Roofs' reflectivity listings

by **Mark S. Graham**

Underwriters Laboratories (UL) Inc. is introducing a new classification program category for roofing products' radiative properties. This new UL classification provides product manufacturers and roofing professionals with a widely recognized third-party source for testing, reporting and disseminating products' solar-reflectance and thermal-emittance properties.

UL Category TGFE

In addition to UL's existing certification categories for its fire, impact and uplift ratings, UL has established a new category—UL Category Code TGFE, Roof Covering Materials, Solar Reflectance—addressing surface radiative properties for low- and steep-slope roofing products. For the purposes of this new category, low-slope products are defined as those intended for use at slopes of 2-in-12 (9 degrees) or less; steep-slope products are those used at slopes greater than 2-in-12 (9 degrees).

Solar-reflectance measurements are made according to ASTM C1549, "Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer." Solar reflectance is identified as the fraction of solar flux reflected by a material's surface expressed within the range of 0.00 and 1.00. A 0.00 value represents no measured reflectance; a 1.00 value represents 100 percent measured reflectance.

UL's classifications for solar reflectance are promulgated based on products' initial (not weathered) solar-reflectance measurements. "Maintained" measurements also may be reported indicating products' solar reflectances measured after a three-year exposure period. Where "NA" is indicated for maintained measurements, the three-year exposure period has not yet been completed and the maintained measurements have not yet been taken.

Where thermal-emittance values also are indicated, UL has tested a product's thermal emittance. Thermal emittance is identified as the fraction of radiative energy emission by a material's surface expressed within the range of 0.00 and 1.00. A 0.00 value represents a material with no measured radiative energy emission, and a 1.00 value represents a material with 100 percent measured emission.

UL tests thermal emittance according to ASTM C1371, "Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers." Similar to the solar-reflectivity testing, when a maintained thermal-emittance value is reported, the value is determined after a three-year exposure period.

UL's classifications for roofing products' solar reflectances and thermal emittances will be included in UL's upcoming *2005 Roofing Materials and Systems Directory*, which is scheduled to be available March 2005. Current classification information is available by accessing UL's Web site, www.ul.com, clicking "Certifications," following the link to "UL Category Code/Guide Information" and entering the UL category code (TGFE) where directed. This online version of UL's directory is the most current source of information regarding UL's classifications.

Closing thoughts

In addition to providing a widely recognized, third-party source for testing, reporting and disseminating products' solar-reflectance and thermal-emittance properties, the UL program also provides manufacturers with a credible means of supplying data to substantiate their products' compliance with the ENERGY STAR® reflective roof products program and possibly the labeling requirements of the Cool Roof Rating Council (CRRC). However, users of UL-derived solar-reflectivity and thermal-emissivity data should realize the UL program does not signify full compliance with either the ENERGY STAR or CRRC programs. In addition to the necessary data, the ENERGY STAR and CRRC programs have other specific requirements not included in the UL program.

For additional information about ENERGY STAR, see "ENERGY STAR® roof products program," January 1999 issue, page 53, and "ENERGY STAR® update," July 2001 issue, page 60. For additional information about CRRC, see "Cool Roof Rating Council," May 2003 issue, page 72.

One of the advantages the UL program has over ENERGY STAR and CRRC is that UL-classified products are subject to UL's follow-up service. Under UL's follow-up service, UL representatives make periodic, unscheduled visits to manufacturing facilities where UL-classified products are made to ensure the products are manufactured in a manner similar to that of the originally tested products.

Roofing products that have a current UL certification and are covered under UL's follow-up service are eligible to bear a UL label referencing the specific UL category for which the classification applies.

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