Designation: ~~C1852 – 17~~ C1852 – 20

Standard Guide for Product Selection/Delivery Systems for Aerosol Foam Sealants and Adhesives[1]

This standard is issued under the fixed designation C1852; 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 guide covers the general use of aerosol polyurethane and aerosol latex foams extruded from pressurized containers intended for building envelope air barrier sealant and adhesive applications in building construction. It also provides an overview of associated standards and test methods that quantify key physical properties that are useful to design professionals, engineers, specifiers, and end users.

1.2 Currently two main foam sealant types are applicable to this practice, single component polyurethane and latex types.

1.3 The values stated in inch-pound units are to be regarded as standard. SI units provided are for information only and are not considered standard.

1.4 *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*. For specific safety considerations see Section 7.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C168 Terminology Relating to Thermal Insulation
C557 Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing
C717 Terminology of Building Seals and Sealants
C1536 Test Method for Measuring the Yield for Aerosol Foam Sealants
C1620 Specification for Aerosol Polyurethane and Aerosol Latex Foam Sealants
C1642 Practice for Determining Air Leakage Rates of Aerosol Foam Sealants and Other Construction Joint Fill and Insulation Materials
C1643 Test Method to Measuring the Post Dispensing Volumetric Expansion of Aerosol Foam Sealants
C1737 Guide for Evaluating Temperature Effects to Aerosol Foam Sealant During and After Dispensing
D883 Terminology Relating to Plastics
D3498 Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing
D6464 Specification for Expandable Foam Adhesives for Fastening Gypsum Wallboard to Wood Framing
E72 Test Methods of Conducting Strength Tests of Panels for Building Construction
E84 Test Method for Surface Burning Characteristics of Building Materials
E119 Test Methods for Fire Tests of Building Construction and Materials
E283 Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
E814 Test Method for Fire Tests of Penetration Firestop Systems

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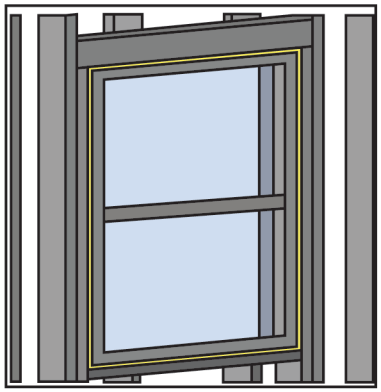
[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

Building Envelope Sealing
Window, Door & Skylight Interior Perimeters

Sealing: Gaps, Cracks & Joints
Within Residential & Commercial Building Envelopes

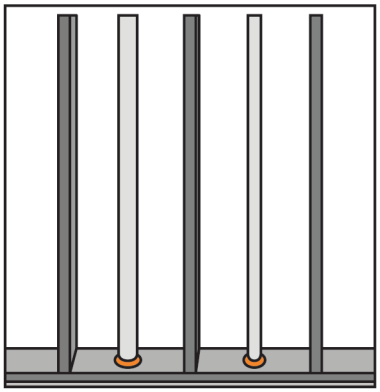
Adhesive
Structural Insulated Panels, Drywall, Subfloor & Insulated Concrete Forms



INTERIOR WINDOW PERIMETERS OF EXTERIOR WALL WINDOWS

Shown as a window perimeter rough opening secondary air seal.

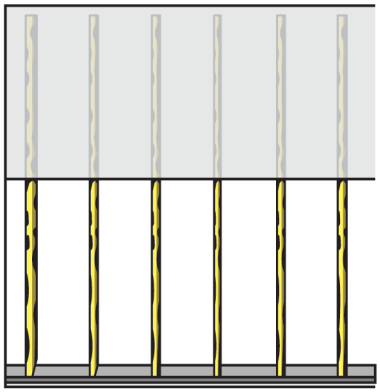
Relevant Lab Standards / Tests: AAMA 812, ASTM C1642, ASTM E283
Installation Guide: ASTM E2112



GAPS / HOLES (FIRE BLOCKING)

Shown as a fire blocking foam sealant for bottom plate penetrations.

Relevant Lab Standards / Tests: ASTM C1620, ASTM C1642, ASTM C1643, ASTM E814", ASTM E84, UL 1715, UL 723

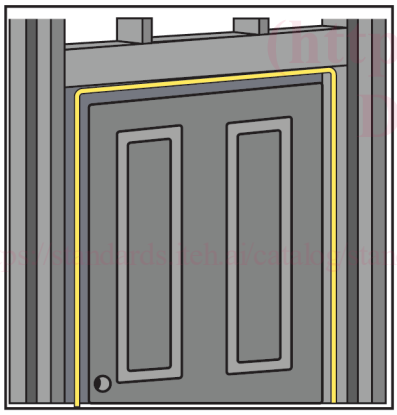


DRYWALL ADHESIVE

Shown as an adhesive between drywall and wall studs.

Relevant Lab Standards / Tests: ASTM C1620, ASTM C557, ASTM D6464, ASTM E72

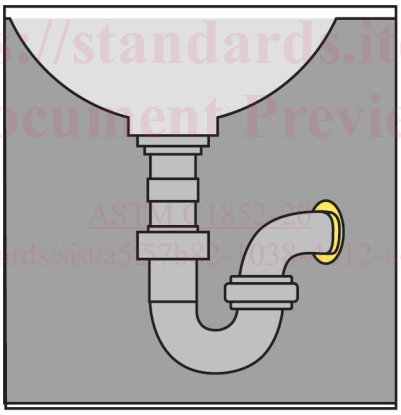
FIG. 1 Interior Window Perimeters of Exterior Wall Windows, Gaps/Holes (Fire Blocking), and Drywall Adhesive



INTERIOR DOOR PERIMETERS OF EXTERIOR DOORS

Shown as a door perimeter rough opening secondary seal.

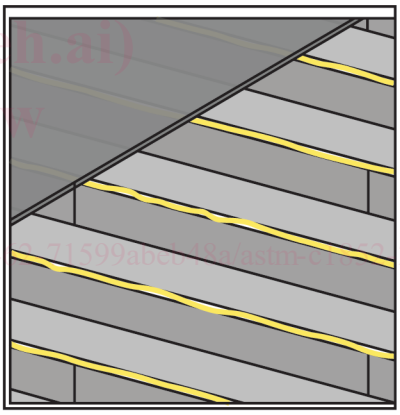
Relevant Lab Standards / Tests: AAMA 812. ASTM C1642, ASTM C1620, ASTM E283



GAPS / HOLES (GENERAL)

Shown as an interior wall pipe penetration seal.

Relevant Lab Standards / Tests: ASTM C1620, ASTM C1642, ASTM C1643



SUBFLOOR ADHESIVE

Shown as an adhesive between floor sheathing and floor joists.

Relevant Lab Standards / Tests: AFG-01, ASTM C1620, ASTM D3498

FIG. 2 Interior Door Perimeters of Exterior Doors, Gaps/Holes (General), and Subfloor Adhesive

E2112 Practice for Installation of Exterior Windows, Doors and Skylights

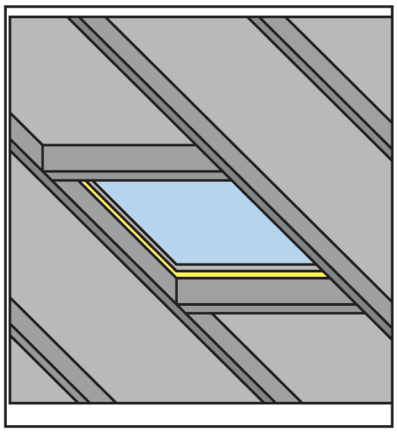
2.2 *Other Standards:*

AFG-01 Adhesives for Field-Gluing Plywood to Wood Framing[3]

UL 723 Test for Surface Burning Characteristics of Building Materials[4]

[3] Available from APA: www.https://www.apawood.org/.

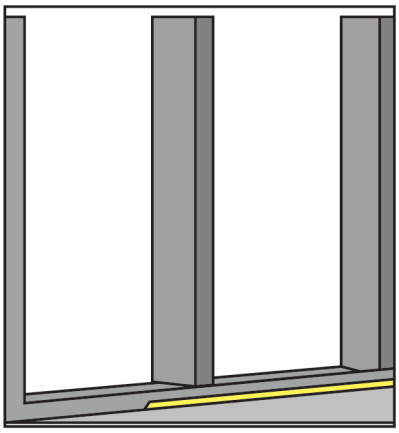
[4] Available from Underwriters Laboratories (UL), 2600 N.W. Lake Rd., Camas, WA 98607-8542, http://www.ul.com.



SKYLIGHT PERIMETERS

Shown as an interior secondary seal.

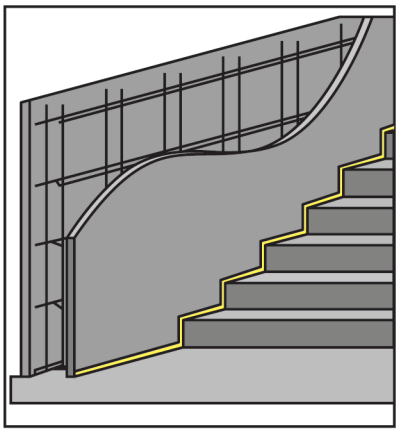
Relevant Lab Standards/Tests: ASTM C1642, ASTM C1620



JOINTS

Shown as a seal at the bottom plate to floor joint.

Relevant Lab Standards/Tests: ASTM C1620, ASTM C1642, ASTM C1643

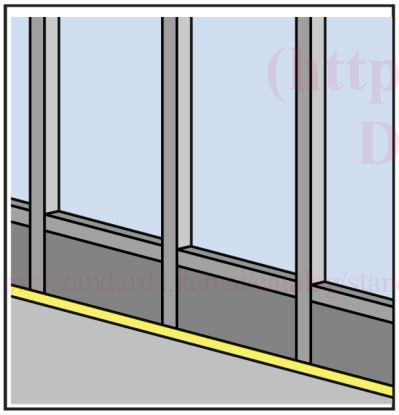


INSULATED CONCRETE FORMS

Shown as a seal between insulated concrete forms and existing construction.

Relevant Lab Standards/Tests: ASTM C1620, ASTM C1642

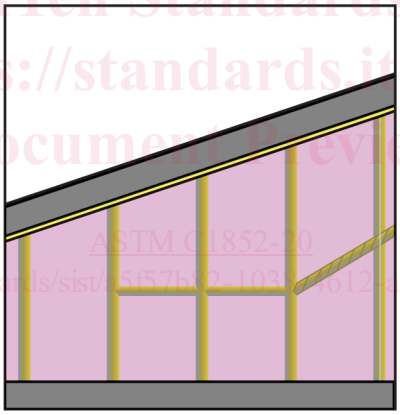
FIG. 3 Skylight Perimeters, Joints, and Insulated Concrete Forms



COMMERCIAL WINDOW INTERIOR PERIMETERS

Shown as an interior secondary seal.

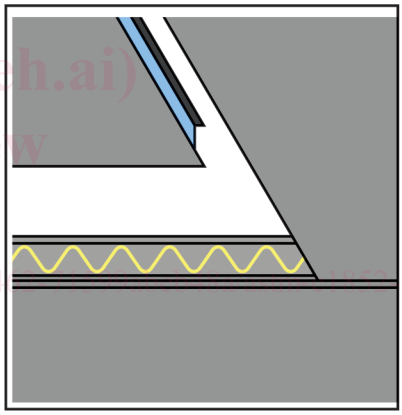
Relevant Lab Standards / Tests: AAMA 812, ASTM C1642, ASTM E283



SEALING JOINTS OF RIGID INSULATION

Shown as an air seal between rigid insulation and wall studs.

Relevant Lab Standards / Tests: ASTM C1620, ASTM C1642, ASTM C1643



STRUCTURAL INSULATED PANELS (SIPs)

Shown as an adhesive and air seal in the on-site assembly of SIP foam core panels at a ridge detail.

Relevant Lab Standards / Tests: AFG-01, ASTM C1642, ASTM C1643, ASTM D3498

FIG. 4 Commercial Window Interior Perimeters, Sealing Joints of Rigid Insulation, and Structural Insulated Panels (SIPs)

UL 1715 Fire Test of Interior Finish Material[4]

AAMA 812 Voluntary Practice for Assessment of Single Component Aerosol Expanding Polyurethane Foams for Sealing Rough Openings of Fenestration Installations[5]

[5] Available from American Architectural Manufacturers Association (AAMA), 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173-4268, http://www.aamanet.org.

NFPA 286: Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth[6].

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, refer to Terminologies C168, C717, and D883.

4. Summary of Guide

4.1 This guide is intended to provide general assistance for a specifier, engineer, design professional or end user who is seeking material selection assistance for a one component aerosol foam sealant. This guide provides an overview and creates awareness of the most common uses of one component foam sealants and further describes key product attributes and performance criteria that may assist in the material selection process. The guide explains only the most common uses of polyurethane and latex foam sealants and provides an overview of aerosol foam sealant physical properties, climate condition considerations, dispensing container types, and product storage variables. The guide provides information on environmental conditions and effects that are known to detrimentally affect a foam sealant. The guide further provides definitions relevant to aerosol foam sealants, germane standards and test methods, product storage best practices, substrate guidance, general safety considerations, and shelf life information.

4.2 In addition to the product considerations in this guide, consult the foam sealant manufacturer about applications and limitations for its products and their proper use and installations. Considering the range of appropriate applications, the properties of commercially available foam sealants, and the many conditions of use, the information contained herein is general in nature.

5. Significance and Use

5.1 The intended use of this guide is to provide a high level summary of relevant test methods and performance criteria of aerosol foam sealants that can be helpful in identifying material properties and suitable applications. Use of this guide can be leveraged to further understand how foam sealant materials can be expected to perform and are positioned for intended use by manufacturers in the marketplace.

5.2 This guide is limited in scope and does not cover all possible end use applications. Consult the Aerosol Foam Sealant Manufacturer for specific performance capability, third party reports, or International Code Council evaluation reports.

6. Performance Overview and Guide to Key Physical Properties

Matrix of Three Primary Application Categories for One Component Aerosol Foam Sealants (See Figs. 1-4)

6.1 *Windows, Doors, and Skylights:*

6.1.1 *Pressure-Build:*

6.1.1.1 *Referenced Voluntary Practice*—AAMA 812.

6.1.1.2 *Background of Performance Criteria*—AAMA 812 is the voluntary practice referenced standard that reports three values to the user of the document. It reports pressure-build reported in psi, dimensional stability in volume %, and a standardized beam deflection in inches. These three physical characteristics of the foam sealant are useful in a system design when the foam is applied next to a fenestration product. Table 1 provides guidance in product selection and supplements AAMA 812.

TABLE 1 Pressure Build

Potential for Frame Distortion	Measurement of Foam Pressure-Build
Highest	Above 2 psi
Medium	1–2 psi
Lowest	0–1 psi

6.1.1.3 Foam pressure build is defined as a value for maximum pressure developed under specified conditions as determined in AAMA described in pounds per square inch (psi) or units of Pascal (Pa).

6.1.2 *Air Infiltration:*

6.1.2.1 *Referenced Standards*—Test Method E283, Practice C1642 with the air infiltration allowable designated in Specification C1620.

6.1.2.2 *Background of Performance Criteria*—Practice C1642 provides a method to build a test specimen before running Test Method E283 specifically for aerosol foam sealants and other materials typically found in the rough opening gap between a window and wall system. Test Method E283 designates how to apply a pressure differential across the specimen using the test assembly called out in Practice C1642. The performance criteria for air infiltration are designated in Specification C1620, Table 1.

[6] Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, http://www.nfpa.org