



technical bulletin

Asphalt Roofing
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Nail Application of Asphalt Shingles for New and Re-cover Roofing

The Asphalt Roofing Manufacturers Association (ARMA) recommends that properly driven roofing nails be utilized as the fastening system for asphalt shingles. Nails are required in the International Building Code. Proper nailing is essential to good performance. To ensure proper nailing during shingle application, the following recommendations are emphasized:

- Nails should have a minimum nominal shank diameter of 12 gauge (0.105") and a minimum head diameter of $\frac{3}{8}$ ".
- Nails should be corrosion resistant. Galvanizing by various processes is the typical means of achieving corrosion resistance. Aluminum roofing nails do not require additional coatings for corrosion resistance.
- Nails should be long enough to penetrate $\frac{3}{4}$ " into the roof deck. Where the deck is less than $\frac{3}{4}$ " thick, the nail should be long enough to penetrate fully and extend at least $\frac{1}{8}$ " through the roof deck.
- In determining nail length, consideration should be given to the number of layers of shingles, shingle thickness(es), underlayment and flashing (eaves, sidewall and valley, etc.)
- In some cases, the underside of the deck is exposed to view. In this case, using nails of the recommended lengths may result in the nail points penetrating through the deck and being exposed to view. Consult the roofing material manufacturer and building code requirements for approved alternatives.
- All nails are to be driven by hand or with pneumatic nailers.
- Failure to use a properly adjusted pneumatic air system, or to place nails accurately, can lead to sealing failures, raised tabs, buckling, leaves and blow-offs.
- For most asphalt shingles, a minimum of 4 nails is required. For some shingles and for some application circumstances, the required number of nails may be different. The specific recommendations of the shingle manufacturer, as printed on each shingle wrapper, must be followed to assure the intended performance and compliance to building codes.

Nail Placement

The following practices reflect the general recommendations of most shingle manufacturers. However, the specific recommendations of the shingle manufacturer, as printed on each shingle wrapper, must be followed when applying shingles.

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Align each shingle carefully. Whenever possible, make sure the cutouts or end joints are more than 2" from any nail or end joint in the underlying course. Start nailing from the end nearest the shingle just laid and proceed across. This will help prevent buckling. To help prevent distortion, do not attempt to realign a shingle by shifting the free end after two nails are in place.

Critical nail placements include:

- √ Never place nails where they will be visibly exposed or weathered.
- √ For most shingles with sealant on the top surface, place nails below the sealant strip but above the area visibly exposed. This is typically around 1/2" up from the exposed area.
- √ Singles with sealant on the back surface have a line or lines to indicate how high up the shingle surface the nails are to be placed.
- √ No nail head should be closer than 1" from the edge of the shingle. Specific recommendations from the shingle manufacturer for positioning the nails across the shingle are included in the instructions.
- √ Do not drive nails into knot holes, cracks or spaces in the roof deck.

Nails are to be applied so that the entire head bears tightly against the shingle.

Nails are not to be underdriven, overdriven (to break or cut into the shingle) or driven crooked.

Incorrectly applied nails are to be repaired immediately. Underdriven nails can be tapped down. Overdriven or crooked nails are to be removed. Repair the hole with asphalt roof cement complying with ASTM D 4586 and place another nail nearby. If this is not practical, replace the entire shingle.

Figure 1: Application of Nails

