

NFPA®

105

Standard for
Smoke Door Assemblies and
Other Opening Protectives

2022



NFPA® 105

Standard for Smoke Door Assemblies and Other Opening Protectives

2022 Edition



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NFPA® 105

Standard for

Smoke Door Assemblies and Other Opening Protectives

2022 Edition

This edition of NFPA 105, *Standard for Smoke Door Assemblies and Other Opening Protectives*, was prepared by the Technical Committee on Fire Doors and Windows and acted on by the NFPA membership during the 2021 NFPA Technical Meeting held June 14–July 2. It was issued by the Standards Council on August 26, 2021, with an effective date of September 15, 2021, and supersedes all previous editions.

This edition of NFPA 105 was approved as an American National Standard on September 15, 2021.

Origin and Development of NFPA 105

This publication is the result of a multiyear project by the Technical Committee on Fire Doors and Windows and is based on the acknowledgment that smoke is the principal killer in destructive fires. Historically, fire doors have been permitted to have such clearances and deflections as would permit the passage of relatively great quantities of smoke. Those fire doors, when properly installed, have proven to be adequate barriers against the passage of fire, but improvement was needed to protect against the passage of smoke.

The first (1985) edition of NFPA 105 was a recommended practice and introduced parameters for door performance that would limit smoke spread through a door opening.

The third (1993) edition incorporated new information recognizing that smoke control doors in buildings protected by automatic sprinklers would have substantially lower pressures created by a potential fire.

The 1999 edition included modifications to address the pressure differentials caused by stack effect in elevator hoistways.

The 2003 edition incorporated editorial and formatting updates to comply with the *Manual of Style for NFPA Technical Committee Documents*, as well as formatting requirements for converting from a recommended practice to a standard. The 2003 edition also included significant modifications to Chapter 4 on installation and testing requirements and to Chapter 5 on maintenance requirements. Annex A contained a considerable amount of new and updated information.

The 2007 edition expanded the scope of the document to include smoke dampers. The title of the document was revised, and new chapters on the installation, inspection, testing, and maintenance of smoke dampers were provided. Other technical changes addressed the retention of maintenance records for smoke door assemblies.

The 2010 edition included modifications to smoke damper inspection and testing requirements. The title of the document was also revised.

The 2013 edition added references to NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, for the inspection and testing requirements of smoke door assemblies. Other technical changes addressed the inspection and testing of smoke dampers and labeling of smoke damper access panels.

The 2016 edition of NFPA 105 represented a significant expansion and update of the document.

For consistency with NFPA 80 and to allow for a more user-friendly document, a new chapter was added: Chapter 6, Swinging Doors, which contained provisions specific to the installation of side-hinged and pivoted swinging smoke door assemblies. Provisions for smoke dampers were moved to a new Chapter 7, Installation, Testing, and Maintenance of Smoke Dampers. Additional chapters will be added in future editions of NFPA 105 to address requirements for other specific types of smoke doors and opening protectives.

Also for consistency with NFPA 80, the inspection, testing, and maintenance provisions for smoke door assemblies in Chapter 5 were expanded to address multiple types of smoke doors as well as three types of testing — operational, acceptance, and periodic. A new chapter, Chapter 8, Smoke Protective Curtain Assemblies, addressed the installation, inspection, testing, and maintenance of smoke-protective curtain assemblies used to protect vertical openings. Significant technical changes were also added regarding the acceptance and periodic testing of smoke dampers. Finally, new definitions for *qualified person* and *smoke-protective curtain assembly* were added, along with updates to referenced publications to maintain the requirements and application of NFPA 105 current with industry trends and practices.

Changes for the 2019 edition of NFPA 105 focused primarily on provisions for smoke dampers. The new 7.3.1.2 required that the smoke damper manufacturer's installation and maintenance instructions be maintained on site for new smoke damper installations. Requirements in Chapter 7 for the inspection, testing, and maintenance of smoke dampers were updated with the addition of 7.6.3.3 on a remote inspection method. A new 7.6.2.3 was added to clarify the application of inspection requirements for single inaccessible dampers. New requirements were added to Section 7.5 to further clarify and update the process for smoke damper acceptance testing. A new opening protective that applied to smoke-protective curtain assemblies for hoistways was addressed in the new Chapter 9. A new definition was added to Chapter 3 to describe a smoke-protective curtain assembly for hoistways.

For the 2022 edition, the new 1.3.3 clarifies that the standard applies to inspection, testing, and maintenance of all types of smoke-rated opening protectives; new definitions of *annual frequency* and *corridor damper* are provided in Section 3.3; Chapter 7 is revised to include corridor dampers, specify listing requirements, add inspection and testing documentation requirements, clarify that smoke damper inspection and testing must be completed by a qualified person, and enhance damper field modification requirements; and Section 9.1 is revised for testing and identification of smoke-protective curtain assemblies for hoistways. Referenced publications and extracts also have been updated.

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2022 Edition

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A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced and extracted publications can be found in Chapter 2 and Annex C.

Chapter 1 Administration

1.1 Scope. This standard shall prescribe minimum requirements for smoke door assemblies for use in providing safety to life and protection of property from smoke.

1.2* Purpose. The purpose of this standard shall be to provide a means to restrict the movement of smoke through door assemblies in order to maintain a tenable environment.

1.3* Application. This standard shall regulate the installation, maintenance, and testing of smoke door assemblies.

1.3.1* This standard shall regulate smoke door assemblies that are intended to restrict the passage of smoke at temperatures up to 400°F (204°C).

1.3.2* This standard shall not regulate elevator hoistway doors.

1.3.3* This standard shall regulate the periodic inspection, testing, and maintenance of all types of smoke-rated opening protectives.

1.4 Retroactivity. This standard is based on product and engineering practices recognized as acceptable at the date of issue. Therefore, the provisions of this standard are not intended to be applied retroactively to installations that were in compliance at the time of installation.

1.5 Equivalency.

1.5.1 This standard shall not prohibit the development of new, modified, or improved devices that meet the intent of these requirements. It shall be the responsibility of the manufacturer to furnish the information necessary to update the requirements pertaining to such new and improved devices.

1.5.2 For devices not described in this standard, the authority having jurisdiction (AHJ) shall request descriptive information from manufacturers that is provided by a testing laboratory concerning acceptable methods for satisfactory field installation based on fire tests and engineering studies for operation and maintenance considerations, where applicable.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 72®, *National Fire Alarm and Signaling Code*®, 2022 edition.

NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2022 edition.

NFPA 92, *Standard for Smoke Control Systems*, 2021 edition.

NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, 2017 edition.

2.3 Other Publications.

2.3.1 ASME Publications. American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, 2016.

2.3.2 BHMA Publications. Builders Hardware Manufacturers Association, 355 Lexington Avenue, 15th floor, New York, NY 10017.

ANSI/BHMA A156.1, *Standard for Butts and Hinges*, 2016.

ANSI/BHMA A156.4, *Door Controls — Closers, Grade 1*, 2019.

2.3.3 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 10B, *Fire Tests of Door Assemblies*, 2008, revised 2015.

UL 10C, *Positive Pressure Fire Tests of Door Assemblies*, 2016.

UL 555, *Fire Dampers*, 2016.

UL 555S, *Smoke Dampers*, 2016.

UL 1784, *Air Leakage Tests of Door Assemblies*, 2015.

2.3.4 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.