Designation: C1620 – 05

Standard Specification for Aerosol Polyurethane and Aerosol Latex Foam Sealants[1]

This standard is issued under the fixed designation C1620; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the types, grades, and physical properties of aerosol polyurethane and aerosol latex foams extruded from pressurized containers and intended for building envelope air barrier sealant applications in building construction.

1.2 For specific aerosol foam sealant applications, operational temperature limit criteria shall be as agreed upon between the aerosol sealant manufacturer and the purchaser.

1.3 The values in SI units are to be regarded as standard. The values shown in parentheses are for information and approximation only.

1.4 The committee with jurisdiction over this standard is not aware of any comparable standards published by other organizations.

1.5 *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 requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C168 Terminology Relating to Thermal Insulation

C390 Practice for Sampling and Acceptance of Thermal Insulation Lots

C518 Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

C717 Terminology of Building Seals and Sealants

C1536 Test Method for Measuring the Yield for Aerosol Foam Sealants

D883 Terminology Relating to Plastics

E84 Test Method for Surface Burning Characteristics of Building Materials

E283 Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

IEEE/ASTM SI 10 American National Standard for Use of the International System of Units (SI) (The Modernized Metric System)

2.2 *Other Documents:*

SPFA Document AY119 Glossary of Terms Common to the Polyurethane Foam Industry[3]

CAN/CGSB 51.93 Air Barrier Materials[4]

CAN/ULC-S710.1 Proposed Standard for Thermal Insulation-Bead-Applied One-Component Polyurethane Air Sealant Foam, Part 1, Section 6.5.1, "Air Permeance"[5]

49 Code of Federal Regulations 178.33[5]

UL 723 Surface Burning Characteristics for Materials Use in Plenums[6]

3. Terminology

3.1 *Definitions:* For definitions of terms used in this specification, refer to Terminologies C168, C717, D883, and SPFA AY119. (SPFA stands for Spray Polyurethane Foam Alliance.[3]

3.1.1 *tack-free time*, *n*—as defined in 10.2.

3.1.2 *trim time*, *n*—as defined in 10.2.

4. Classification

4.1 *Type I Aerosol Polyurethane Foam Sealants* in containers one liter or less.

4.2 *Type II Aerosol Latex Foam Sealants* in containers one liter or less.

4.3 *Grade 1 Aerosol Foam Sealants* contain flammable gas blowing agent or propellant, or both, and are classified as a flammable aerosol by DOT.

4.4 *Grade 2 Aerosol Foam Sealants* contain nonflammable blowing agent or propellants, or both, and are not classified flammable.

[1] This specification 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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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from the Spray Polyurethane Foam Alliance, 440 Fair Lakes Court, Suite 105, Fairfax, VA 22033.

[4] Available from the Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, ON L4W 5N6 Canada.

[5] Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

[6] Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

5. Ordering Information

5.1 Orders for materials purchased under this specification shall include the following information:

5.1.1 Manufacturer,

5.1.2 Product identification information or product name

5.1.3 ASTM Specification C1620,

5.1.4 Product classification (see Section 4),

5.1.5 Certificate of compliance (if required),

5.1.6 Ordering date,

5.1.7 Target delivery date,

5.1.8 Special packaging or handling (if required),

5.1.9 Special markings (if required), and

5.1.10 Special compliance information, as applicable for the user.

5.2 Purchases for governmental agencies shall comply with their special needs.

6. Materials and Manufacture

6.1 Aerosol polyurethane foam sealants are produced by the catalyzed chemical polymerization reaction of proprietary chemical formulations and appropriate blowing agents. The product of this reaction is bead extruded from pressurized containers through a nozzle device at the point of application to a building joint as a foamed sealant material. Bead foam curing is achieved with atmospheric moisture.

6.2 Aerosol latex foam sealants are produced by the blending of proprietary formulations and appropriate blowing agents. This mixture is bead extruded from pressurized containers through a nozzle device at the point of application to a building joint as foamed sealant material. Bead foam drying then continues over a brief period of time with the loss of formulation moisture.

6.3 The aerosol foam sealant product shall be suitable for shelf-stable pressurized containment, ready to dispense.

6.4 In most field applications, the aerosol foam sealant is foamed-in-place directly into open joints and cavities in building envelope wall and roof areas by consumers or trained professionals to resist the undesirable transmission of moisture, conditioned air, heat, and atmospheric air infiltration/exfiltration of gases and heat energy.

7. Physical Requirements

7.1 Aerosol foam sealants shall have guide physical property characteristics as shown in Table 1.

7.2 Other physical properties shall be specified as agreed upon between the manufacturer and the purchaser, if required for engineering design purposes, such as the anticipation of service temperature extremes and conductive thermal resistance values.

NOTE 1—While apparent foam density is not a specification requirement here, its determination using data obtained in Test Method C1536 may be beneficial for field quality control purposes (calculate foam weight/foam volume and report apparent density in kg/m^3 and lb/ft^3).

8. Sampling

8.1 For the purposes of sampling, the lot shall consist of all the single-use containers of sealant purchased and delivered at one time.

8.2 Sampling for inspection tests, if required, shall be for physical properties agreed upon between sealant manufacturer and purchaser.

8.3 Refer to Practice C390 for sampling practices as appropriate.

9. Test Specimen Preparation

9.1 Aerosol foam sealant specimens for physical property testing shall be made in accordance with the manufacturer's recommendations.

9.1.1 Pressurized containers shall be conditioned for 48 h under controlled temperature and humidity environment conditions before the extrusion of foam sealant beads onto an approved substrate surface.

TABLE 1 Properties of Aerosol Foam Sealants

Physical Property	Test Method	Type I Grade 1	Type I Grade 2	Type II Grade 1
Linear yield	C1536	Report value for product	report value for product	report value for product
Air permeability (max flow rate)	E283	1.5 L/(s· m^2) (0.3 ft^3 /(min·ft^2) 0.02 L/(s· m) (0.01 ft^3/(min · ft)	1.5 L/(s· m^2) (0.3ft^3 /(min·ft^2) 0.02 L/(s· m) (0.01 ft^3/(min · ft)	1.5 L/(s· m^2) (0.3ft^3/(min·ft^2) 0.02 L/(s· m) (0.01 ft^3/(min · ft)
Apparent aged *R* value per thickness of 2.54 cm/1.00 in. (min allowed value)	C518	0.048 W/m (3.0 ft^2 h·°F/Btu)	0.048 W/m (3.0 ft^2 h·°F/Btu)	0.048 W/m (3.0 ft^2 h·°F/Btu)
Tack-free time (max)	see 10.2	30 min.	30 min.	30 min.
Trim time (max)	see 10.2	2 h	2 h	N/A
Flame spread index	E84	as labeled	as labeled	as labeled
Smoke index	E84	as labeled	as labeled	as labeled
Post-dispensing expansion/ contraction[A]	consult manufacturer	consult manufacturer	consult manufacturer	consult manufacturer
Shear strength (adhesion)[A]	consult manufacturer	consult manufacturer	consult manufacturer	consult manufacturer
Tensile strength (adhesion)	consult manufacturer	consult manufacturer	consult manufacturer	consult manufacturer
Shelf life (can) min	stored in standard laboratory C/RH	12 months	12 months	12 months
Freeze/thaw resistance (can)[A]	consult manufacturer	N/A	N/A	3 cycles

[A]Subcommittee C24.61 continues to develop standardized ASTM International test methods for these properties. Until consensus standards are established for these test methods, consult with product manufacturers regarding their product values and the test methods used.