



Standard Test Method for Determining Adhesive Attack on Rigid Cellular Foam¹

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1. Scope

1.1 This test method covers a practical means of measuring the degree of rigid cellular polystyrene (RCPS) foam cavitation damage when an adhesive is used to bond this substrate.

1.2 The values stated in inch pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 578 Specification for Preformed, Cellular Polystyrene Thermal Insulation²

D 907 Terminology of Adhesives³

3. Terminology

3.1 Definitions:

3.1.1 Many terms in this standard are defined in Terminology D 907.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cavitation damage, n*—as related to rigid cellular polystyrene foam, the pitting and wearing away of the surface.

3.2.1.1 *Discussion*—Damage may include loss of material, surface deformation, or any other changes in microstructure, properties, or appearance.

3.3 Abbreviations:

3.3.1 RCPS—Rigid cellular polystyrene.

4. Summary of Test Method

4.1 This test method consists of testing two RCPS sections bonded by adhesive and allowed to set for 24 h. Before evaluation, the degree of cavitation is measured and recorded.

5. Significance and Use

5.1 Rigid foam such as RCPS is used in the building

construction industry. Because it is sensitive to certain components contained in adhesives which cause it to dissolve, it is important to have a test method to determine whether an adhesive is compatible with RCPS foam. This test method would help the end user decide which adhesive to use with RCPS foam by quantitatively measuring the amount of cavitation formed by the components contained in the adhesive.

6. Apparatus

6.1 *Circular Template*, with an inside diameter of 1.0 in. (25.4 mm) and a depth of ¼ in. (6.3 mm).

6.2 *Circulating Air Oven*, for elevated temperature testing, capable of being held at $40 \pm 1^\circ\text{C}$ ($104^\circ \pm 1.8^\circ\text{F}$).

7. Materials

7.1 For the test, use Type IV RCPS foam with a nominal thickness of 1.0 in. (25.4 mm).

7.2 If another type is used, record the type, thickness and density.

8. Conditioning

8.1 Unless otherwise agreed upon by the purchaser and the manufacturer, condition the test specimen and adhesive 24 h prior to testing at $23 \pm 1^\circ\text{C}$ ($73.4 \pm 1.8^\circ\text{F}$) and $50 \pm 5\%$ relative humidity.

9. Procedure

9.1 Prepare enough specimens so that two assemblies are tested at both temperatures.

9.1.1 For each test, cut two sections of RCPS into 3 in. (76.2 mm) by 3 in. specimens.

9.1.2 Place the template in the center of one of the specimens.

9.1.3 Fill the template with the desired adhesive, taking care to strike off any excess with a flat edge spatula.

9.1.4 Immediately remove the template and superimpose the second piece of foamboard on top of the first one. Squeeze the assembly together until the adhesive can be seen squeezing out from between the assembly.

9.1.5 Wrap the assembly in a 12.0 in. (304.8 mm) by 12.0 in. (304.8 mm) piece of aluminum foil.

9.2 Condition the assemblies for 24 h at the desired temperatures, room temperature and 40°C (127.7°F) or any other requested temperatures.

9.3 After conditioning, unwrap the assemblies and cut them in half (corner to corner to allow a greater cross-sectional area).

¹ This test method is under the jurisdiction of ASTM Committee D-14 on Adhesives and is the direct responsibility of Subcommittee D14.10 on Working Properties.

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² *Annual Book of ASTM Standards*, Vol 04.06.

³ *Annual Book of ASTM Standards*, Vol 15.06.