



## Code Compliance Research Report

**Subject:** SES Foam 0.5 lb Spray  
Spray-Applied Polyurethane Foam Insulation System

Supplement to ESR-3375

- Alternative Assemblies using TPR<sup>2</sup> F10E Coating
- Recognized Maximum Thickness behind Prescriptive Thermal Barrier

**Date:** April 17, 2013

**Materials:** SES Foam 0.5 lb Spray

**Test Standards:** 1. ASTM E 84 Test for Surface Burning Characteristics of Building Materials  
2. NFPA 286 Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth

### Purpose and Scope:

Since the issuance of ESR-3375 by ICC Evaluation Service, two situations have occurred with affect the interpretation of that report. Namely:

1. SES Foam has conducted additional testing of the SES Foam 0.5 lb Spray (also identified under the trademark “Sucraseal”) with the intumescent coating TPR<sup>2</sup> F10E for use as an alternate assembly to the use of a thermal barrier; and
2. Revisions to AC 377 (Acceptance Criteria for Spray-Applied Foam Plastic Insulation) promulgated in November 2012 have changed the requirements for the recognition of maximum thickness limitations when spray-applied foam plastic insulation is covered with a prescriptive thermal barrier.

The intent of this Supplement to ESR-3375 is to provide guidance on the interpretation of that report in view of the above changes.

### Summary:

1. Based on the test data submitted and the reference documents, the thermal barrier required by IBC Section 2603 and/or IRC Section R316 may be omitted when:
  - The thickness of SES Foam 0.5 lb Spray does not exceed 11.5 inches in walls and/or ceilings, and
  - The SES Foam 0.5 lb Spray is coated with a minimum of 14 dry mils (application rate of 80 ft<sup>2</sup>/gal) of TPR<sup>2</sup> F10E intumescent coating.

2. Based on AC 377 (November 2012) Section 3.2.2.3, and the ASTM E84 testing summarized in ESR-3375, the installed thickness of SES Foam 0.5 lb Spray is not limited when separated from the interior by a prescriptive thermal barrier (i.e., 1/2-inch [minimum] gypsum wallboard).

### Discussion:

1. **Alternative Assembly:** In IBC Section 2603.10 (Special approval) and IRC Section R316.6 (Specific approval), the building code permits alternate assemblies to the use of the required thermal barrier when tested in accordance with specific tests. One such test is NFPA 286 (Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth) when used in combination with the acceptance criteria of IBC Section 803.1.2.1 or IRC Section R302.9.4. (NFPA 286 does not provide its own acceptance criteria, hence this is specifically defined within the building codes.)

SES Foam 0.5 lb Spray was tested in accordance with NFPA 286 with results reported in QAI Laboratories Test Report No. TJ0934, March 12, 2013 wherein the spray foam was coated with the intumescent coating TPR<sup>2</sup> F10E. The test result successfully passed the acceptance criteria as defined in the IBC and IRC.

Therefore, the thermal barrier as required in IBC Section 2603 and/or IRC Section 316 may be omitted provided the following limitations are observed:

- The maximum thickness SES Foam 0.5 lb Spray in wall and ceiling assemblies is limited to 11.5 inches.
  - The SES Foam 0.5 lb Spray is coated with 14 mils minimum dry film thickness (application rate of 80 ft<sup>2</sup> per gallon) of TPR<sup>2</sup> F10E intumescent coating.
2. **Maximum thickness:** The maximum thickness that can be tested in accordance with ASTM E 84 is four (4) inches. For thicknesses greater than four inches, the IBC (Section 2603.3, Exception 4) and the IRC (R316.3, Exception) provide for testing greater thicknesses in accordance with the Special Approval and Specific Approval sections, respectively.

Traditionally, small room corner tests (such as NFPA 286) were employed to test thicknesses greater than 4 inches, with the spray foam covered with a prescriptive thermal barrier (i.e., 1/2-inch gypsum wallboard). However, after reviewing voluminous small room corner test results, ICC-ES staff recommended and the ICC-ES board approved a modification to AC 377 wherein this test protocol may be omitted. Under this provision, the maximum thickness of the spray foam is not limited. The limitations placed on this provision reflect the data that ICC-ES reviewed, namely:

- The spray foam product must have passed ASTM E84 testing at a thickness of four (4) inches with maximum flame spread and smoke developed results of 25 and 450 respectively.
- The spray foam product must be separated from the building interior by a prescriptive thermal barrier (1/2-inch [min.] gypsum wallboard is the only prescriptive thermal barrier listed in the building code).

The provisions described above are within AC 377, Section 3.2.2.3 (November 2012).

SES Foam 0.5 lb Spray has been tested in accordance with ASTM E84 with flame spread of less than 25 and smoke developed of less than 450. Therefore, SES Foam 0.5 lb Spray falls within the provisions of AC 377, Section 3.2.2.3 and may be installed at any thickness provided it is covered with a prescriptive thermal barrier.

**Conclusions:**

SES Foam ½ lb Spray foam plastic insulation meets the requirements and intent of the IBC and IRC as specified and as limited in the Summary section above.

Respectfully submitted,  
Deer Ridge Consulting, Inc.

A handwritten signature in black ink, appearing to read "Roger Morrison". The signature is written in a cursive style with a large initial "R".

Roger V. Morrison, PE, RRC  
President

**Reference Documents:**

1. 2009 and 2012 International Building Code: Sections 803.1.2.1; 2603.
2. 2009 and 2012 International Residential Code: Sections R302.9.4; R316.
3. QAI Laboratories Test Report No. TJ0934, March 12, 2013 (NFPA 286).
4. Acceptance Criterial 377, November 2012.