



Designation: E3385 – 24

Standard Practice for On-Site Inspection of Fire Resistive Duct Systems¹

This standard is issued under the fixed designation E3385; 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 covers a standard set of procedures for inspecting and reporting on the installed fire resistive duct systems.

1.2 This practice establishes procedures to inspect products and systems, including methods for field verification and inspection.

1.3 This practice provides an inspector and inspection body, various methods to verify that required systems have been installed in accordance with the inspection document.

1.4 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.

1.5 The text of this standard references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *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

E119 Test Methods for Fire Tests of Building Construction and Materials

¹ This practice is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.21 on Serviceability.

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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.

E176 Terminology of Fire Standards

E631 Terminology of Building Constructions

E699 Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components

E2174 Practice for On-Site Inspection of Installed Firestop Systems

E2336 Test Methods for Fire Resistive Grease Duct Enclosure Systems

E2816 Test Methods for Fire Resistive Metallic HVAC Duct Systems

2.2 ISO Standards:³

ISO/IEC 17020 Conformity assessment – Requirements for the operation of various types of bodies performing inspection

ISO/IEC 17065 Conformity assessment – Requirements for bodies certifying products, processes and services

2.3 Other Standard:⁴

UL 2221 Standard for Tests of Fire Resistive Grease Duct Enclosure Assemblies

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this practice and associated with fire issues, refer to the definitions contained in Terminology **E176**.

3.1.2 For definitions of terms used in this practice and associated with building issues, refer to the definitions contained in Terminology **E631**.

3.1.3 When there is a conflict between Terminology **E176** and Terminology **E631** definitions, Terminology **E631** definitions shall apply.

NOTE 1—There are existing definitions for general concepts related to inspection are as follows:

3.1.4 *authorizing authority (AA), n*—the designated person, or organization, or their duly authorized representative, charged with the administration and enforcement of the provisions of this inspection document.

³ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

⁴ Available from Underwriters Laboratories (UL), UL Headquarters, 333 Pfingsten Road, Northbrook, IL, 60062, <http://www.ul.com>.

3.1.4.1 *Discussion*—Examples of the AA include the responsible architect, engineer, building owner, or their representative.

3.1.5 *authority having jurisdiction (AHJ), n*—the designated authority, or their duly authorized representative, charged with the administration or enforcement, or both, of the applicable code including, but not limited to, the local fire code or building code, or both.

3.1.6 *fire resistance, n*—the ability of a material, product, or assembly to withstand fire or give protection from it for a period of time.

3.1.6.1 *Discussion*—As applied to elements of buildings, fire resistance is characterized by the ability to confine a fire or to continue to perform a given structural function, or both. More specific examples of this ability include retention of stability (loadbearing capacity), integrity, or thermal insulation.

3.1.7 *fire resistance rating, n*—a measure of the elapsed time during which a material, product, or assembly continues to exhibit fire resistance under specified exposure conditions.

3.1.7.1 *Discussion*—This term is defined because it is used in codes. As applied to elements of buildings, it is commonly measured by the methods and to the criteria defined in Test Method E119.

3.1.8 *fire resistive, adj*—having fire resistance.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *design listing, n*—a publicly available document created by an approved agency that is an OSHA approved Nationally Recognized Testing Laboratory (NRTL) or an ANAB accredited certification laboratory or other accepted agency. The approved agency shall be a technically qualified, independent, third-party agency (1) that contains a published fire resistance rating and (2) that describes the building element, the application method, and the materials and installation methods needed to achieve the published rating.

3.2.1.1 *Discussion*—Design listings are normally created by ISO/IEC 17065 agencies because these agencies monitor the on-going production of the fire resistive materials.

3.2.2 *installation contractor, n*—a company that installs fire resistive duct systems.

3.2.2.1 *Discussion*—The application of fire resistive systems is intended to be in compliance with the inspection document.

3.2.3 *inspection body, n*—an agency⁵ engaged in field application assessments of fire-resistive materials.

3.2.3.1 *Discussion*—The International Building Code® uses the term “approved agency,” which is an agency engaged in one or more of the following activities: testing, inspection, or listing and labeling. An approved agency can be a testing laboratory that performs the test, a certification body that lists and labels a product, or an inspection body that inspects the product.

3.2.3.2 *Discussion*—An ISO/IEC 17020 Type A inspection body is independent and not linked to, or part of, a legal entity that is engaged in any activities that may conflict with their

independence of judgment and integrity in relation to their inspection activities. A possible conflict for an inspection body is assessing an installation where the inspecting body sold material, is the building owner, or might be a competitor of the installation contractor, manufacturer, or supplier.

3.2.3.3 *Discussion*—The International Building Code® defines an “approved agency” as “An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification where such agency has been approved by the building official.”

3.2.4 *inspection document, n*—any information provided to the inspector by the AA that is to be used as the basis for the inspection process.

3.2.4.1 *Discussion*—This information includes, but is not limited to, project specifications, construction drawings, design listings, judgments, manufacturer’s installation instructions, and other relevant documentation.

3.2.5 *inspection form, n*—a document created by the inspector or the inspection agency that is used to record information obtained during the inspection(s).

3.2.6 *inspector, n*—an individual meeting the qualifications set forth in this document and who performs the inspection of fire resistive materials.

3.2.7 *judgment, n*—an evaluation of a field condition, that is produced by a qualified individual or organization, which does not conform to an existing design listing.

3.2.7.1 *Discussion*—The purpose of a judgment is to determine whether a field condition, when fire-resistance tested, will meet the performance requirements of the specified test method and can be classified as a fire resistance rated assembly.

3.2.7.2 *Discussion*—Judgments are expected to be issued by a manufacturer or an accredited testing laboratory on the basis of an appropriate combination of engineering principles and testing.

3.2.7.3 *Discussion*—A judgment is commonly referred to as an “engineering judgment” or “EJ” in the fire resistance industry. These judgments are not always issued by engineers.

3.2.7.4 *Discussion*—Some AHJs allow a judgment by the manufacturer if there is no tested and listed system for the non-typical condition; others do not. Most AHJs will allow judgments by accredited testing laboratories.

3.2.8 *listing label, n*—identification applied to the product that includes the name of an ISO/IEC 17065 certification body indicating that a representative sample of the product or material has been tested and evaluated by the certification body.

3.2.9 *non-conformance, n*—failure of a fire resistive duct system to meet specified criteria in the design listing or judgment contained in the inspection document.

3.2.9.1 *Discussion*—A non-conformance can occur daily and must be recorded and reported for correction.

4. Summary of Practice

4.1 This practice identifies fire resistive duct systems to be assessed, subject to the inspection procedures outlined in this practice.

⁵ <http://www.merriam-webster.com/dictionary/agency>.

4.2 This practice identifies the methods of field assessment of fire resistive duct systems.

4.3 This practice provides the minimum information required to verify compliance of installed fire resistive duct system with the inspection document.

4.4 This practice provides the necessary information that is to be used in an inspection report outlined in Section 13.

5. Significance and Use

5.1 This practice provides a standard set of procedures that are to be followed when conducting and reporting on inspections of installed fire resistive duct systems.

5.2 This practice provides a means to verify compliance of the installed fire resistive duct system to the inspection document.

5.3 This practice does not provide a basis for selecting a design listing, the installation contractor, products, or any other material, service, or company.

5.4 This practice does not establish any performance criteria of the inspected fire resistive duct systems.

6. Qualifications

6.1 *Inspection Body:*

6.1.1 The inspection body and its inspector(s) shall be acceptable to the AA and AHJ.

6.1.2 The inspection body shall employ inspectors that are technically competent as related to inspections of fire resistive duct systems.

6.1.3 The inspector(s) shall meet at least one of the following criteria:

6.1.3.1 Meet the criteria contained in Specification E699 for agencies involved in quality assurance;

6.1.3.2 Have a minimum of two years of experience in construction field inspections and have education, credentials, and experience acceptable to the AA; or

6.1.3.3 Be a quality assurance agency acceptable to the AHJ.

6.2 *Conflicts of Interest and Documentation:*

6.2.1 The inspection body and inspector shall be completely independent of, and divested from, the installation contractor, contractor, manufacturer, or supplier of any material being inspected.

6.2.2 The inspection body and inspector shall not be a competitor of the installation contractor, manufacturer, or supplier of any material being inspected.

6.2.3 The inspection body shall submit to the AA a Certificate of Accreditation from an accreditation body that documents compliance as inspection body accredited to ISO/IEC 17020 Type A verifying compliance with 6.1.2.

6.2.4 The inspection body shall submit notarized statements to the AA assuring compliance with 6.2. The inspection body shall make a written submission to the AA requesting acceptance. If accepted, the AA shall deliver written confirmation of acceptance to the inspection body.

7. Inspection Document

7.1 All information contained in the inspection document shall be submitted to and accepted by the AA and AHJ.

7.2 The inspection body and AA shall be responsible for ensuring that the inspection document does not contain conflicting information.

7.3 The AA shall provide the inspection body with a complete inspection document at least ten (10) working days prior to beginning the inspection process.

7.4 The inspection body shall review all information contained in the inspection document prior to conducting any inspection.

7.5 When the inspection body believes that the inspection document contains (1) conflicting information; or (2) documentation that the inspection body believes is insufficient to perform the inspection, the inspection body shall submit written notification of the potential conflict or insufficiency to the AA. The inspection body shall obtain written clarification from the AA before conducting any inspection.

7.6 Design listings shall be provided by the AA for every fire resistive duct system as part of the inspection document, which is to be used as a reference document against which to assess the installation.

7.7 When no design listing exists for a particular application, a judgment issued by the product manufacturer or in concert with the manufacturer by a knowledgeable registered Professional Engineer, Fire Protection Engineer, or accredited testing laboratory shall be provided as a reference against which to compare and inspect the installation. Every judgment issued shall be acceptable to the AA and AHJ.

8. Materials

8.1 The inspector shall verify that the materials and systems used for the fire resistive duct system have been tested in accordance with the specified test standard in the fire resistive duct system and are listed and labeled for the use intended.

NOTE 2—Listed and labeled refers to materials, devices, or assemblies that have been tested by an accredited testing laboratory after which the test results and description of the materials, devices, or assemblies are published by an accredited certification body and the materials, devices, or assemblies bear a listing label. The design listing will specify which materials require a label, and any other generic materials required. Generic, non-labeled materials are only required to meet the material specifications or description provided in the design listing, or both.

NOTE 3—Examples of standards used may include but are not limited to Test Methods E2336, E2816, or UL 2221.

8.2 All materials shall bear a listing label as defined in 3.2.8. Manufacturer's container labels shall include the manufacturer's name, product name, and product description. Other components of the fire resistive duct system shall also be identifiable by labeling or other method approved by the AHJ.

8.3 All materials shall be exactly as identified on the inspection documents.

8.4 All materials used in fire resistive duct systems shall have been tested or evaluated as part of the system described in the design listing or judgement in accordance with the specified