



# Standard Test Method for Measuring the Flow Rate of Aerosol Foam Sealants<sup>1</sup>

This standard is issued under the fixed designation C1806; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method describes a procedure for determining the flow rate of aerosol foam sealants.

1.2 Flow rate is determined in a controlled laboratory environment with manual dispensing (Method A) or using a flow rate machine (Method B).

1.3 Currently, two foam sealant types are applicable to this test method, single component and polyurethane and latex.

1.4 There are not other known test methods specific for measuring the flow rate of aerosol foam sealants.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *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:*<sup>2</sup>

**C717** Terminology of Building Seals and Sealants

**C1620** Specification for Aerosol Polyurethane and Aerosol Latex Foam Sealants

## 3. Terminology

3.1 *Definitions*—Refer to Terminology **C717** for definitions of the following terms used in this terminology: foam sealant, sealant-latex. Refer to Specification **C1620** for definitions and classifications of aerosol foam sealants and latex foam sealants. Temperature and humidity are referenced from **C1620**.

3.2 *Definitions of Terms Specific to This Standard:*

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee **C24** on Building Seals and Sealants and is the direct responsibility of Subcommittee **C24.61** on Aerosol Foam Sealants.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2.1 *empty aerosol can, n*—the time at which the product flow of the foam sealant is less than 2.0 linear cm of 1.0 g of continuous foam bead during two continuous seconds of dispensing.

3.2.2 *flow rate, n*—a unit of measurement expressed for this standard as grams per second (g/s).

3.2.3 *flow rate machine, n*—a testing machine that includes both a stationary and a moveable member (pneumatic piston).

3.2.3.1 *Discussion*—The machine must be capable of depressing the aerosol can valve at a consistent and repeatable pressure and do so for a consistent and repeatable duration for each test operation.

3.2.4 *mechanical test method, n*—practice of utilizing a testing machine to measure flow rate without an applicator or dispensing unit.

3.2.5 *non-mechanical test method, n*—practice of using an applicator or dispensing unit to dispense the foam sealant product to measure flow rate by hand.

## 4. Summary of Test Method

4.1 *Procedure A-Non-mechanical Test Method:*

4.1.1 The aerosol can's contents are dispensed for a specific amount of time with a consistent amount of hand pressure on the applicator of the dispensing unit.

4.1.2 The flow rate is calculated from the measured amount of foam dispensed and the net time to dispense the aerosol can.

4.2 *Procedure B-Mechanical Test Method:*

4.2.1 The aerosol sealant is dispensed for a specific amount of time with the same amount of pressure with a testing machine (the aerosol can is in the fully activated position).

4.2.2 The flow rate is calculated from the measured amount of foam dispensed and the net time to dispense the aerosol can.

## 5. Significance and Use

5.1 This test method provides a calculated data point regarding the amount of foam dispensed at one time from a single can of foam at standard laboratory conditions or a specific temperature and relative humidity range  $23 \pm 2^\circ\text{C}$  and  $50 \pm 5\%$ .

5.2 Flow Rate does not predict the performance capability of the foam sealant or its suitability for the intended application.

5.3 Flow Rate can be measured with a testing machine (Procedure B) or with the intended applicator or dispensing unit (Procedure A).

5.4 The test is suitable for product performance certification and quality control programs, and can be useful to the general public, aerosol foam sealant manufacturers, distributors, specifiers, architects, contractors, testing laboratories, and other businesses and professionals.

## 6. Apparatus

6.1 *Testing machine, dispensing unit, or applicator*, recommended for use with the sealant.

6.2 *Calibrated Analytical Balance or scale*, capable of accurately weighing the specimens to the nearest  $\pm 0.1$  g.

6.3 *Dispensing unit or applicator*, which is recommended by the manufacturer.

6.4 *Timer or stop watch*, accurate to  $\pm 1$  s and fraction thereof.

## 7. Sampling and Test Specimens

7.1 Product to be measured shall be unopened.

7.2 Minimum of three cans shall be tested and their average flow rate determined.

7.3 Samples to be randomly selected from production lot.

7.4 Samples are to represent the final manufactured product for which recognition is sought.

## 8. Conditioning

8.1 Incubate the three cans of aerosol foam sealant and dispensing mechanism at standard laboratory conditions of  $23 \pm 2^\circ\text{C}$  and  $50 \pm 5$  % relative humidity or at desired temperature and relative humidity for a minimum of 48 h prior to testing.

## 9. Procedure A

9.1 Record the conditioning temperature of the foam or latex sealant.

9.2 Attach dispensing mechanism (if meterable, adjust the flow control to full open).

9.3 Weigh the full can of foam sealant with attached dispensing mechanism and record as the start weight.

9.4 Shake the aerosol can vigorously for 30 s or as recommended in the product's instructions.

9.5 Start timer, dispense product fully activated for 10 s.

9.6 After dispensing for the 10 s duration, weigh the discharged aerosol can and record the end weight.

9.7 With a second can of foam sealant, repeat steps 9.1 – 9.6. Record flow rate.

9.8 With a third can of foam sealant, repeat steps 9.1 – 9.6. Record flow rate.

## 10. Calculation or Interpretation of Results

10.1 Subtract the end weight from the start weight; this gives you the total amount dispensed. Divide the amount

dispensed by the activation time (g/s). Flow rate (g/s) = (start weight – end weight)/10 s.

10.2 Average the three flow rates.

## 11. Procedure B

11.1 Record the conditioning temperature as defined in Section 8 as the product temperature.

11.2 Weight the full can of foam sealant without the cap and record as the start weight.

11.3 Shake the can for 30 s or follow manufacturer's instructions.

11.4 Invert aerosol can and place in the stationary part of the flow rate machine.

NOTE 1—Reset the spacing for different product sizes.

11.5 Activate the flow rate measurement machine. See Fig. 1.

11.6 After dispensing for the prescribed duration, weight the discharge aerosol can and record the end weight.

11.7 With sample cans 2 and 3, repeat steps 11.1 – 11.6.

## 12. Calculation or Interpretation of Results

12.1 Subtract the end weight from the start weight; this gives you the total amount dispensed. Divide the amount dispensed by the activation time (g/s). Flow rate (g/s) = (start weight – end weight) / 10 s.

12.2 Average the three flow rates.

## 13. Report

13.1 Complete name or designation of product tested.

13.2 Record temperature and humidity of the environment at the time dispensing takes place.

13.3 Record aerosol can test temperature.

13.4 Label statement of the size or contents of the aerosol in units of grams, weight ounces, or milliliters, etc.

13.5 Make and model of dispensing unit.

13.6 Testing agency and location.

13.7 Sample location and by whom.

13.8 Date of the initiation of the test.

13.9 Date of report.

13.10 Expiration date of product tested.

13.11 Record whether Procedure A or B was followed.

13.12 Average Flow Rate.

13.13 A statement that the test or tests were conducted in accordance with this test method.

## 14. Precision and Bias

14.1 No precision or bias have been developed for this test method.

## 15. Keywords

15.1 aerosol; aerosol foam; air infiltration; foam sealant; latex foam sealant; polyurethane foam sealant

NOTE 1—Use: the can is inserted with the valve placed in the small hole at the bottom and then the device is activated compressing the valve a reproducible amount for each test.

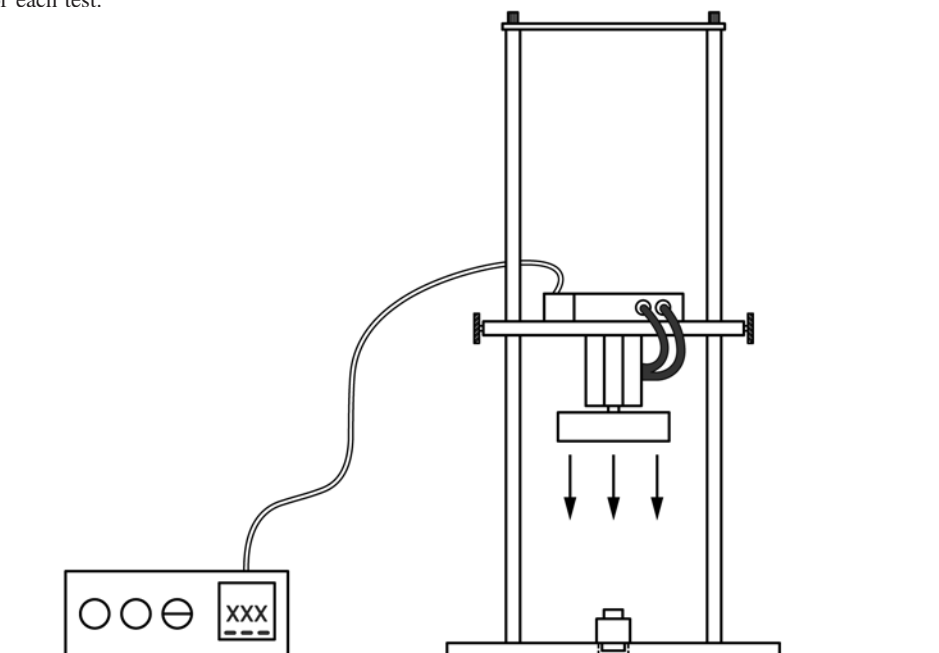


FIG. 1 Flow Rate Machine

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