Extruded Polystyrene Insulation FOAMULAR®

November 1998

Raft-R-Mate, Attic Rafter Vent, Used Without an Ignition Barrier

Introduction
Owens Corning Raft-R-Mate is an extruded polystyrene foam plastic product intended to preserve an airway through the ceiling insulation layer, and enable air movement, as required by most codes, between soffit and attic air spaces. Sometimes, uncertainty exists regarding the building code requirement that foam plastic be covered, in attics, with an ignition barrier. This report explains that Raft-R-Mate can remain uncovered, and the building code justification. This report summarizes the Owens Corning position, however, the user must always verify local building code requirements with the authority having jurisdiction, as theirs is the controlling rule.

Raft-R-Mate is stapled in place, under the roof deck, between rafters or the upper chord of roof trusses, in the area between attic and soffit vents, where the ceiling insulation intersects the underside of the roof deck.

Building Code Requirements
Building code sections referenced below are from the 1995 CABO 1 and 2 Family Dwelling Code, a model code often adopted across the U.S. to govern the construction of single family homes.

Ignition Barrier Covering
Building codes often require that foam plastic insulation be separated from attic spaces by an ignition barrier. Common ignition barriers include glass fiber insulation batts, 1/4" plywood, and 3/8" gypsum board, as well as others. See section 317.2.3.

Raft-R-Mate is not an insulation, and as such, could be considered exempt from the ignition barrier requirement. The ignition barrier requirement is primarily intended to govern foam plastic insulation used as sheathing. Code officials often interpret the code in that manner. See section 317.1.

Other code officials have ruled that Raft-R-Mate, a foam plastic, must be covered by an ignition barrier. Given the manner in which Raft-R-Mate is installed, covering it is a significant hardship. This is particularly true considering that, to function properly, the foam plastic baffle surface must remain in the air flow to the attic space.

To resolve such hardships when they arise, most building codes permit testing that demonstrates end use "performance" as an alternative to the "prescription" in the code. If the end use "performance" is judged acceptable by the authority having jurisdiction, then the proven "performance" installation can be substituted for the "prescriptive" installation. See section 317.3.

Alternative "Performance" Test Data

Owens Corning sponsored testing by, model code accredited, Omega Point Laboratories in San Antonio, Texas, to evaluate the performance of Raft-R-Mate, exposed in an attic configuration. The objective of the testing was to assess the behavior of Raft-R-Mate when exposed to a standard fire ignition source, and estimate it's likely contribution to fire growth in an attic. The full test report entitled, "Test Procedure Comparing Roof Vent Materials; Project No. 10950-99375; February 26, 1996, is available for examination. A brief summary follows.

The test method utilized a mock-up of a rafter cavity, and a standard burner fire source. It compared traditionally accepted cardboard vents to Raft-R-Mate. Cardboard vents are routinely accepted, exposed to the attic, without covering. The report stated in conclusion, on page 4, that:

".....Raft-R-Mate foam plastic vents "melted quickly and removed itself as a fuel source," The cardboard vent system, "when exposed to the same conditions, rapidly spread flames along the entire length of the deck, generated a greater amount of heat energy, and induced higher under deck cavity temperatures, than the (Raft-R-Mate) test decks....."

See the comparison photos below.

Raft-R-Mate

Cardboard

Flame Spread and Smoke Developed
Building codes also often limit the "surface burning characteristics" of foam plastic to a maximum 75 flame spread, and 450 smoke developed. Larger numbers indicate a greater rapidity of flame spread, and a greater volume of smoke developed. See section 317.1.1

Underwriters Laboratories project report 95NK28694 details the results of ASTM E84 (UL 723) testing on Raft-R-Mate. The results are flame spread 5 and smoke developed 25. These values are under the maximum of 75 and 450 allowed by the code. These numerical flame spread and smoke ratings are not intended to reflect hazards presented by this material under actual fire conditions.

Experience
This report summarizes the Owens Corning position regarding Raft-R-Mate used in attics without covering, however, the user must always verify local building code requirements with the authority having jurisdiction, as theirs is the controlling rule. An example building department position letter concerning Raft-R-Mate is reproduced below.

City of Columbus
Mayor Gregory S. Lashutka

Department of Trade and Development
George J. Arnold, Director

MEMORANDUM

TO: ALL FIELD INSPECTORS AND PLANS EXAMINERS I & II'S

FROM: Joe Busch, Chief Building Official

DATE: October 30, 1998

SUBJECT: PRODUCT APPROVAL

After a considerable amount of investigation and witnessing a video tape of the laboratory burn test on this product, be advised that effective immediately "RAFT-R-MATE", manufactured by Owen Corning, will be acceptable for attic rafter vents in residential application for both CABO and OBBC without being covered with gypsum board. CABO R-216.1 requires foam plastics to have a maximum flame spread index of 75 and smoke development of 250. This product has a flame spread of 5 and a smoke index of 25. It has been tested under UL report 95NK28694 and meets the standards of ASTM E84 (UL 723). NOTE: The toxicity data listed for this product is based on NBs-TOX 48.1 and is equal to wood. Thus, this product or any similar product meeting these criteria are acceptable in Columbus without the ignition barrier. Installation shall be per manufacturer's printed instruction and all products shall be labeled for identification.

c: Herbert Slone

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