



Fire-Rated Roofs

Answers to Those Burning Questions

by Bob LaCosse

In an effort to remove some of the mystique surrounding the fire ratings of various roofing products, the National Roofing Contractors Association (NRCA) recently developed answers to the most common questions they receive. Here's a sampling:

• *What is the difference between the three classes of Underwriters Laboratories (UL) fire ratings?*

Roofing coverings with a Class A fire rating are the most fire-resistant. To receive a Class A rating, a roofing material must not be readily flammable, and during a fire it must not carry or communicate flames, slip from position, or be susceptible to flying brands (i.e., not burn if materials from another fire land on the roof). Class B roofing coverings are resistant to only moderate fire exposures, and Class C coverings are effective against only light fire exposures.

• *Are all aggregate-surfaced built-up roofs automatically rated Class A?*

No. Some are rated Class B. The fire rating of a particular system may be found on page 321 of the current UL *Building Materials Directory*.

• *Are all fiberglass-composition shingles Class A?*

All asphalt glass-mat shingles being labeled today are Class A. In the past, some shingles with lighter glass mats were rated Class B. Although manufacturers no longer are making Class B shingles, there is nothing to prevent them from doing so in the future. To be certain of a shingle's fire rating, it is best to check the UL label on the bundles.

• *When installing a roof assembly, can a contractor mix and match components from different manufacturers and still maintain the system's published fire rating, or must all the*

components in the system be from the same manufacturer?

To maintain a system's fire rating, contractors should use only the specific materials approved by UL for use with the system as listed in the *Building Products Directory*. Should the *Directory* make a generic reference to a system's components (when it specifies asphalt organic felt and hot mopping asphalt, for instance), any manufacturer's products may be used, and the contractor may mix products from different manufacturers in the assembly.

In most cases, if an assembly does not appear in the current *Directory*, it simply means that the material no longer is manufactured. If UL approved the original system, the fire rating previously published would apply.

• *How do I retrofit a built-up roof if the original fire-rated assembly is no longer listed in the *Building Materials Directory*?*

In most cases, if an assembly does not appear in the current *Directory*, it simply means that the material no longer is manufactured. If UL approved the original system, the fire rating previously published would apply. Information about the system's original fire rating can be obtained directly from UL. Once this information is received, retrofitting may proceed under the same guidelines that would be used for any roof with that particular rating.

• *Has UL approved the use of the newer insulations—such as polyurethane, isocyanurate, expanded and extruded polystyrene and phenolic foam—in fire-rated assemblies? Are composite roof-insulation products approved as well?*

UL has classified numerous assemblies using the foam insulations cited. Composite insulation boards also have been classified for use in specific assemblies as described in the *Building Materials Directory*.

• *How may UL approval be obtained for a system that originally was fire-rated but now*

the assembly?

Yes. The increased thermal value of the insulation could allow higher temperatures to build up in the supporting structural membranes during a fire, increasing the chances of assembly failure.

• *If an insulation manufacturer changes the formulation of its product, will roofing systems that have been granted UL approval using the insulation need to be retested to maintain their fire rating?*

The systems may need to be tested with the new insulation if the insulation formula is changed significantly. Using the information UL has collected about the effects of formula changes on fire-resistance, UL's engineers can determine whether a particular change is extensive enough to require additional testing.

• *Do any of UL's wind-uplift tests correspond to those of Factory Mutual? Do the two organizations cooperate on product or assembly approvals?*

UL and Factory Mutual do not engage in any cooperative wind-uplift testing or product-approval programs. In fact, there is a wide divergence in the test methods of the two laboratories. UL subjects a 10x10' sample to positive pressure on the underside and negative pressure on the top to determine wind-uplift resistance, while Factory Mutual subjects a smaller sample to positive pressure only on the underside. UL's ratings for wind-uplift resistance are Classes 30, 60 and 90; Factory Mutual's ratings are Classes I-60 and I-90.

• *Do the physical requirements for roofing materials in the American Society of Testing and Materials' (ASTM) standards correspond to requirements in the UL standards?*

Not completely. However, UL is conducting supplemental physical property tests on roofing products in response to requests from the roofing industry to coincide with ASTM's material standards.

• *Many find the UL Building Materials Directory and Fire Resistance Directory difficult to read and understand. Is UL planning to release easy-to-understand explanations of the information in these documents?*

As a result of several meetings between members of UL, the roofing industry and the National Roofing Contractors Association (NRCA), UL is developing a new format for the *Building Materials Directory* that will help to clarify the document's contents. UL also is preparing a series of brochures that explains how to locate and apply the information found in both directories. ■

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