Designation: C919 – 22

Standard Practice for Use of Sealants in Acoustical Applications[1]

This standard is issued under the fixed designation C919; 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 practice provides information for the use of sealants to reduce sound transmission characteristics of interior walls, ceilings, and floors by proper application of sealants to joints, voids, and penetrations normally found in building construction, which are commonly referred to as airborne sound flanking paths.

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

1.3 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.4 This standard does not purport to address fire stopping or safing requirements for joints, voids, and penetrations through fire-rated wall, ceiling, and floor assemblies. Additional requirements may be necessary for fire-rated assemblies to meet the applicable building code provisions.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *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]

C634 Terminology Relating to Building and Environmental Acoustics
C717 Terminology of Building Seals and Sealants
C834 Specification for Latex Sealants
C920 Specification for Elastomeric Joint Sealants
C1193 Guide for Use of Joint Sealants
C1520 Guide for Paintability of Latex 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
C1852 Guide for Product Selection/Delivery Systems for Aerosol Foam Sealants and Adhesives
E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
E336 Test Method for Measurement of Airborne Sound Attenuation between Rooms in Buildings
E413 Classification for Rating Sound Insulation

2.2 *US Department of Housing and Urban Development Standard:*[3]

HUD Minimum Property Standards for Housing, Section 4910.1

2.3 *International Building Code:*[4]

3. Terminology

3.1 *Definitions*—For definitions of terms used in this recommended practice, see Terminologies C717 and C634.

4. Significance and Use

4.1 Walls, ceilings, and floors in building construction with improperly sealed joints, voids, or penetrations will not achieve the desired sound transmission loss. Proper sealing of joints, voids, and penetrations will increase sound transmission loss by reducing airborne sound flanking paths.

5. Sound Transmission Class Requirements

5.1 The construction industry has adopted Sound Transmission Class (STC) units, as defined in Terminology C634, to rate

[1] This practice is under the jurisdiction of ASTM Committee C24 on Building Seals and Sealants and is the direct responsibility of Subcommittee C24.10 on Specifications, Guides and Practices.

Current edition approved Jan. 1, 2022. Published February 2022. Originally approved in 1979. Last previous edition approved in 2019 as C919 – 19. DOI: 10.1520/C0919-22.

[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 Superintendent of Documents, U.S. Government Printing Office.

[4] Available from International Code Council (ICC).

the sound transmission properties of walls, ceilings, and floors. The STC is determined in accordance with Classification E413. The test data are obtained in accordance with Test Methods E90 for laboratory conditions and E336 for field conditions.

5.2 Various building and other governmental adopted codes and high-performance design guides identify minimum requirements for STC.

5.2.1 The International Building Code (IBC) has minimum requirements for the STC of common interior walls, partitions, and floor and ceiling assemblies between adjacent dwelling units or between dwelling units and adjacent public areas of a building, such as halls, corridors, stairs, or service areas. This section also includes requirements for penetrations or openings in these assemblies, including piping and electrical devices, to be sealed, lined, insulated, or otherwise treated to maintain the required ratings.

5.2.2 Additionally, the department of Housing and Urban Development (HUD) has the following standard for STC performance of various housing units: HUD Minimum Property Standards for Housing, Section 4910.1.

6. Purpose of Sealing Openings

6.1 Fig. 1 illustrates examples of how sound travels through unsealed joints, voids, and penetrations in walls and how sealing them will improve sound transmission loss. Options for sealing joints, voids, and penetrations include the use of liquid applied sealants, precured sealants, adhesive backed tapes, films, membranes, joint compound, or aerosol foam sealants.

6.2 The effect of unsealed joints, voids, and penetrations on the STC rating of partition walls is illustrated in Fig. 2. The sample wall example, with an STC rating of 40 that has openings that total 9 cm^2 (1.4 $in.^2$) will have its STC reduced to 36.

7. Positioning of Sealants

7.1 Fig. 3 illustrates placement of liquid-applied sealants to improve the STC rating from a value of 29 to a value of 53. Note that two properly placed sealants are sufficient and sealing beyond that is unnecessary.

8. Application of Sealants

8.1 Fig. 4 illustrates typical liquid-applied sealant applications. Additional sealant application information can be obtained from Guide C1193 and manufacturer's literature for specific products and applications.

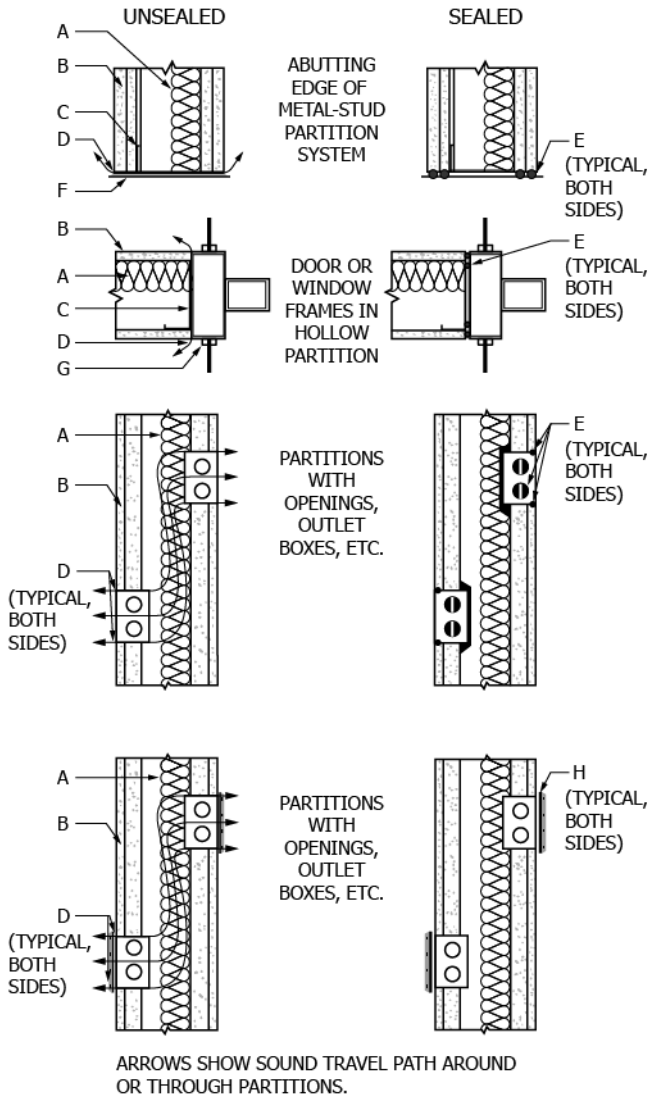

FIG. 1 Examples of Achieving an Effective Sound Barrier and Maintaining the Designed STC Value of Partition Systems

9. Types of Sealants

9.1 *Precured Sealants*—Precured sealants include a wide variety of gaskets and tapes, and foamed shapes that have constant dimensions. These materials are effective sound seals when the tolerances for joint, void, or penetration opening can be accurately predicted and installed within those tolerances. A varying opening width along its length, which exceeds those tolerances, will cause the gasket, tape, or foamed shape to have difficulty in maintaining a proper seal at all points with the constant compression that is necessary to effect a seal. Precured sealants in the form of pads have proven to be effective for sealing electric, telephone, television, and other types of jack and back boxes.

9.2 *Non-Sag Sealants*—These liquid-applied sealants can conform to the wide range of sizes encountered in joints, voids, and penetrations especially those that have tolerances exceeding those applicable for precured sealants. The following types are available:

9.2.1 *Nondrying, Nonhardening, Nonskinning Sealants*—These types of sealants have proven to be effective in reducing