

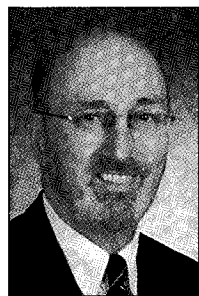
## Q & A

### Which asphalt shingle is better?

by Tom Bollnow

**Q:** Which type of asphalt shingle is better for a steep-slope roof system—organic or fiberglass?

**A:** Asphalt shingle material performance depends on the quality, quantity and compatibility of asphalt, fillers, reinforcement and surfacing granules. Both organic and fiberglass-reinforced asphalt shingles can be manufactured to provide the necessary qualities to achieve their design service lives. There is no definitive answer as to which type is better—both have documented performance records. Preference is based on performance attributes and generally depends on climatic regions.



#### Reinforcement

Fiberglass shingles have been produced using fiberglass mats varying from 1.35 pounds to 2.5 pounds per 100 square feet (65.9 g/m<sup>2</sup> to 122.8 g/m<sup>2</sup>). Fiberglass shingle strength and toughness generally increase with a mat's mass. Fiberglass mats are more fire- and moisture-resistant than mats used for organic shingles, and the quality of the back coating on a fiberglass mat helps increase resistance to low-temperature thermal contraction. The top surface asphalt coating of a fiberglass mat includes a filler content of about 60 percent to 65 percent, which adds strength to shingle strips and tabs.

Organic shingles are produced with organic mats principally composed of defibrated wood fibers. A heavy back coating of asphalt on an organic mat is critical to preventing moisture intrusion, which can cause curling and cupping of shingles. Although organic asphalt coatings use

less filler than fiberglass coatings, organic shingles generally have better tear strength and fastener pull-through resistance.

#### Fiberglass shingles

Fiberglass shingles' advantages include resistance to fire spread, moisture intrusion and surface degradation (e.g., mildew). In addition, fiberglass shingles carry Underwriters Laboratories' (UL) Class A fire-resistance classifications. Fiberglass shingles' moisture-resistance abilities also result in less curling and cupping of shingle strips and tabs.

However, the nature, amount and shape of a fiberglass shingle's self-seal strip affect wind-uplift strength and resistance to cracking and splitting. Roofing professionals should note that combining a lightweight mat and seal-strip bond strength that is greater than tear strength can cause cracking and splitting of fiberglass shingles.

#### Organic shingles

Organic shingles' advantages include good wind resistance, tear strength and rigidity. In addition, organic shingles telescope fewer underlayment irregularities on new and overlay applications, and they carry UL Class C fire-resistance classifications. Organic shingles' toughness also provides better cold-weather pliability, and their stiffness provides better performance in heat.

Failure of organic shingles begins with surface crazing of an asphalt coating and increases as moisture moves to the organic mat. Curling, cupping and buckling also can occur as a result of moisture intrusion into the edges of an organic shingle's strip or tabs.

#### Availability and use

The 1999 NRCA Steep-Slope Roofing Materials Guide lists 15 asphalt shingle manufacturers. (Roofing professionals should note that the guide was published before several roofing products manufacturer consolidations occurred.) According to the

guide, seven produce only fiberglass shingles; six produce fiberglass and organic shingles; one produces fiberglass and modified bitumen shingles; and one produces organic, fiberglass and modified bitumen shingles. Of the 169 shingles listed, 121 are fiberglass, 43 are organic, and five are modified bitumen.

Generally, roofing professionals in warm, humid areas almost always select fiberglass shingles, which often are enhanced with algae and fungus inhibitors. Roofing professionals in cooler climates are more evenly divided in their preferences for organic or fiberglass shingles.

#### Conclusion

Asphalt shingle selection is related to preference for application-handling characteristics, UL fire-rating classifications and life-cycle expectancy. Various surface colors, styles (e.g., three tab, laminated) and algae-resistant products are available for fiberglass and organic shingles.

Asphalt shingles should be specified by weight, manufacturer, and compliance with American Society for Testing and Materials (ASTM) standards and applicable building codes. ASTM standards include ASTM D 225, "Standard Specification for Asphalt Shingles (Organic Felt) Surfaced With Mineral Granules," and ASTM D 3462, "Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules."

When selecting asphalt shingles, roofing professionals should avoid mistaking problems associated with ventilation, underlayment, substrate, attachment or color shading with the physical properties of fiberglass or organic shingles. **FR**

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*Each month in this column, one of NRCA's technical services staff members will answer readers' technical questions. If you have a specific question you would like answered in this column, send it to Professional Roofing magazine, 10255 W. Higgins Road, Suite 600, Rosemont, IL 60018-5607; or fax (847) 299-1183.*