure (in.)			
		5 1/2	7 1/2	8 1/2	10
18" x 1/2" Hand split-and-resawn mediums	4	55*	75**	—	—
18" x 3/4" Hand split-and-resawn heavies	5	55*	75**	—	—
24" x 1/2" Hand split-and-resawn mediums	4	—	75*	85	100**
24" x 3/4" Hand split-and-resawn heavies	5	—	75*	85	100**
24" x 1/2" Tapersplit	4	—	75*	85	100**
18" x 3/8" Straight-split	5	65*	90**	—	—
24" x 3/8" Straight-split	5	—	75*	85	100**

* Maximum recommended exposure for 3-ply roof.

** Maximum recommended exposure for 2-ply roof.

FIGURE: FASTENERS PER SQUARE FOR WOOD SHAKES OR SHINGLES

Roofing Type	Nail Type	Nail Quantity (per square)
24"	4d shingle	2 lbs.
16"–18"	3d shingle	2 lbs.
Hand-split shakes	6d shingle	2 lbs.

Note: Use only hot-dipped, stainless-steel, or aluminum nails for shakes and shingles. Do not use electrogalvanized or copper.

UNDERLAYMENT

A permeable 15# or 30# felt is typically installed only over the solid sheathing area at eaves (**below**).

FIGURE: SHEATHING AND UNDERLAYMENT FOR WOOD ROOFS

	Sheathing	Interlayment	Underlayment ¹
Wood Shingles	Spaced ²	none	15# or 30# felt over section of solid sheathing at eaves
	Solid ³	none	15# or 30# felt at eaves. Optional over field of roof
Wood Shakes	Spaced ²	30# asphalt-saturated felt	30# felt over section of solid sheathing at eaves
	Solid ³	30# asphalt-saturated felt	30# felt at eaves

Note: 1: Underlayment at eaves should extend to a point 12–24 in. inside building. Bituminous eaves flashing recommended in cold, snowy climates. **2:** Recommended in hot, humid climates. **3:** Used to protect against windblown snow or where required for structural reasons. May shorten life of shingles and shakes. Ceader Breather® is recommended to provide ventilation between underlayment and shingles.

SHEATHING OPTIONS FOR SHINGLES

It is best to install wood roofing over spaced sheathing — evenly spaced 1x4s or 1x6s (**Shingle Installation**, below). Shingles installed on solid sheathing can't dry out as well. Because their back sides stay wet while the sun beats on their face, they decay faster and are more likely to cup, curl, and split.

Spaced Sheathing

- One option is to space 1x4s to coincide with the weather exposure of the shingles as shown in **Shake Installation**, below.
- The other option is to use 1x6s such that two courses of shingles are nailed to each 1x6, as shown in **Shingle Installation**, below.

Estimating Wood Shakes and Shingles

Underlayment

Sheathing Options for Shingles

Solid Sheathing

Solid sheathing is required for wood shingles only for structural reasons — such as in seismic zones — or for protection against wind-blown snow. If the job demands solid sheathing, strap the roof or use a ventilating underlayment, as follows:

Sheathing Options for Shingles

Strapping Over Plywood

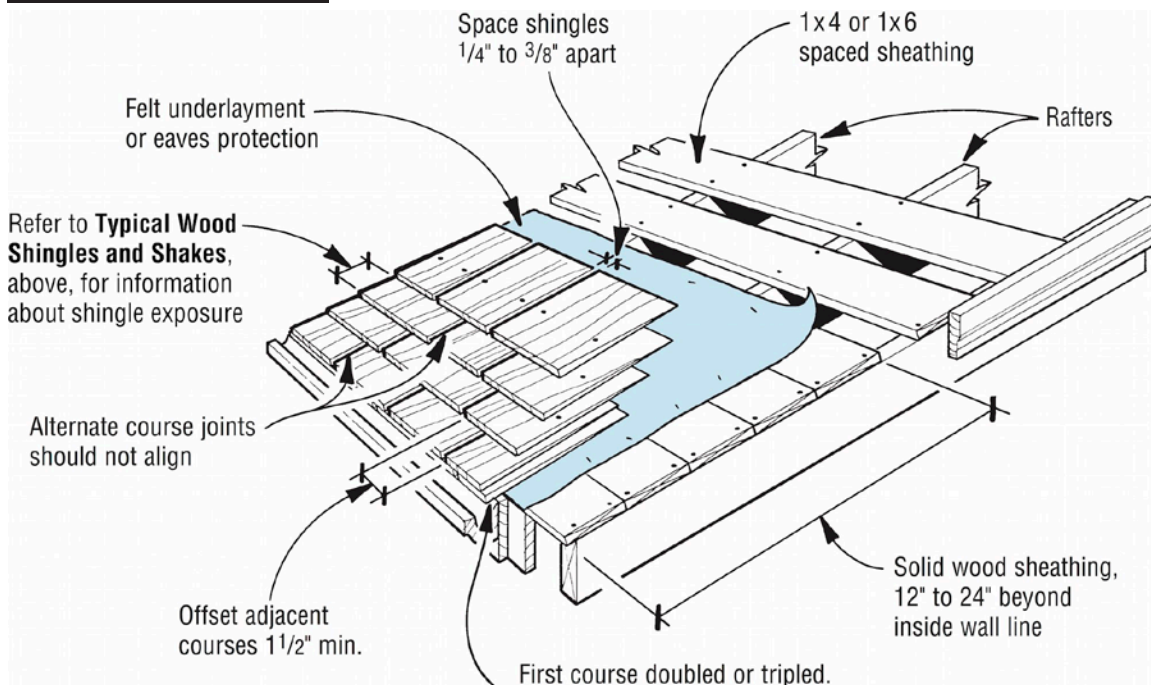
- Sheathe the roof deck with plywood;
- Cover the plywood with 15- or 30-lb. asphalt-impregnated felt paper;
- Install horizontal 1x3 strapping over the plywood, cutting 1/2-in. notches at 4 ft. o.c. on the bottom of the strapping for drainage;
- Install the shingles over the strapping, following the installation details for spaced sheathing. An alternative to notching is to lay vertical strapping first, and then horizontal strapping.

Ventilating Underlayment

Another option for ventilating shingles installed over plywood is a product called Cedar Breather® (Benjamin Obdyke, Horsham, Pa., www.obdyke.com). The 3/8-in.-thick material comes in 39-in.-wide rolls. Its matrix of synthetic fibers is stiff enough to resist crushing, so it provides continuous airflow between the roof deck and the wood roofing.

- Install Cedar Breather® course by course just ahead of the shingles, tacking it in place with 5d galvanized box nails.
- The seams are butted (not overlapped), and can be cut easily with shears.

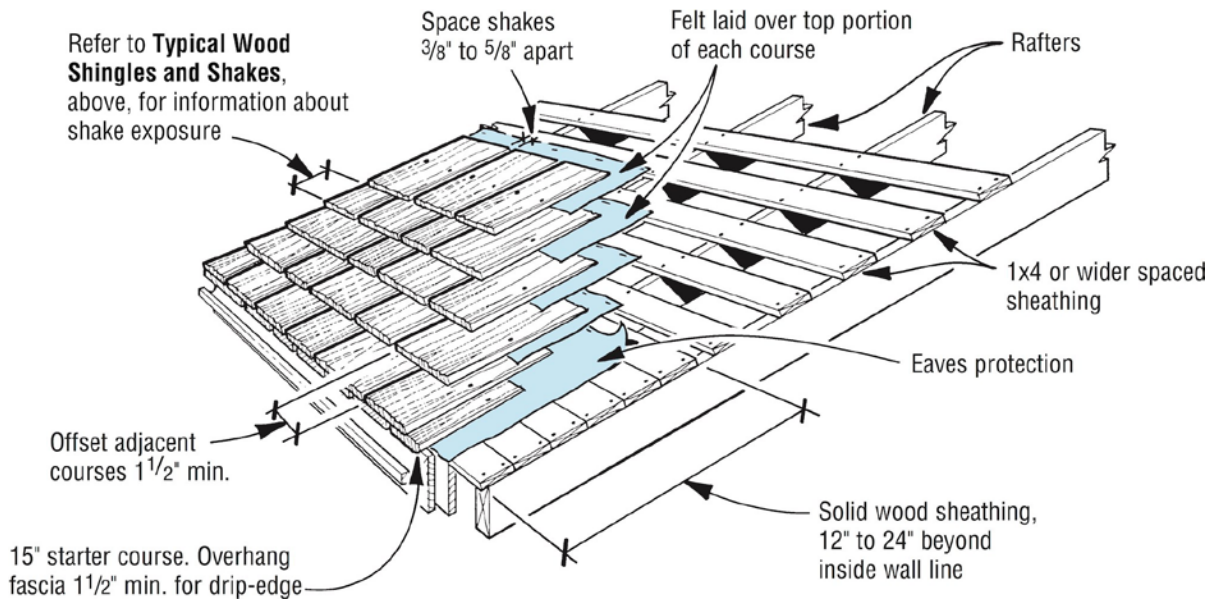
FIGURE: SHINGLE INSTALLATION



Adapted from Cedar Shake and Shingle Bureau

Install wood shingles on spaced or skip sheathing. If solid sheathing is needed, it's best to cover the plywood with 15- or 30-lb. felt paper and install strapping over the plywood, cutting notches for drainage. Or install Cedar Breather®.

FIGURE: SHAKE INSTALLATION



Adapted from Cedar Shake and Shingle Bureau

Use interlaid felt strips with shakes to keep windblown snow and rain from penetrating between the irregular surfaces. With spaced sheathing, the felt layers should attach to the lower portion of each sheathing board with the nails driven into the upper portion.

SHEATHING OPTIONS FOR SHAKES

Because the irregular surface of hand-split shakes makes them somewhat self-ventilating, they may be installed over either spaced or solid sheathing in most cases.

Spaced sheathing for shakes is a must in hot, humid regions, however, because the shakes need a greater drying potential. For shakes, spaced sheathing usually consists of 1x6s spaced on centers equal to the weather exposure of the shakes.

Solid sheathing for shakes is preferable in three instances: on roofs with slopes of less than 4:12; in snowy regions where windblown snow could penetrate the shakes; and in earthquake-prone regions where the sheathing must act as a shear diaphragm.

INTERLAYMENT FOR SHAKE ROOFS

Because of the rough profile, each course of cedar shakes must be laid over an 18-in.-wide interlayment of 30-lb. felt. The felt serves as a baffle against wind-driven snow and rain (**Shake Installation**, above).

Install interlayment by fastening the strips to the sheathing, then apply the shakes by slipping their top edges under the felt interlayment strips.

Sheathing Options
for Shingles

Sheathing Options
for Shakes

Interlayment for
Shake Roofs

Interlayment Layout

- The first strip of interlayment protects the eaves overhang, so its bottom edge should be twice the distance from the eaves edge as the weather exposure you plan to use.
- The second strip starts two exposure widths up from the bottom edge of the roof.
- Install the remaining strips on centers that equal the weather exposure. Make sure the top edge of each layer of felt rests on a section of sheathing, or it won't provide a good baffle.

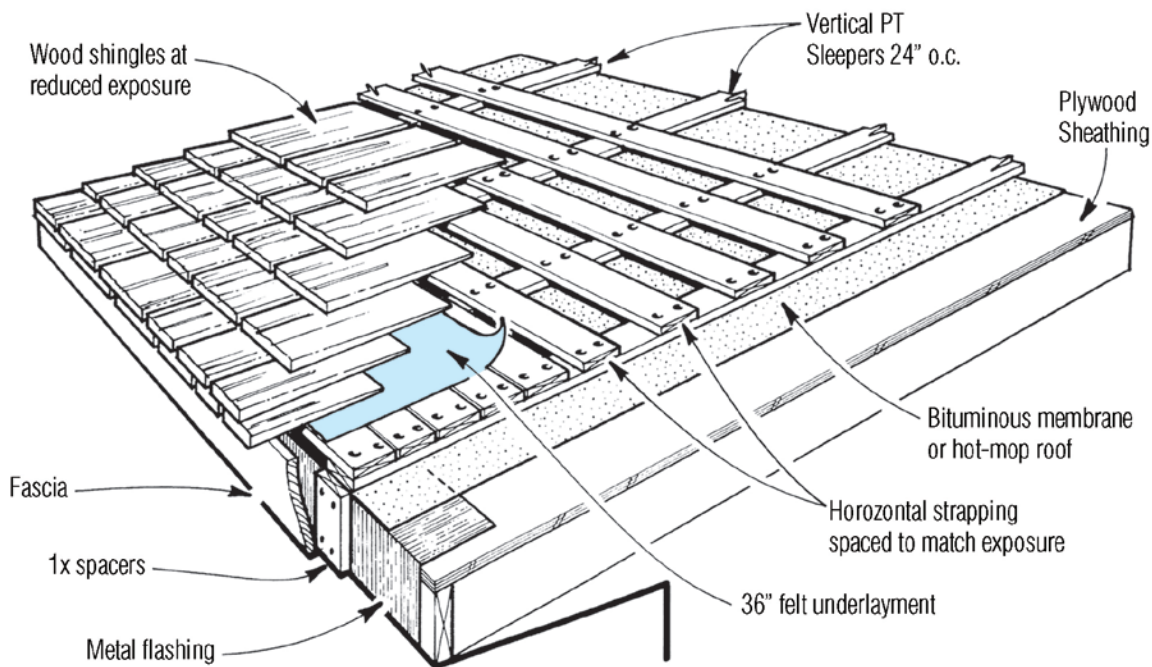
Interlayment for
Shake Roofs

Maintenance
and Repair

Underlayment on Shallow Roofs

CABO sets a minimum slope of 3:12 for wood shingles and 4:12 for shakes. For lower slopes, NRCA and the Cedar Shake and Shingle Bureau recommend installing wood roofing on a lattice-like framework of pressure-treated strapping over a watertight membrane (**below**).

FIGURE: LOW-SLOPE SHINGLE AND SHAKE INSTALLATION



On shallow slopes, install wood shingles and shakes over a watertight subroof and a framework of pressure-treated strapping. The fascia is spaced out from the metal flashing at the eaves to allow any water that gets under the roofing to drain from the subroof.

MAINTENANCE AND REPAIR

Shingles and shakes need more care than other types of roofs. Fungus and rot are very much at home on wood roofs, particularly low-pitched roofs in humid, wooded areas. Parts of the roof beneath overhanging trees are especially vulnerable since wet debris such as needles and leaves can trap moisture, leading to fungus growth, premature rot, and leaks.

Cleaning a Wood Roof

Cleaning with a power washer or garden sprayer can double a wood roof's service life. Clean roofs yearly, paying particular attention to the keyways between adjacent -shingles.

Maintenance
and Repair

Minor Repairs

- A high-pressure water sprayer works best. Use a power washer with a flow rate of 4 to 6 gallons per minute.
- Or use a 50/50 solution of water and household bleach (for an even stronger solution, replace the bleach with
- 2 to 4 ounces of swimming-pool chlorine) in a garden pump. Spray 1 to 1½ gallons of this solution over each square of roof area. Let it stand for 15 to 30 minutes, and then rinse it off with a power washer or garden hose.
- Protect the surrounding shrubs and grass: Hose them down with clean water before, during, and after application, or cover them with tarps (see Landscape Protection).

MINOR REPAIRS

Cracked Shingles

- If both sides of a cracked shingle are still present, nail them to the roof deck.
- Drill pilot holes first to prevent splitting the shingle and cover both the joint and the nail heads with roofing cement.

Temporary Repair

- A damaged shingle can be temporarily repaired by inserting a piece of galvanized steel or aluminum under it and nailing through the shingle and metal with two nails.
- The metal should extend 2 in. beyond both edges of the shingle and 1 in. under the butt line of the overlying shingle in the next course.

Shingle Replacement

- Individual shingles can be removed by first splitting them and removing the pieces. Cut the roofing nails with a shingle ripper or hacksaw blade. Make sure that the nails are cut off flush with the sheathing; use caution when cutting the nails to avoid damage to the roof deck sheathing or underlayment.
- Next, trim the replacement shingle to the required width and slide it into place. Tap it gently into place with a hammer and wood block. Nail it to the roof deck and cover the nail heads with roofing cement.

Bowed Shingles

- Split a bowed shingle down the center and remove about 1/4 in. of wood from the inside edge of one section to form a joint for roofing cement.
- Nail the two sections on either side of the joint and cover the joint and nail heads with roofing cement.