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Standard Guide for Understanding and Using Information Related to Installation of Firestop Systems[1]

This standard is issued under the fixed designation E3157; 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.

INTRODUCTION

This guide should[2] increase the awareness of information and approaches associated with installing *firestop systems*. Various building trades (also known as construction trades) create *openings* (breaches or penetrations) in *fire-separating elements* to accommodate the installation of existing or future *penetrating items* such as pipes, ducts, wires, etc. The materials and methods of construction used to seal and protect *openings* created in *fire-separating elements* must not reduce its existing fire-resistance rating. Multiple building trades are sometimes involved with the process of restoring the fire-resistance rating of the *fire-separating element*. Often the building trade (for example, firestop contractor) responsible for restoring the fire-resistance rating of the *fire-separating element* did not create the *opening*. This guide is intended to help identify and alleviate problems as well as misunderstandings associated with the installation of *firestop systems*. This guide is intended to provide information to those that create the *opening*, install the *penetrating item* through the *opening*, install *firestop materials* for the *opening*, and those charged with the inspection of the *firestop system* during and after installation. This guide proposes a series of options or instructions that offer direction without recommending a definite course of action for the installation of *firestop systems*.

1. Scope

1.1 This guide is a compendium of information related to installing *firestop systems* in *fire-separating elements*. This guide is intended to be used to increase industry knowledge of national and international testing requirements, code prerequisites, and other supplemental tests that may be specified, which can affect the installation and performance of *firestop systems*.

1.2 This guide relates to the use of *firestop systems* tested, or evaluated, to Test Method E814 and other test methods addressing the same specific subject matter, such as CAN/ULC-S115; EN 1366-3; IMO Resolution MSC.307(88), FTP Code; IEEE 634; ISO 10295-1; UL 1479; etc.

1.3 This guide also addresses the use of *firestop systems* tested or evaluated to Test Methods E119 or other test methods that use a *firestop system* as a component of a typically larger test assembly, such as AS 1530.4; BS 476-21; BS 476;[3] CAN/ULC-S101; ISO 834;[4] NFPA 251; UL 263; etc.

1.4 This guide discusses the installation of *firestop systems* in *membrane penetrations* and *through penetrations*. The installation is typically performed by a firestop contractor (also known as a firestop installer or an installer). However, the quality of the installation is based on the information provided to the firestop contractor as well as the expertise and competence of the firestop contractor. A lack of information in the test report, *listing*, *manufacturer's instructions*, or project documents can be the cause of a deficient installation.

1.5 The term "*firestop system*" refers to and includes both a *membrane-penetration firestop system* and *through-penetration firestop system*.

1.6 Information in this guide is applicable to *firestop systems* that accommodate single or multiple *penetrating items*.

1.7 This guide does not address the design aspects of locating and defining the dimensions of an *opening*; or the method to create the *opening*; or the inspection of the *penetrating item* prior to *firestop material* installation. However,

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[2] "Should" is used to indicate that a provision is not mandatory but is recommended as good practice.

[3] In this guide, BS 476–21 and BS 476–22 are collectively referred to as BS 476.

[4] In this guide, ISO 834-1, ISO 834-4, ISO 834-5, ISO 834-6, ISO 834-8, and ISO 834-9 are collectively referred to as ISO 834.

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locating and defining the dimensions of an *opening* and the method to create the *opening* are critical to a *firestop system*'s installation.

1.8 This guide does not address all the test methods needed to address proper performance of all *firestop systems* or *firestop materials*.

NOTE 1—For example, IEEE 848 provides information on the ampacity derating of cables that are protected by *firestop systems* using IEEE 835 as baseline information.

1.9 This guide does not address all the test methods needed to address proper performance of *firestop systems* in all installations. For a specific application of a *firestop system* one or more of the following are consulted when available:

1.9.1 The *firestop system*'s test report or *listing*;

1.9.2 The *manufacturer's instructions* when they are not in conflict with the *firestop system*'s test report or *listing*; or

1.9.3 A *judgment* with justifiable technical rationale prepared based on a *firestop system*'s test report or *listing*.

1.10 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.11 *The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.*

1.12 *This guide offers an organized collection of information or a series of options and does not recommend a specific course of action. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this guide may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

1.13 Fire standards, other than ASTM standards, are referenced in this document. The following caveat applies to all fire standards referenced in this guide. *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests.*

1.14 *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.*

1.15 *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:*[5]

C717 Terminology of Building Seals and Sealants

E84 Test Method for Surface Burning Characteristics of Building Materials

E119 Test Methods for Fire Tests of Building Construction and Materials

E136 Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 °C

E176 Terminology of Fire Standards

E631 Terminology of Building Constructions

E814 Test Method for Fire Tests of Penetration Firestop Systems

E1529 Test Methods for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies

E1966 Test Method for Fire-Resistive Joint Systems

E2032 Practice for Extension of Data From Fire Resistance Tests Conducted in Accordance with ASTM E 119

E2174 Practice for On-Site Inspection of Installed Firestop Systems

E2226 Practice for Application of Hose Stream

E2307 Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus

E2393 Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers

E2750 Guide for Extension of Data from Penetration Firestop System Tests Conducted in Accordance with ASTM E814

E2785 Test Method for Exposure of Firestop Materials to Severe Environmental Conditions

E2786 Test Methods for Measuring Expansion of Intumescent Materials Used in Firestop and Joint Systems

E2837 Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies

E2923 Practice for Longevity Assessment of Firestop Materials Using Differential Scanning Calorimetry

E3021/E3021M Guide for Evaluating the Relative Effectiveness of Building Systems to Resist the Passage of Products of Combustion Based on the Aggregation of Leakage Rates

E3037 Test Method for Measuring Relative Movement Capabilities of Through-Penetration Firestop Systems

[5] 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.