

NFPA®

82

Standard on Incinerators and Waste and Linen Handling Systems and Equipment

2019



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NFPA® 82

Standard on

Incinerators and Waste and Linen Handling Systems and Equipment

2019 Edition

This edition of NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment*, was prepared by the Technical Committee on Incinerators and Waste Handling Systems. It was issued by the Standards Council on November 5, 2018, with an effective date of November 25, 2018, and supersedes all previous editions.

This edition of NFPA 82 was approved as an American National Standard on November 25, 2018.

Origin and Development of NFPA 82

This standard was first adopted by the NFPA in 1948 on recommendation of the Committee on Field Practice. In 1953, a completely revised edition of the text on incinerators was prepared by a representative subcommittee and adopted by the NFPA on recommendation of the Committee on Building Construction. Responsibility for the subject of incinerators was turned over to the Committee on Chimneys and Heating Equipment in 1956. Revised editions were adopted in 1955, 1958, 1960, 1969, 1970, 1971, and 1972. The original 1948 text covered both rubbish handling and incinerators; the 1953, 1955, 1958, and 1960 revisions covered only incinerators. In the 1960 edition, incinerators and rubbish handling were covered by separate standards, NFPA 82, *Standard on Incinerators*, and NFPA 82A, *Standard for Rubbish Handling*, respectively, with NFPA 82A remaining unchanged from the 1948 edition. In the 1969 edition, the subject of rubbish handling was included with incinerators, and NFPA 82A was discontinued as a separate standard. The 1977 edition was expanded to include linen handling systems, and the 1983 edition represented a partial revision, which was mainly editorial.

The 1990 edition contained minor revisions to Chapters 1 and 2, including a minor change to the Scope section. Chapters 3 and 4 were completely revised, and a new Appendix A was added to provide technical information to facilitate the selection of chimney materials for handling saturated and corrosive gases. The entire section on domestic incinerators was deleted from the 1990 edition.

For the 1994 edition, Chapters 3 and 4 were combined into one chapter (new Chapter 3). Limited-combustible construction was recognized by a new definition and by a new exception that allowed limited-combustible construction for a gravity chute enclosure where a building is protected throughout by a supervised automatic sprinkler system. Also, new Chapters 4 and 7 were added to address waste handling systems other than chute systems and waste processing equipment other than compactors.

The 1999 edition clarified that NFPA 82 does not apply to one- and two-family residential structures. Chapter 3 was modified to allow for a maximum 45-degree chute offset above the top-loading door. Additionally, Chapter 3 was modified to reduce the minimum linen chute size to 20 in. and to reduce the termination height of chute venting to 3 ft above the roof of the building. Chapter 5 was also modified to delete the requirements associated with domestic compactors.

The 2004 edition was revised and restructured to conform to the *Manual of Style for NFPA Technical Committee Documents*. Technical changes included clarification of the difference between discharge doors serving waste chutes and those serving linen chutes and clarification of the dimensional requirements for service opening rooms.

The 2009 edition contained a revision to the scope to include maintenance requirements for incinerators and waste and linen handling systems and equipment. A new Chapter 10 was also added to address the maintenance requirements spelled out in the scope. Chapter 8 was revised to include recyclables storage rooms. New definitions for *gravity chute intake door*, *pneumatic chute loading door*, *general access chute*, and *limited access chute* were added to Chapter 3.

For the 2014 edition, the committee revised the use of the terms *fire resistance rating* and *fire protection rating* to be more consistent with how they are defined and used within other NFPA documents. All uses of the terms *loading*, *service opening*, and *service loading* were changed to *intake* for consistency within the document and to match its use within the industry. The definition for *chute discharge door* was added to differentiate between the types of doors used in chute operations. The committee also added the use of a fire damper in lieu of a fire door, which reflects current practice. A fire damper provides for the level of protection equivalent to a fire door, but it eliminates much of the maintenance concerns of a fire door. A fire damper also provides a much more effective seal at the opening than the standard, horizontal sliding fire door used at the bottom of most waste chutes. The fire protection rating for the openings in the chute enclosure were also clarified to be consistent with other changes during that revision. The requirements for external fed waste compactors were expanded by adding a definition to clarify how an external waste compactor is different from a waste compactor and by adding specific requirements in Chapter 8 to address the risk of fire and smoke spread from the compactor back into the building, which is the main hazard of these type of compactors. Requirements were added for decommissioning a chute to give users a method to remove the chute door while maintaining the rating of the chute enclosure. In addition, references were updated and other editorial changes were approved for consistency with the *Manual of Style for NFPA Technical Committee Documents*.

For the 2019 edition, the committee has added definitions for *combustible material*, *noncombustible material*, and *spark arresters* to provide clarity to the context in which those terms are used and for consistency with NFPA 211. The revisions in Chapter 5 focus on spark arresters as a method of preventing spark and fly ash from exiting chimneys. Chapter 6 has been revised to remove gaskets as a requirement for chute doors, following AHJs requiring gasket manufacturers to modify listed chute doors in a manner inconsistent with the listing that resulted in chute doors not seating properly. Other revisions to the 2019 edition include updating references and editorial changes for compliance with the *Manual of Style for NFPA Technical Committee Documents*.

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This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the fire-safe installation, inspection, maintenance, and use of incinerators, compactors, converters, other waste handling systems and laundry (linen) handling systems.

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

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

Chapter 1 Administration

1.1 Scope.

1.1.1 This standard covers requirements for the installation, maintenance, and use of waste and recyclables storage rooms, containers, handling systems, incinerators, compactors, and linen and laundry handling systems.

1.1.2 This standard does not include design criteria for the purpose of reducing air pollution. For such criteria, consult the authorities having jurisdiction.

1.1.3 The requirements in this standard shall not apply to one- or two-family residential structures.

1.2 Purpose. (Reserved)

1.3* Application. This standard shall be applied to new construction and new equipment, as determined by the authority having jurisdiction (AHJ).

1.4 Retroactivity. This standard shall not require the alteration or replacement of existing construction or equipment currently in use, provided that the owner establishes appropriate administrative, maintenance, and training programs that provide equivalent safety.

1.5 Equivalency. Nothing in this standard is intended to prevent the use of new methods or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard.

1.5.1 Technical documentation shall be submitted to the AHJ to demonstrate equivalency.

1.5.2 The system, method, or device shall be approved for the intended purpose by the AHJ.

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 13, *Standard for the Installation of Sprinkler Systems*, 2019 edition.

NFPA 31, *Standard for the Installation of Oil-Burning Equipment*, 2016 edition.

NFPA 54/ANSI Z223.1, *National Fuel Gas Code*, 2018 edition.

NFPA 58, *Liquefied Petroleum Gas Code*, 2017 edition.

NFPA 70®, *National Electrical Code®*, 2017 edition.

NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2019 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2018 edition.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*, 2019 edition.

NFPA 5000®, *Building Construction and Safety Code®*, 2018 edition.

2.3 Other Publications.

2.3.1 ASHRAE Publications. ASHRAE, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305.

ASHRAE *Handbook — HVAC Systems and Equipment*, 2012.

2.3.2 ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM C27, *Standard Classification for Fireclay and High-Alumina Refractory Brick*, 1998 (2013).

ASTM C199, *Standard Test Method for Pier Test for Refractory Mortars*, 1984 (2016).

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, 2016a.

ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, 1958 (2016).

2.3.3 Other Publications.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*, 2016 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.4* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.5 Shall. Indicates a mandatory requirement.

3.2.6 Should. Indicates a recommendation or that which is advised but not required.

3.2.7 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards,

including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Chute.

3.3.1.1 General Access Chute. Chute capable of being accessed by the general public with no restriction on use.

3.3.1.2* Gravity Waste or Linen Chute. An enclosed vertical passageway (riser) in a building, used for transferring trash or linen by gravity to a room at the bottom or to an interface to a compactor.

3.3.1.3 Limited Access Chute. Chute not capable of being accessed by the general public with a restriction on use to authorized personnel.

3.3.2 Door.

3.3.2.1 Chute Discharge Door. The door used at the termination of a waste or linen chute of a gravity or pneumatic system.

3.3.2.2 Chute Intake Door. The door used to deposit waste or linen directly into the chute of a gravity or pneumatic system.

3.3.3 External Waste Compactors. A waste compactor that is located outside of a building, but is accessed (i.e., hand-fed) from inside the building by means of an intake door and a hopper.

3.3.4 General Access Chute. See 3.3.1.1.

3.3.5 Gravity Waste or Linen Chute. See 3.3.1.2.

3.3.6* Incinerator. An appliance or combustion chamber for the reduction, by burning, of rubbish, garbage, and other wastes. [211, 2016]

3.3.7 Limited Access Chute. See 3.3.1.3.

3.3.8 Material.

N 3.3.8.1 Combustible Material. Material made of or surfaced with wood, compressed paper, plant fibers, plastics, or other material that can ignite and burn, whether flameproofed or not, or whether plastered or unplastered. [211, 2016]

N 3.3.8.2 Noncombustible Material. A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat; materials that are reported as passing ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, shall be considered noncombustible materials. [211, 2016]

N 3.3.9 Spark Arresters. Screening material or a screening device attached to a chimney termination to prevent the passage of sparks and brands to the outside atmosphere. [211, 2016]

3.3.10 Waste Compactor. A device using electro-mechanical-hydraulic means to reduce the volume of waste and to package it in the reduced condition.

3.3.11 Waste or Linen Conveying Systems.

3.3.11.1 Full Pneumatic. A closed system consisting of loading stations with inner doors and a fire-rated, normally

locked, outer (intake) door; normally closed air damper above the topmost loading station; transport piping, both vertical and horizontal; waste or linen collector; fan with a fan damper; and a central process controller.

3.3.11.2 Gravity Pneumatic Transport System. A combination of a gravity chute and a horizontal pneumatic transport system. The gravity pneumatic system includes gravity chutes with a material discharge valve at the bottom, an air source at or near the bottom of the chute, air control dampers, horizontal piping with a pipe tee to connect to the chute, a collector, and a fan and fan damper.

3.3.12 Waste Processing Systems and Equipment. Devices and processes used to change the physical form or characteristics of waste.

Chapter 4 General

4.1 Opening Protectives. Where required by this standard, openings required to have a fire protection rating shall be protected by approved fire door assemblies that are installed and maintained in accordance with NFPA 80, except as otherwise specified by this standard.

4.2 Fire Resistance Rating. Where a fire resistance rating is required by this standard, it shall be determined in accordance with the requirements of ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, unless another fire resistance test method is specified explicitly.

Chapter 5 Incinerators

5.1 General.

5.1.1 Provision for Auxiliary Fuel.

5.1.1.1 Gas-burning installations shall be in accordance with the applicable provisions of NFPA 54/ANSI Z223.1 and NFPA 58.

5.1.1.2 Oil-burning installations shall comply with NFPA 31.

5.1.1.3 Fuel burners of all incinerators shall be equipped with safety controls that will automatically shut off the fuel supply to the burner in the event the burner fails to ignite or its flame becomes extinguished or in the event of insufficient draft.

5.1.2 Electrical Supply. The electrical supply to an incinerator shall be installed in accordance with NFPA 70.

5.1.3 Air for Combustion and Ventilation.

5.1.3.1 Provision shall be made for an adequate supply of air for combustion and ventilation to enter the room in which an incinerator is located.

5.1.3.2 Fans shall be permitted to be installed to deliver air to the incinerator room, provided they are in operation whenever the incinerator is in use.

5.1.3.3 Rooms in which incinerators are installed shall be furnished air for combustion and ventilation by one of the following means:

- (1) A screened or louvered ventilator opening or other suitable air intake, which, if communicating to other parts of the building, is protected by an approved fire damper
- (2) A duct leading from the incinerator room to the outdoors

- (3) A duct leading to a boiler or furnace room cut off as prescribed in Section 5.3 and provided with sufficient air supply for both rooms

5.1.3.4 The opening or duct specified in 5.1.3.3 shall be sized so as to provide all air requirements, including those for waste combustion, auxiliary fuel combustion, room temperature control, and general area ventilation, where applicable.

5.1.3.5 Air ducts extending to or from an incinerator room through other parts of a building shall be constructed and installed in accordance with NFPA 90A.

5.1.4 Sparks/Fly Ash Protection. Where the nature of the waste being incinerated produces fly ash emissions, the incinerator stacks shall be protected by one of the following:

- (1) Spark arresters installed on incinerator stacks
- (2) A wet scrubber or other emission control system or component installed between the incinerator and the stack such that fly ash cannot pass directly from the incinerator to the stack
- (3) Approved design and control features that prevent the entrainment of fly ash from the incinerator to the stack under all operating conditions

5.1.4.1 Spark Arresters.

5.1.4.1.1 The net free area of the arrester screen shall be not less than three times the net free area of the outlet of the chimney flue it serves.

5.1.4.1.2 The arrester shall have a vertical height of not less than 1.3 times the minimum diameter of the chimney flue or the minimum horizontal dimension of a rectangular chimney flue.

5.1.4.1.3 The arrester shall have a heat- and corrosion-resistant screen equivalent to 19 gauge [1.04 mm (0.041 in.)] galvanized steel or 24 gauge [0.61 mm (0.024 in.)] stainless steel.

5.1.4.1.4 The arrester shall have bolts, rivets, screws, and supporting members made of heat- and corrosion-resistant materials.

5.1.4.1.5 Openings shall not permit the passage of spheres having a diameter larger than 12.7 mm (½ in.) or block the passage of spheres having a diameter of less than 9.5 mm (¾ in.).

5.1.4.1.6 Means shall be provided for securely attaching the spark arrester to the chimney.

5.1.4.1.7 The attachment method shall provide adequate support, preventing the movement or detachment of the arrester during normal operation and designed wind loads.

5.1.4.1.8 The spark screen shall be accessible for cleaning, and the screen shall be removable to allow the cleaning of the chimney flue.

5.1.4.1.9 Where a screen is not removable because it is part of a chimney cap assembly, the assembly shall be removable to allow the cleaning of the chimney flue.

5.1.4.1.10 Spark screens shall be replaceable.

5.1.4.1.11 Where a screen is part of a chimney cap assembly and the assembly is not intended to have the screen removed and/or replaced, the assembly shall be replaceable.