

Application of Asphalt Shingles on Slopes Greater Than 21:12

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The maximum slope ARMA considers suitable for normal asphalt shingle application is 21:12, or 21" per foot. The use of asphalt shingles on slopes greater than 21:12 (e.g., mansard roofs) requires special application methods because such very steep slopes reduce the effectiveness of factory-applied self-sealing adhesives, especially in colder climates and shaded areas. If normal application methods are used for asphalt shingles on very steep slopes, problems can occur that are not a result of any weakness or defect in the product but rather because special application methods for very steep slopes were not employed.

If a roof slope exceeds 21:12, the shingles should be applied by the following recommended method:

- Secure the shingle to the roof deck with fasteners as directed by the roofing manufacturer. Manufacturer directions may call for more than the normal number of fasteners per shingle and may provide specific fastener locations. On very steep slope roofs, correct placement of nails on laminated (two-piece) shingles is even more critical as the nails will penetrate both shingle layers when placed correctly. If the nails are placed too high on the shingle, it is possible that, over time, the bottom layer, which will be held in place only by the factory-applied adhesive, may delaminate and slide off the roof.
- Apply a manufacturer-recommended asphalt roof cement complying with ASTM D4586, *Standard Specification for Asphalt Roof Cement, Asbestos-Free*, or other cements approved by the roofing manufacturer under all shingle tabs in spots equivalent to the size of a quarter (about 1" or 25mm diameter), immediately upon installation.
- For standard laminated shingles (i.e., 'no cut-out' shingles), apply four spots of cement under each shingle near the lowermost edge, with two near the corners and two equally spaced between the corners.
 - For 'three-tab' shingles, apply two spots of cement under each tab near the lowermost corners.
 - For other specialty shingles, refer to the manufacturer's recommendations.
- Over-application of adhesives is not recommended; follow the manufacturer's recommendation for cement type and minimum and maximum quantities.
- An unvented space may be behind a mansard roof. It is important to provide a properly ventilated flow-through air space behind the roof sheathing to prevent the entrapment of moisture-laden air. Additional information is available in ARMA's technical bulletins "Considerations in Attic Ventilation System Selection" and "Why Ventilation is Important."



TECHNICAL BULLETIN

- See also ARMA's *Residential Asphalt Roofing Manual*.

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