NFPA STANDARDS DEVELOPMENT SITE

SECOND DRAFT REPORT

Released Version Closing Date: October 04, 2023

Complete Instructions

NF[illegible]d on Incinerators and Waste and Linen Handling Systems and Equipment, 2019 Edition

NOTE: All Public Comm

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Chapter 1 Administration

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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 equivaler 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

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2.1 General.

The documents or portions thereof listed in this chapter are referenced within this standard an 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,* 2022 edition.

NFPA 31, *Standard for the Installation of Oil-Burning Equipment,* 2024 edition.

NFPA 54/~~ANSI Z223.1~~ , *National Fuel Gas Code,* 2024 edition.

NFPA 58, *Liquefied Petroleum Gas Code,* ~~2023~~ 2024 edition.

NFPA 70®, *National Electrical Code®,* 2023 edition.

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

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems,* 2024 edition.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel–Burning Appliances,* 2024 edition.

NFPA 5000®, *Building Construction and Safety Code®,* 2024 edition.

SR-1 Hide Legis

2.3 Other Publications.

2.3.1 ASHRAE Publications.

ASHRAE, ~~Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305~~ 180 Technology Parkway, Peachtree Corners, GA 30092 .

ASHRAE *Handbook — HVAC Systems and Equipment,* 2020.

PCs [1]

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 (~~2018~~ 2022).

ASTM C199, *Standard Test Method for Pier Test for Refractory Mortars*, ~~1984 (~~ 2022~~)~~ .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2020~~ 2022 .

ASTM E136, *Standard Test Method for ~~Behavior~~ Assessing Combustibility of Materials ~~in~~ Using a Vertical Tube Furnace at 750°C*, ~~1958 (2019a)~~ 2022 .

2.3.3 UL Publications.

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

UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised 2022.

2.3.4 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, ~~2003~~ 2020 .

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2.4 References for Extracts in Mandatory Sections.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel–Burning Appliances*, 2024 edition.

NFPA 5000 ® , Building Construction and Safety Code ® , 2024 edition.

Chapter 3 Definitions Save As Word Show Revisions/Notes Show PI/PC's Quick Pri

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 thei 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 phrases “standards development process” or “standards development activities,” the term “standards” includes all NFPA standards, includin 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,** 2024]

3.3.7 Limited Access Chute.

See 3.3.1.3.

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3.3.8 Material.

3.3.8.1 Combustible (Material).

A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible. [**5000,** 2024]~~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]~~

3.3.8.2 Limited-Combustible (Material).

See 4.3.2.

PCs [1]

3.3.8.3 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]~~See 4.3.1.

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,** 2024]

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*, or UL 263, *Fire Tests of Building Construction and Materials*.

4.3 Materials

4.3.1* Noncombustible Material.

4.3.1.1

A material that complies with any one of the following shall be considered a noncombustible material:

(1)* The material, 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.

(2) The material is reported as passing ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*.

(3) The material is reported as complying with the pass/fail criteria of ASTM E136 when tested in accordance with the test method and procedure in ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-Shaped Airflow Stabilizer, at 750°C*.

[**5000:** 7.1.4.1.1]

4.3.1.2

Where the term *limited-combustible* is used in this document, it shall also include the term noncombustible. [**5000:** 7.1.4.1.2]

4.3.2* Limited-Combustible Material.

A material shall be considered a limited-combustible material where one of the following is met:

(1) The conditions of 4.3.2.1 and 4.3.2.2, and the conditions of either 4.3.2.3 or 4.3.2.4, shall be met.

(2) The conditions of 4.3.2.5 shall be met.

[**5000:** 7.1.4.2]

4.3.2.1

The material does not comply with the requirements for a noncombustible material in accordance with 4.3.1. [**5000:** 7.1.4.2.1]

4.3.2.2

The material, in the form in which it is used, exhibits a potential heat value not exceeding 3500 Btu/lb (8141 kJ/kg) when tested in accordance with NFPA 259. [**5000:** 7.1.4.2.2]

4.3.2.3

The material shall have a structural base of noncombustible material with a surfacing not exceeding a thickness of ⅛ in. (3.2 mm) where the surfacing exhibits a flame spread index not greater than 50 when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*. [**5000:** 7.1.4.2.3]

4.3.2.4

The material shall be composed of materials that in the form and thickness used neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723 and are of such composition that all surfaces that would be exposed by cutting through the material on any plane would neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723. [**5000:** 7.1.4.2.4]

4.3.2.5

Materials shall be considered limited-combustible materials where tested in accordance with ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter*, at an incident heat flux of 75 kW/m^2 for a 20-minute exposure, and both the following conditions are met:

(1) The peak heat release rate shall not exceed 150 kW/m^2 for longer than 10 seconds.

(2) The total heat released shall not exceed 8 MJ/m^2.

[**5000:** 7.1.4.2.5]

4.3.2.6

Where the term *limited-combustible* is used in this standard, it shall also include the term *noncombustible*. [**5000:** 7.1.4.2.6]

Chapter 5 Incinerators

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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 provide 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, an 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 (⅜ 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.

5.1.4.1.12

Where part of a listed chimney termination system, spark arresters shall be constructed and installed in accordance with the listing.

5.2 Incinerators.

5.2.1 Design and Construction.

The design and construction of the incinerator and all associated components shall be such that, in service, they will not crack, warp, or otherwise fail structurally so as to permit flame passage or emission of combustion gases or sparks into the building.

5.2.1.1

Incinerators shall be built in accordance with the following requirements:

(1) All combustion shall take place within the combustion chamber designed for combustion temperatures.

(2) Combustion shall not take place in breaching or chimneys unless they are designed as combustion chambers.

(3) Incinerators designed for positive pressures shall be gastight.

(4) The combustion chamber, inner walls, roofs, bridges, walls, and curtain walls shall be constructed so as to withstand the combustion temperatures involved and shall maintain their integrity under all operating conditions.

(5) Metal stays, lintels, or other supports shall not be exposed to the interior of the combustio chamber.

(6) An exterior masonry casing shall be reinforced with structural steel framework, and an exterior steel casing shall be reinforced with structural steel members such that the casing will withstand interior thrusts from arches and be capable of supporting all doors and burner equipment.

(7) The steel casing or framework shall be erected and set plumb before any brickwork is done.

(8) Cylindrical outer casings made of steel not less than ¼ in. (6.4 mm) thick shall not be required to be reinforced.

(9) All incinerator structures shall be designed to comply with applicable building codes, and consideration shall be given to the most adverse conditions of seismic, wind, dead, live, moving, concentrated, erection, and thermal loadings; corrosion allowance; or combinations thereof.

(10) Openings shall be provided so that all parts of the incinerator can be cleaned, including the ash pit, the combustion chamber, the passes of separation chambers, and the incinerator flue.

(11) Cleanouts shall be closed by tight-fitting doors or covers, securely latched, or otherwise held in a closed position.

(12) Ash pit and combustion chamber closures and frames shall be of cast iron or equivalent, with the frames securely attached to the incinerator.

5.2.1.2

No part of an incinerator shall be used as a wall, roof, or floor of a building.

5.2.1.3

Incinerators shall be designed with internal insulation or refractory or shall be otherwise protected by location, guard rails, or shields such that all areas or surfaces normally accessible to personnel shall not exceed 71.1°C (160°F).

5.2.1.4

External insulation over incinerator shells shall not be utilized in achieving the temperature specified in 5.2.1.3, since severe thermal damage could result. Handles of operating doors shall not exceed a 4.4°C (40°F) rise for metallic handles and a 15.6°C (60°F) rise for nonmetallic handles.

5.2.1.5

Factory-built incinerators and cremation furnaces shall be labeled, installed, and maintained in accordance with the listing and the manufacturer's instructions.

SR-7 Hide Legis

5.2.1.6 Crematoriums.

5.2.1.6.1

Crematoriums shall be installed and operated according to the manufacturer's specifications.

5.2.1.6.2

The crematorium exhaust stack shall be tested in accordance with the manufacturer, local AHJ, or local regulations.

5.2.1.6.3

Maintenance shall be conducted in accordance with a schedule provided by the manufacturer or developed by the owner or operator.

5.2.2 Explosion Relief.

5.2.2.1

Explosion relief shall be provided.

5.2.2.2

The area of explosion relief shall be not less than 0.09 m^2 (1 ft^2) of relief area for every 3 m^3 (100 ft^3) of primary combustion chamber volume.

5.2.2.3

Where the exhaust chimney will not serve the purpose of explosion relief, a door or panel shal be provided and arranged to allow the door or panel to return to a closed position promptly after pressure has been released.

5.2.2.4

Exhaust stack areas that typically are closed off with valving or stack caps for directing combustion-gas effluent to other process equipment, such as heat recovery boilers, cleanup equipment, or similar installations, shall not be used in the calculation of the explosion venting area specified in 5.2.2.2.

5.2.2.5

Systems equipped with wet ash–type removal modules where a water seal exists between the outside and the incinerator chamber atmosphere and where this water seal does not exceed the equivalent of 1.49 kPa (6 in. water column) and the interconnecting passageway between the internal ash port and external ash removal device is vertically oriented directly beneath the ash port without changes in direction shall be permitted to be considered to offer an explosion relief area for the minimum required area, based on the following:

(1) The internal dimensions of the ash port

(2) The smallest internal dimensions of the connecting and vertical passageway

(3) The normal projected area of the water surface interface

5.2.2.6

Wet ash systems wherein ash is expelled by mechanical devices, necessitating a normal change in direction of ash flow — that is, from vertical to horizontal — shall not be considered to provide an effective explosion relief area.

5.2.2.7

All explosion relief devices shall be oriented on the incinerator chamber so as not to be closer than 90 degrees in side elevation or plan view to the normal operator position.

5.2.2.8

All explosion relief devices shall be placed in areas generally inaccessible to normal personne activities and shall be properly guarded and posted with safety signs on all sides indicating the potential safety hazard of the vent area.

5.2.3 Placement.

5.2.3.1

Incinerators shall be placed on properly designed foundations of masonry or reinforced concrete or on noncombustible material having a fire resistance rating of not less than 3 hours provided such support is independent of the building construction and the load is transferred to the ground.

5.2.3.2

All incinerator combustion chambers shall be elevated above concrete bearing surfaces through the use of pedestals, cradles, skids, or other means to provide a minimum of 101.6 mm (4 in.) clear air circulation space between the concrete bearing surface and the closest surface of the underside of the combustion chamber.

5.2.3.3

Where this elevation is not practical, as in the case of large field-erected incinerators, other equivalent means shall be provided through the use of increased insulation, natural or forced circulation, or other methods acceptable to the AHJ to adequately protect the concrete bearing surfaces from thermal damage.

5.2.4 Clearances.

5.2.4.1

Incinerators shall be installed to provide a clearance to combustible material of not less than 914 mm (36 in.) at the sides and rear, not less than 1220 mm (48 in.) above, and not less than 2.4 m (8 ft) at the front of the incinerator.

5.2.4.2

For an incinerator encased in brick, the clearance to combustible material shall be permitted to be 914 mm (36 in.) above the incinerator and 457 mm (18 in.) at the sides and the rear of the incinerator.

5.2.4.3

A clearance of not less than 305 mm (12 in.) shall be provided from the incinerator to the walls or ceilings of noncombustible construction.

5.2.4.4

Where it is not possible to place combustible material on the outer or upper side thereof, a clearance of not less than 3 in. (76.2 mm) shall be permitted to be provided from commercial and industrial incinerators to walls or ceilings of noncombustible construction.

5.2.4.5

Incinerators that are listed specifically for installation at lesser clearances than those specified in 5.2.4.1 and 5.2.4.2 shall be installed in accordance with the conditions of such listing, provided that, in any case, the clearances shall be sufficient to afford accessibility for firing, cleanout, and any necessary servicing as set forth in 5.2.4.6 through 5.2.4.10.

5.2.4.6

Clearance shall be provided around the incinerator and its appurtenances to facilitate cleaning repairing, and servicing.

5.2.4.7

Clearance shall be provided to allow the cleanout doors to be opened completely so that all parts of the combustion chamber, ash pit, separation chambers, and so forth, can be reached and so that implements used for this purpose can be freely manipulated.

5.2.4.8

All dampers, gates, burners, valves, levers, and so forth, shall be accessible for repair and adjustment or replacement.

5.2.4.9

Structural members shall not be located closer than 406 mm (16 in.) to any part of an incinerator unless permitted by 5.2.4.10.

5.2.4.10

Noncombustible structural members 610 mm (24 in.) wide or less, parallel to the incinerator, shall be permitted to be located as close as 152 mm (6 in.) to the incinerator, provided such members do not reduce accessibility to any moving parts of the incinerator.

5.2.5 Incinerator Charging.

5.2.5.1

A waste charging system and appropriate controls shall be provided to prevent the direct discharge of flames, combustion gases, and heat from the incinerator during waste loading operations.

5.2.5.2

Incinerators that are loaded on a batch basis, during which the charging door is not open while waste combustion is taking place, shall not be required to have a mechanical charging system

5.2.5.3

The combustion chamber of an incinerator shall not be charged through the floor immediately above such incinerator unless the charging chute is designed with dampering and controls tha would prevent the direct passage of combustion products and radiant heat through the chute into the charging room.

5.2.5.4

The charging hood and chute shall be constructed of not less than 12 U.S. gauge steel casing and shall be lined with not less than 114 mm (4½ in.) of firebrick (Type F, medium duty, or the equivalent as defined in ASTM C27, *Standard Classification for Fireclay and High-Alumina Refractory Brick)*.

5.2.5.4.1

This charging hopper shall not exceed 1.8 m (6 ft) in length, measured from the floor opening to the outside of the roof of the incinerator combustion chamber.

5.2.5.5

The charging opening shall be protected by a cover extending beyond the edges of the opening for at least 51 mm (2 in.) on all sides and lined with not less than 63.5 mm (2½ in.) of refractory material.

5.2.5.6

The charging-floor opening shall be located in a room with walls and floor-ceiling assemblies that have a fire resistance rating of not less than 2 hours, with openings protected by an approved self-closing or automatic-closing fire door assembly with a fire protection rating of no less than 3 hours.

5.2.5.6.1

Doors shall be kept closed during the charging operation and at other times, except when waste material is delivered to the room.

5.2.6 Incinerator Residue Removal.

5.2.6.1

A system and appropriate approved measures shall be provided to adequately quench or fully contain, or both, ash residues removed from the incinerator during cleanout operations.

5.2.6.2

These shall include such features as water sprays, a wet quench pit, or a special containment enclosure to enable ash cleanout with minimal exposure to ambient conditions.

5.2.7 Incinerator Rooms for Incinerators.

5.2.7.1

Incinerators shall be enclosed within a room separated from other parts of the building by walls, partitions, floor, and floor-ceiling assemblies constructed of noncombustible material and having a fire resistance rating of not less than 2 hours and used for no other purpose.

5.2.7.1.1

Storage containers of waste material to be burned and building heating equipment shall be permitted to be located in the incinerator room.

5.2.7.2

Door(s) or other openings in rooms containing incinerators that communicate with other areas of the building shall be protected by an approved self-closing or automatic-closing fire door assembly with a fire protection rating of not less than 1½-hours.

5.2.7.3

Automatic sprinklers shall be provided in incinerator rooms in accordance with NFPA 13.

5.3* Chimneys for Incinerators.

5.3.1 General.

5.3.1.1

Chimneys for incinerators shall comply with the provisions of NFPA 211 and with the requirements of this section.

5.3.1.2

The chimney shall serve only the incinerator, unless the chimney construction is acceptable for all devices being served.

5.3.1.3

The chimney shall be designed and proportioned to provide adequate draft for proper operation of the incinerator in accordance with the requirements of the ASHRAE *Handbook — HVAC Systems and Equipment* or other approved methods.

5.3.1.4

The chimneys shall be supported on properly designed foundations of masonry, reinforced portland cement concrete, or reinforced refractory concrete.

5.3.1.5

If incinerator walls or the roof of the combustion chamber support the chimney, they shall be built to support the load imposed.

5.3.1.6

Masonry chimneys shall be permitted to be supported on noncombustible material having a fire resistance rating of not less than 3 hours where such supports are independent of the building construction and the load is transferred to the ground.

5.3.1.7

Listed factory-built chimneys and metal chimneys shall be permitted to be supported by the building structure with liquidtight expansion joints at each support level or with joints of a design such that liquid will drain to the interior of the chimney provided at each support level.

5.3.1.8

Cleanout openings provided in chimneys shall be equipped with ferrous metal doors and frames arranged to remain tightly closed when not in use. A clearance of not less than 914 mm (36 in.) shall be provided between cleanout doors and combustible material.

5.3.1.9

Drains shall be provided at the base of all chimneys to allow the removal of condensed flue products and shall be designed to avoid clogging.

5.3.1.10

Breachings shall be designed or otherwise protected in an approved manner, such as by guard rails or shields, to protect personnel from accidental contact with surfaces that exceed 71.1°C (160°F).

5.3.1.11

External insulation shall not be used on hot breachings.

5.3.2 Factory-Built Medium-Heat Chimneys.

Factory-built medium-heat appliance chimneys shall be listed and labeled and installed in accordance with the conditions of the listing and the manufacturer's instructions.

5.3.3 Metal Chimneys.

5.3.3.1

Metal chimneys shall be properly riveted or welded, securely supported, and constructed in accordance with good engineering practice.

5.3.3.2

Metal chimneys shall be constructed of steel or cast iron. Sheet steel shall have a thickness not less than that indicated in Table 5.3.3.2.

Table 5.3.3.2 Minimum Thickness of Sheet Steel Chimneys

Manufacturer Standard U.S. Gauge Number	Minimum Thickness		Area		Equivalent Round Diameter	
	mm	in.	m^2	$in.^2$	mm	in.
16	1.37	0.054	Up to 0.0994	Up to 154	Up to 356	Up to 14
14	1.75	0.069	0.0999–0.1296	155–201	>356–406	>14–16
12	2.49	0.098	0.1303–0.1638	202–254	>406–457	>16–18
10	3.25	0.128	>0.1638	>254	>457	>18

Note: Regardless of minimum thicknesses in this table, the thickness of sheet metal shall be adequate to meet the requirements of 5.3.3.6.

5.3.3.3

Where secondary combustion temperatures do not exceed 982°C (1800°F), metal chimneys shall be lined with 114 mm (4½ in.) of high-duty, spall-resistant firebrick (as defined in ASTM C27, *Standard Classification for Fireclay and High-Alumina Refractory Brick*) laid in high-duty refractory mortar (as defined in ASTM C199, *Standard Test Method for Pier Test for Refractory Mortars*).

5.3.3.3.1

The lining shall start at the base of the chimney and extend continuously to the top.

5.3.3.3.2*

Equivalent linings of equivalent thickness, such as Class A or better alumina-silica base castable refractories or Class O or better insulating castable refractories, shall be permitted to be used.

5.3.3.4

Where secondary combustion temperatures exceed 982°C (1800°F), metal chimneys shall be lined with 114 mm (4½ in.) of super-duty, spall-resistant refractory brick (as defined in ASTM C27, *Standard Classification for Fireclay and High-Alumina Refractory Brick*) laid in refractory mortar.

5.3.3.4.1

The refractory mortar shall be high-duty for temperatures up to 1500°C (2730°F) and super-duty or better for temperatures up to 1600°C (2910°F).

5.3.3.4.2

The lining shall start at the base of the chimney and extend continuously to the top.

5.3.3.4.3*

Equivalent linings of equivalent thickness, such as Class B or better alumina-silica base castable refractories (as defined in ASTM C27) in accordance with temperature requirements or Class P and Class Q insulating castable refractories (as defined in ASTM C27) in accordance with temperature requirements, shall be permitted to be used.

5.3.3.5

Castable plastic refractories or other refractories shall be permitted to be used in metal chimneys in lieu of firebrick, provided such refractory is of equivalent heat and corrosion resistance.

5.3.3.5.1

Liners made of these refractories shall be supported by anchors made of corrosion-resistant steel capable of supporting the refractory load at 727°C (1500°F).

5.3.3.5.2

The insulating value shall be such that temperatures at the supports shall not exceed this temperature under all firing conditions.

5.3.3.6

Metal chimneys shall be properly riveted, welded, or bolted; securely supported; and constructed in accordance with good engineering practice as necessary to achieve the following conditions:

(1) Strength to resist stresses due to steady or gusting wind loads

(2) Adequate anchoring, bracing, and inherent strength to withstand seismic and wind-induced vibrational stresses

(3) Proper material thickness for durability, considering fuel analysis, gas temperature, and exposure

(4) Security against leakage of flue gases under positive pressure

(5) Allowance for thermal expansion of breaching and vertical sections

5.3.3.7

If a metal chimney extends through any story of a building above that in which the connected incinerator is located, it shall be enclosed in such upper stories within continuous walls that are constructed of noncombustible materials, such as masonry, and that extend from the ceiling of the incinerator room to or through the roof so as to retain the integrity of the fire separations as required by applicable building code provisions.

5.3.3.7.1

The walls shall have a fire resistance rating of not less than 1 hour for chimneys extending through less than four stories, or not less than 2 hours for chimneys extending through four or more stories, and shall conform to the following:

(1) The enclosure shall provide a space on all sides of the chimney sufficient to permit inspection and repair, but in no case shall the space be less than 305 mm (12 in.).

(2) The enclosing walls shall be without openings.

(3) Doorways equipped with an approved self-closing fire door assembly with a fire protection rating of not less than 1 ½ hours shall be permitted to be installed at various floor levels fo inspection purposes.

5.3.4 Masonry Chimneys.

5.3.4.1

Where secondary combustion temperatures do not exceed 982°C (1800°F), masonry chimneys shall be constructed of solid masonry units or reinforced concrete with walls not less than 203 mm (8 in.) thick.

5.3.4.1.1

Such walls shall be lined with 114 mm (4½ in.) high-duty, spall-resistant firebrick (as defined in ASTM C27, *Standard Classification for Fireclay and High-Alumina Refractory Brick*) laid in high-duty refractory mortar (as defined in ASTM C199, *Standard Test Method for Pier Test for Refractory Mortars*).

5.3.4.1.2

The lining shall start at the base of the chimney and extend continuously to the top.

5.3.4.2

Where secondary combustion temperatures exceed 982°C (1800°F), masonry chimneys shall be constructed with double walls of solid masonry units or reinforced concrete.

5.3.4.2.1

Each wall shall not be less than 203 mm (8 in.) thick with an air space of not less than 51 mm (2 in.) between them.

5.3.4.2.2

The inside of the interior wall shall be lined with 114 mm (4½ in.) super-duty, spall-resistant firebrick laid in super-duty refractory mortar (as defined in ASTM C27).

5.3.4.2.3

The lining shall start at the base of the chimney and extend continuously to the top.

5.3.4.3

Masonry chimneys shall be proved airtight by a smoke test after erection and before being put into service.

5.3.5 Chimney Clearances.

5.3.5.1

Listed chimneys shall be installed in accordance with the conditions of the manufacturer's instructions for clearances.

5.3.5.1.1

Exposed portions of chimneys or breachings that can be touched shall be so designed that maximum surface temperatures shall not exceed 39°C (70°F) above ambient temperature.

5.3.5.2 Masonry Chimneys.

A clearance of not less than 102 mm (4 in.) shall be provided between the exterior surface of masonry chimneys and combustible material.

5.3.5.3 Exterior Metal Chimneys.

5.3.5.3.1

Exterior metal chimneys shall have a clearance of not less than 610 mm (24 in.) from a wall of wood frame construction and from any combustible material.

5.3.5.3.2

Exterior metal chimneys over 457 mm (18 in.) in diameter shall have a clearance of not less than 102 mm (4 in.), and those chimneys 457 mm (18 in.) or less in diameter shall have a clearance of not less than 51 mm (2 in.) from a building wall of other than wood frame construction.

5.3.5.3.3

An exterior metal chimney shall be installed with a minimum clearance of 610 mm (24 in.) to any door or window or to any walkway, unless insulated or shielded in an approved manner to prevent a person from coming in contact with the chimney.

5.3.5.4 Interior Metal Chimneys.

5.3.5.4.1

Within the same story of a building as that in which an incinerator is located, a metal chimney shall have a clearance of not less than 914 mm (36 in.) from a wall of wood frame construction and from any combustible material.

5.3.5.4.2

Interior metal chimneys over 457 mm (18 in.) in outside diameter shall have a clearance of not less than 102 mm (4 in.), and those 457 mm (18 in.) or less in outside diameter shall have a clearance of not less than 51 mm (2 in.) from a building wall of other than wood frame construction.

5.3.5.4.3

If a metal chimney passes through a roof constructed of combustible material, it shall be guarded by a ventilating thimble of galvanized iron or approved corrosion-resistant metal, extending not less than 229 mm (9 in.) below and not less than 229 mm (9 in.) above the roof construction, and shall be of a size to provide not less than 457 mm (18 in.) clearance on all sides of the chimney.

5.3.6* Low-Temperature Chimneys and Breachings.

Incinerator chimneys and breachings designed to handle saturated flue gases or flue gases with condensed acids shall be designed and constructed to be corrosion resistant under all operating conditions.

5.3.7 Chimney Termination.

5.3.7.1

Incinerator chimneys where the secondary combustion chamber is designed to be operated at 982°C (1800°F) or less shall extend not less than 3.0 m (10 ft) higher than any portion of any building within 7.6 m (25 ft).

5.3.7.1.1

Chimneys shall be permitted to be less than 3.1 m (10 ft) higher than other chimneys, vents, o open structural framing.

5.3.7.2

Incinerator chimneys where the secondary combustion chamber is designed to be operated at over 982°C (1800°F) shall extend not less than 6.1 m (20 ft) higher than any portion of any building within 15 m (50 ft).

5.3.7.2.1

Chimneys shall be permitted to be less than 3.1 m (10 ft) higher than other chimneys, vents, o open structural framing.

5.3.7.3

The terminus of the chimney flue for the incinerator shall be equipped with an approved spark arrester or protected in accordance with 5.1.4.1.

5.3.8 Chimney Connector or Breaching.

5.3.8.1

A chimney connector or breaching connecting an incinerator to a chimney shall be constructed of not lighter than 16 U.S. gauge steel if it is 305 mm (12 in.) or less in diameter or greatest cross-section dimension and of not lighter than 12 U.S. gauge steel if it exceeds 305 mm (12 in.) in diameter or greatest cross-section dimension.

5.3.8.1.1

Breachings that utilize listed medium-heat chimney sections shall be permitted, provided these sections are joined together with continuous welds, flanges, or couplings.

5.3.8.2

Chimney connectors or breaching up to 457 mm (18 in.) in diameter or greatest cross-section dimension shall be lined with not less than 63.5 mm (2½ in.) high-duty, spall-resistant refractory brick (as defined in ASTM C27).

5.3.8.3

Chimney connectors or breaching over 457 mm (18 in.) in diameter or greatest cross-section dimension shall be lined with not less than 114 mm (4½ in.) of high-duty, spall-resistant refractory brick (as defined in ASTM C27).

5.3.8.4

Castable plastic refractories or other refractories shall be permitted to be used in lieu of firebrick, provided such refractory is of equivalent heat and corrosion resistance.

5.3.8.4.1

Liners made of castable plastic refractories shall be supported by anchors made of corrosion-resistant steel capable of supporting the refractory load at 727°C (1500°F).

5.3.8.4.2

The insulating value shall be such that temperatures at the supports shall not exceed 727°C (1500°F) under all firing conditions.

5.3.8.5

The net internal free area of the connector shall be not less than the free area of the flue collar of the incinerator.

5.3.8.6

A chimney connector shall not be enclosed.

5.3.8.6.1

The connector shall be readily accessible for inspection and replacement throughout its entire length.

5.3.8.7*

Chimney connectors or breachings of all commercial-institutional-type incinerators, including those of special design to produce low-temperature flue gases, shall conform with 5.3.8.

5.3.8.8

If a gas washer or scrubber is used, or if other arrangements are such that the natural draft is insufficient for proper operation of the incinerator, a draft inducer shall be permitted to be used

5.3.8.8.1

In this event, the chimney shall be sized for natural-draft operation and a bypass installed around the gas washer or scrubber or other unit that requires the draft induction.

5.3.8.8.2

Suitable, normally open dampers shall be installed in the bypass to allow venting of combustion products in the event of power failure.

5.3.8.9

Expansion joints shall be provided as required.

5.4 Outdoor Incinerators.

All outdoor incinerators shall conform with Chapter 5, depending on use.

Chapter 6 Waste and Linen Chutes and Transport Systems

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6.1 General.

6.1.1

Approved waste and linen chutes and transport systems, including gravity waste and linen chutes, full pneumatic waste or linen conveying systems, and gravity pneumatic waste or linen conveying systems, shall comply with the provisions of this chapter.

6.1.2

Chute intake doors shall be installed at a minimum at alternate floor levels.

6.2* Gravity Waste or Linen Chutes.

6.2.1 General.

General access gravity chutes shall be permitted to be supplied with unlocked doors and shall be permitted to be available to all occupants at all times.

6.2.1.1

Linen gravity chutes shall only be limited access chutes.

6.2.1.2

A limited access chute shall be secured either by locking the intake door or the entry door into the service room so that it can be used only by authorized personnel.

6.2.1.3

A gravity waste or linen chute also shall be permitted to be used to interface with a pneumatic transport system.

6.2.2 Construction.

6.2.2.1 Chute Supports.

6.2.2.1.1

A steel or steel-jacketed refractory chute supported at intervals by the building structure shall be provided with expansion joints between support levels.

6.2.2.1.2

Other chutes shall be supported on a substantial noncombustible foundation.

6.2.2.2 Chute Offsets.

6.2.2.2.1

Gravity metal chutes shall be constructed straight and plumb where allowed by the building configuration.

6.2.2.2.2

Gravity metal chutes shall be permitted to be offset a maximum of 15 degrees from plumb with the approval of the AHJ.

6.2.2.2.3

Offsets shall be limited to a maximum of one offset for every two floors.

6.2.2.3 Standard Dimensions of Waste and Linen Gravity Chutes.

Standard gravity chutes shall be a minimum of 571 mm (22½ in.) by 571 mm (22½ in.) or 610 mm (24 in.) in diameter.

6.2.2.4 Chute Venting.

6.2.2.4.1

A waste or linen chute shall extend (full size) at least 0.92 m (3 ft) above the roof of a building of Type II-000, Type III, Type IV, or Type V construction. *(See NFPA 5000.)*

6.2.2.4.2

The chute shall be permitted to extend less than 0.92 m (3 ft) above the roof of a building of Type I, Type II-222, or Type II-111 construction subject to the approval of the AHJ. *(See NFPA 5000.)*

6.2.2.4.3

The chute shall be open to the atmosphere, with the opening being the same cross-sectional area as the chute.

6.2.2.4.4

The portion of chute between the highest intake door and the top of the chute vent shall be permitted to be offset a maximum of 90 degrees from the plumb, subject to the approval of the AHJ.

6.2.2.5 Masonry Waste Chutes.

6.2.2.5.1

Masonry waste chutes shall be constructed of clay or shale brickwork not less than 203 mm (8 in.) thick or of reinforced concrete not less than 152 mm (6 in.) thick. Such chutes shall be lined with low-duty refractory brick (as defined in ASTM C27) not less than 114 mm (4½ in.) thick.

6.2.2.5.2

Equivalent construction with walls providing a 2 hour fire resistance rating with equivalent structural features shall be acceptable.

6.2.2.5.3

Lined masonry chutes that comply with 6.2.2.5 shall not require automatic sprinkler protection.

6.2.2.6 Lined Metal Waste Chutes.

6.2.2.6.1

Metal waste chutes shall be permitted to be lined with low-duty refractory brick (as defined in ASTM C27) not less than 63.5 mm (2½ in.) thick or equivalent castable refractories.

6.2.2.6.2

Lined metal chutes that comply with 6.2.2.6.1 shall not require automatic sprinkler protection.

6.2.2.6.3

All unlined steel chutes shall be protected internally by automatic sprinklers. *(See 6.2.6.1.)*

6.2.2.7 Metal Chute Wall Thickness.

6.2.2.7.1

Metal waste or linen chutes shall be made of stainless steel, galvanized steel, or aluminum-coated steel with no screws, rivets, or other projections on the interior surface of the chute.

6.2.2.7.2

Laps or joints shall be designed so that liquid will drain to the interior of the chute.

6.2.2.7.3

The steel shall not be lighter than 16 U.S. gauge.

6.2.2.7.4

Special waste chutes designed to handle dense or heavy material over 1500 kg/m^3 (10 lb/ft^3) shall be made of steel not lighter than 14 U.S. gauge.

6.2.2.8 Medium-Heat Chimneys.

6.2.2.8.1

Listed medium-heat appliance chimney sections shall be acceptable for use as trash chutes.

6.2.2.8.2

Listed medium-heat chimney shall not require automatic sprinkler protection.

6.2.3 Chute Enclosure (Chase).

6.2.3.1 General.

6.2.3.1.1

Vertical waste or linen chute enclosures shall be constructed of materials consistent with the building construction type.

6.2.3.1.2

The walls of the enclosure shall be continuous and have a fire resistance rating of not less tha 2 hours for chutes connecting four or more stories and not less than 1 hour if the building for chutes connecting less than four stories.

6.2.3.1.3

Openings in the fire resistance-rated enclosure shall have a fire protection rating as follows:

(1) 1½-hour fire protection rating for 2-hour fire resistance-rated enclosures

(2) 1-hour fire protection rating for 1-hour fire resistance-rated enclosures

6.2.3.2 Chute Discharge Doors.

6.2.3.2.1*

The bottom of a waste chute shall be protected by an approved automatic closing or self-closing door or fire damper of construction that is equivalent to the opening fire protection rating for the chute in 6.2.3.1.3.

6.2.3.2.2

The waste chute discharge door shall not be required to have a positive latch.

6.2.3.2.3

The bottom of a linen chute shall be protected by a listed automatic closing or self-closing fire door or fire damper that provides a fire protection rating in accordance with 6.2.3.1.3.

6.2.3.2.4

Chute discharge doors or fire dampers shall be permitted to be held open by a fusible link.

6.2.3.3 Chute Intake Doors.

6.2.3.3.1 General Access Gravity Waste Chutes.

6.2.3.3.1.1*

All chute intake doors into a waste chute shall be provided with a self-closing and positive latching fire door assembly in accordance with 6.2.3.1.3.

6.2.3.3.1.2

The fire door assembly shall be installed in accordance with its listing.

6.2.3.3.1.3

The design and installation shall be such that no part of the frame or door projects into the chute.

6.2.3.3.1.4

The area of each chute intake door shall be limited to one-third of the cross-sectional area of a square chute and 44 percent of the area of a round chute.

SR-3 Hide Legis

6.2.3.3.1.5

The force required to open the chute door leaf shall not exceed 30 lbf (133 N) to set the leaf in motion and 15 lbf (67 N) to open the leaf to the required width.

6.2.3.3.2 Limited-Access Gravity Chutes.

6.2.3.3.2.1

All chute intake doors into a linen or waste chute shall be listed and provided with a self-closin and positive-latching fire door assembly in accordance with 6.2.3.1.3.

6.2.3.3.2.2

The fire door assembly shall be installed in accordance with its listing.

6.2.3.3.2.3

The design and installation shall be such that no part of the frame or door projects into the chute.

6.2.3.3.2.4

A lock shall be provided for the chute intake door.

6.2.3.3.2.5

The area of each waste chute intake door shall be limited to two-thirds of the cross-sectional area of the chute.

6.2.3.3.2.6

The area of each linen chute intake door shall not exceed the cross-sectional area of the chute.

6.2.4 Chute Discharge Rooms.

6.2.4.1 General.

6.2.4.1.1

Waste and linen chutes shall terminate or discharge directly into a room having a minimum fire resistance rating not less than that specified for the chute enclosure.

6.2.4.1.2

Openings into a chute discharge room shall be protected by an approved self-closing fire door assembly having a minimum fire protection rating not less than that specified for the chute enclosure.

6.2.4.1.3 Chute-to-Incinerator Interface.

Trash gravity chutes shall not discharge directly into an incinerator.

6.2.5 Chute Intake Rooms.

6.2.5.1 General.

6.2.5.1.1

Every chute intake shall be in a room that is separated from the other parts of the building by walls, partitions, floors, and floor-ceiling assemblies having a fire resistance rating of not less than the required rating of the chute enclosure as specified in 6.2.3.1.

6.2.5.1.2

Openings into a chute intake room shall be protected by an approved automatic or self-closing fire door assembly having a fire protection rating as follows:

(1) 1 ½-hour fire protection rating for 2-hour fire resistance-rated enclosures

(2) ¾-hour fire protection rating for 1-hour fire resistance-rated enclosures

6.2.5.1.3

Where chute intake rooms are protected by automatic sprinklers, the room shall be enclosed i a minimum of 1-hour fire resistance-rated construction.

6.2.5.1.4

The size of the chute intake room shall not be less than that required to maintain a minimum 152.4 mm (6 in.) clearance between the closed chute intake door and the closed door.

6.2.5.2* Limited-Access Chute Intake Room.

6.2.5.2.1

If entrance to a limited-access chute intake room is provided with a lock, the chute intake door shall not require a lock.

6.2.6 Automatic Sprinklers.

6.2.6.1 Gravity Chute.

6.2.6.1.1

Gravity chutes shall be protected internally by automatic sprinklers unless the chute is in accordance with 6.2.2.5 or 6.2.2.6.

6.2.6.1.2

A sprinkler shall be installed at or above the top chute intake of the chute.

6.2.6.1.3

Automatic sprinklers installed in gravity chute intakes shall be recessed out of the chute area through which the material travels.

6.2.6.1.4

A sprinkler shall be installed within the chute at alternate floor levels in chutes connecting more than two stories, with a mandatory sprinkler located at the lowest chute intake door.

6.2.6.1.5

Sprinkler system installation shall comply with NFPA 13.

6.2.6.2 Chute Discharge Room.

6.2.6.2.1

Automatic sprinklers shall be installed in chute discharge rooms.

6.3* Full Pneumatic Waste and Linen Conveying Systems.

6.3.1 General.

A full pneumatic waste or linen transport system consists of full vacuum stations equipped with inner doors and a locked outer door, an air source at the top of the riser, an air inlet control damper, flanged riser piping, transport piping, collectors (receivers), and a fan and fan damper

6.3.2 Construction.

6.3.2.1 General.

6.3.2.1.1

Full vacuum chute intake doors shall be a minimum of 508 mm (20 in.) in diameter, shall have an inner door that is under processor control, and shall not yield under system vacuum.

6.3.2.1.2

The outer chute intake door shall be provided with a gasketed, self-closing, positive-latching fire door assembly with a fire protection rating of not less than 1 hour.

6.3.2.1.3

The door frame shall be fastened into the station and shall be flush with the rated shaft wall.

6.3.2.1.4

Minimum outer door size shall be 457 mm (18 in.) and shall be side hinged. Full vacuum stations shall be constructed from a minimum of 14 U.S. gauge stainless or galvanized steel.

6.3.2.2 Multibag Loading of Waste or Linen Systems.

6.3.2.2.1

During the multibag loading procedure, both the outer and the inner doors shall be permitted to be open.

6.3.2.2.2

Only one inner door shall be open at a time.

6.3.2.3 Chute Intake Rooms.

6.3.2.3.1

Every chute intake door shall be in a room that is separated from other parts of the building by walls, partitions, floors, and floor-ceiling assemblies having a fire resistance rating of not less than 1 hour.

6.3.2.3.2

Openings into such a room shall be protected by an approved self-closing fire door assembly with a fire protection rating of not less than ¾ hour.

6.3.2.4 Riser Pipe.

6.3.2.4.1

Full pneumatic riser pipe shall have a minimum diameter of 508 mm (20 in.) and shall be constructed from 16 U.S. gauge (minimum) stainless steel or galvanized or aluminum coated steel, with no screws, rivets, or other projections on the interior surface of the pipe.

6.3.2.5 Air Source.

6.3.2.5.1

A full pneumatic system requires a full-diameter air source for conveying materials on a movin air stream.

6.3.2.5.2

The air source shall be a roof vent and curb, an all-weather elbow, or a louver through the side of the building.

6.3.2.6 Full Vacuum Station Supports.

6.3.2.6.1

Full vacuum stations shall be supported at each floor by mounting plates or a steel channel that will bridge the shaft opening.

6.3.2.6.2

Stations shall be bolted to prevent movement under transport conditions.

6.3.2.6.3

On floors where no station is installed, the riser pipe shall be supported at each floor.

6.3.2.7 Riser Offsets.

Full pneumatic risers shall be permitted to be offset to fit building design requirements.

6.3.3 Riser Enclosure (Chase).

6.3.3.1 General.

6.3.3.1.1

Full pneumatic stations and vertical risers shall be mounted within a continuous enclosure constructed of materials that are noncombustible and that extend from floor to floor.

6.3.3.1.2

The walls of the enclosure shall have a fire resistance rating of not less than 1 hour if the building is less than four stories in height and not less than 2 hours if the building is four or more stories in height. *(See 6.3.2.7 for offsets in full pneumatic riser piping.)*

6.3.3.2 Chute Intake Doors.

6.3.3.2.1

All full vacuum chute intake outer doors shall be provided with a gasketed, self-closing, positive-latching fire door assembly with a fire protection rating of not less than 1 hour.

6.3.3.2.2

The door frame shall be installed onto the station and shall be set flush to the shaft wall.

6.3.3.2.3

The width of the opening shall be permitted to be equivalent to the internal diameter of the chute, and the height shall be a maximum of one and a half times the diameter.

6.3.3.2.4

Minimum door size for a waste or linen loading door shall be 457 mm (18 in.) and shall be side hinged.

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6.3.3.2.5

The force required to open the chute door leaf shall not exceed 30 lbf (133 N) to set the leaf in motion and 15 lbf (67 N) to open the leaf to the required width.

6.3.4* Automatic Sprinklers Systems.

6.3.4.1

Full pneumatic-type risers shall be protected internally by automatic sprinklers.

6.3.4.2

A sprinkler shall be required at or above the top chute intake door and at alternate floor levels in buildings over two stories, with a mandatory sprinkler located at the lowest chute intake door.

6.3.4.3

Sprinklers shall be recessed out of the station area through which the material travels.

6.3.4.4

Sprinkler system installation shall comply with NFPA 13.

6.3.5 Transport Piping.

6.3.5.1 Transport Piping Size and Thickness.

6.3.5.1.1

Transport piping shall have a minimum wall thickness of 16 U.S. gauge galvanized or stainless steel and shall be sized to fit the system's needs.

6.3.5.1.2

Waste and linen transport systems shall be a minimum of 406 mm (16 in.) in diameter.

6.3.5.1.3

Where all materials entering the pneumatic-powered system are processed through a shredder, the transport pipe shall be permitted to be less than 406 mm (16 in.) in accordance with the AHJ.

6.3.5.2 Penetrating of Fire-Rated Assemblies.

6.3.5.2.1

Automatic fire dampers shall be installed at all points where the waste or linen transport system penetrates fire-resistive partitions or floor assemblies. *[See Figure 6.3.5.2.1(a) through Figure 6.3.5.2.1(c).]*

Figure 6.3.5.2.1(a) Full Pneumatic Riser with Offset.

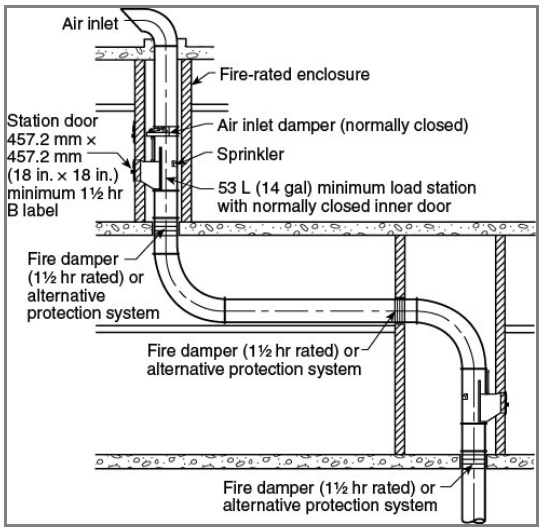


Figure 6.3.5.2.1(b) Full Pneumatic System with Penetration of an Evacuation Corridor.

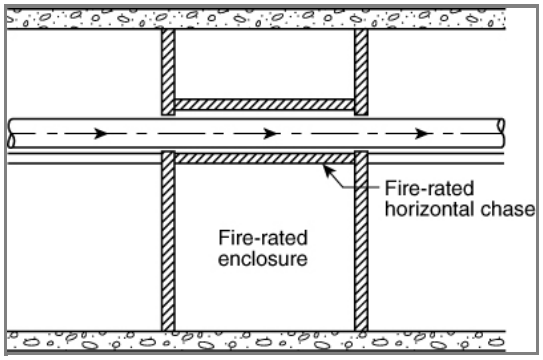
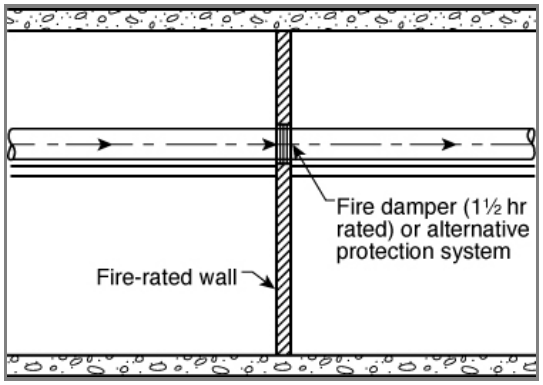


Figure 6.3.5.2.1(c) Full Pneumatic System with Penetration of a 2-Hour Fire-Rated Wall.



6.3.5.2.2

The system shall shut down automatically upon the closing of one of the fire dampers.

6.3.5.2.3*

Fire dampers shall not be required where an engineered alternative system is provided that is acceptable to the AHJ.

6.3.5.3 Exiting from 2-Hour Fire-Rated Shafts.

6.3.5.3.1

Where the pneumatic transport pipe exits a 2-hour fire-rated shaft, the pipe wall thickness shal be increased to 11 U.S. gauge from within the shaft to four pipe diameters beyond the shaft wall.

6.3.5.3.2

The 11 U.S. gauge pipe shall be supported at 0.92 m (3 ft) intervals.

6.3.6 Collector Discharge Area.

6.3.6.1

The room or area where the collector discharges waste or linen shall be separated from the occupied part of the building by a 2-hour fire resistance-rated wall.

6.3.6.2

The room or area shall be protected by a sprinkler system. Sprinkler system installation shall comply with NFPA 13.

6.4* Gravity Pneumatic Trash or Linen Conveying System.

6.4.1 General.

A gravity pneumatic transport system shall comply with the requirements of Section 6.4.

6.4.2 Construction.

6.4.2.1 General.

All the requirements of Section 6.2 shall apply to gravity pneumatic conveying systems.

6.4.2.2 Dampers.

6.4.2.2.1

Where an open funnel is employed as an interface between the gravity chute storage section and the transport discharge damper, a normally closed, specially designed 11 U.S. gauge, blade-type damper shall be installed at the bottom of the chute and above the funnel opening.

6.4.2.2.2

At the point of entry into the transport piping tee, a material discharge damper shall be required to close off the transport piping when that riser is not being sequenced.

6.4.2.3 Chute Automatic Sprinklers.

Where material is to be stored at the bottom of the chute and above the riser discharge damper (above the transport tee), a sprinkler shall be located at the lowest chute intake door.

6.4.2.4 Discharge Room Criteria.

6.4.2.4.1

Where a gravity pneumatic system has any opening in the connection between the chute and the transport pipe, the interface and the discharge damper shall be in a room that is separated from other parts of the building by walls, partitions, and floor-ceiling assemblies having a minimum fire resistance rating not less than that specified for the chute.

6.4.2.4.2

Openings to such rooms shall be protected by an approved automatic closing or self-closing fire door assembly having a fire protection rating of not less than 1½ hours.

6.4.2.4.3

Automatic sprinklers shall be installed in chute discharge rooms.

6.4.3 Transport Piping.

6.4.3.1 Piping Size and Thickness.

6.4.3.1.1

Transport piping shall have a minimum wall thickness of 16 U.S. gauge galvanized or stainless steel and shall be sized to fit the system's needs.

6.4.3.1.2

Waste and linen transport systems shall be a minimum of 406 mm (16 in.) in diameter.

6.4.3.1.3

Where all materials entering the pneumatic-powered system are processed through a shredder, the transport pipe shall be permitted to be less than 406 mm (16 in.) in accordance with the AHJ.

6.4.3.2 Penetrating of Fire-Rated Assemblies.

6.4.3.2.1

Automatic fire dampers shall be installed at all points where the waste or linen transport system penetrates fire resistance-rated partitions or floor assemblies.

6.4.3.2.2

The system shall shut down automatically upon the closing of one of the fire dampers.

6.4.3.2.3

Fire dampers shall not be required where an engineered alternative system is provided that is acceptable to the AHJ.

6.4.3.3 Exiting from 2-Hour Fire-Rated Shafts.

6.4.3.3.1

Where the pneumatic transport pipe exits a 2-hour fire-rated shaft, the pipe wall thickness shal be increased to 11 U.S. gauge from within the shaft to four pipe diameters beyond the shaft wall.

6.4.3.3.2

The 11 U.S. gauge pipe shall be supported at 0.92 m (3 ft) intervals.

6.4.4 Gravity Pneumatic Collector Discharge Area.

6.4.4.1

The room or area where the collector discharges waste or linen shall be separated from the occupied part of the building by a 2-hour fire resistance-rated wall.

6.4.4.2

Where the room or area of collector discharge is within or abutting an occupied building, the room or area shall be protected by a sprinkler system.

6.4.4.3

Sprinkler system installation shall comply with NFPA 13.

Chapter 7 Other Waste Handling Systems

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7.1 General.

Waste handling systems and equipment, other than chute systems covered in Chapter 6, including, but not limited to, waste cart transport systems, skip hoists, cranes and grapples, and various types of conveyors, such as belt conveyors, pan conveyors, screw conveyors, vibratory conveyors, and drag conveyors, shall comply with this chapter.

7.2 Waste Spillage Control.

Waste handling systems and equipment shall be designed and constructed to prevent or minimize waste spillage so as to prevent potential fire problems.

7.3 Enclosure Requirements.

7.3.1

The building, rooms, or enclosures in which waste handling systems and equipment are located and used for either interim storage of waste materials or the direct movement of waste from storage areas to processing equipment, such as incinerators, or both, shall be shut off from other areas of the building by walls, floor, and ceiling assemblies having a fire resistance rating of not less than 2 hours.

7.3.2

Openings to such rooms shall be protected by an approved automatic closing or self-closing fire door assembly with a fire protection rating of not less than 1½ hours.

7.4 Automatic Sprinklers.

7.4.1

Automatic sprinklers shall be installed in rooms where waste handling systems and equipment are used to transport waste from interim storage areas to waste processing equipment, such as incinerators.

7.4.2

In locations or rooms where waste handling systems and equipment are used for interim storage of waste only, the rooms shall be sprinklered in accordance with requirements specified in Chapter 8.

Chapter 8 Waste Compactors

8.1 General.

Compactors shall be regulated by the provisions of this chapter.

8.2 Automatic Sprinklers.

8.2.1

All chute-fed compactors shall have an automatic sprinkler with a minimum 13 mm (½ in.) orifice installed in the hopper of the compactor.

8.2.1.1

Sprinklers shall be ordinary temperature-rated sprinklers.

8.2.1.2

Sprinklers shall be supplied by a minimum 25.4 mm (1 in.) ferrous piping or 19 mm (¾ in.) copper tubing line from the domestic cold water supply or by the building fire sprinkler system.

8.2.1.3

Sprinkler water piping shall be protected from freezing in outdoor installations.

8.2.2

Hand-fed compactors located within a building and not operated in conjunction with a chute shall not require installation of an automatic sprinkler in the hopper.

8.2.2.1

Compactors with charging capacities greater than 0.76 m^3 (1 yd^3) shall be enclosed in a fire-rated room in conformance with 8.2.4.

8.2.3

Self-contained and breakaway compactors shall have an access door to the containers that can be opened without disconnecting the containers from the compactor or shall be provided with one 63.5 mm (2½ in.) hose connection that fits standard fire-fighting equipment near the top of the container.

8.2.4

Chute terminal, compacting, or storage rooms shall be separated from other parts of the building by walls, partitions, floor, and floor-ceiling assemblies having a fire resistance rating of not less than 2 hours.

8.2.4.1

Openings to such rooms shall be protected by approved automatic-closing or self-closing fire doors with a fire protection rating of not less than 1½ hours.

8.3 External Waste Compactors.

8.3.1

The compactor shall be constructed of noncombustible material.

8.3.2*

The compactor hopper extension access from the building shall be protected by a self-closing, fire resistance–rated intake door in accordance with 6.2.3.1.3.

8.3.3*

Fire department access shall be maintained in accordance with the local building code.

8.3.4

Compactor extinguishing and access point shall be clearly marked.

8.3.5

The intake door shall be located in a room in accordance with the applicable requirements of 6.2.5.

Chapter 9 Waste and Recyclables Storage Rooms

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9.1* General.

Storage of waste and recyclables with a combined total volume exceeding 0.76 m^3 (1 yd^3) of uncompacted measure of waste and recyclables shall be stored in a waste and recyclables storage room complying with this chapter.

9.2 Fire Separation.

9.2.1

Waste and recyclables storage rooms shall be separated from other parts of the building by walls and floor-ceiling assemblies having a fire resistance rating of not less than 1 hour.

9.2.2

Openings to such rooms shall be protected by an approved automatic closing or self-closing fire door assembly with a fire protection rating of not less than ¾ hour.

9.3 Automatic Sprinklers.

Waste and recyclables storage rooms shall be provided with automatic sprinklers installed in accordance with NFPA 13.

Chapter 10 Other Waste Processing Equipment

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10.1* General.

Other waste processing equipment shall include such devices as shredders, granulators, grinders, pulpers, and chippers.

10.2 Fire Separation.

10.2.1

Rooms in which waste processing systems and equipment are located shall be separated from other parts of the building by walls, floor, and ceiling assemblies having a fire resistance rating of not less than 2 hours.

10.2.2

Openings to such rooms shall be protected by an automatic closing or self-closing fire door assembly with a fire protection rating of not less than 1½ hours.

10.3 Explosion Protection.

Devices that granulate waste materials and that produce potentially explosive aerosols or combustible air mixtures shall be equipped with explosion protection devices or systems.

10.4 Automatic Sprinklers.

10.4.1

Rooms in which waste processing equipment is located shall be installed with automatic sprinklers.

10.4.2

Sprinkler system installation shall be in accordance with NFPA 13.

Chapter 11 Maintenance of Incinerators and Waste and Linen Handling Systems and Equipment

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11.1 Incinerators.

11.1.1

Incinerators shall be inspected and maintained not less than annually in accordance with manufacturers' instructions.

11.1.2

A written record of the inspection shall be signed and retained for inspection by the AHJ.

11.2 Waste and Linen Chutes and Transport Systems.

11.2.1

Chute intake and discharge doors shall be maintained clear and unobstructed at all times.

11.2.2*

Waste and linen chutes and transport systems, including chute intake and discharge doors, shall be inspected and maintained not less than annually in accordance with manufacturers' instructions.

11.2.2.1

If the waste and linen chute discharge door is equipped with a fusible link, the following shall be conducted:

(1) Inspect the link to ensure it is not painted or coated with dust or grease.

(2) Evaluate the condition of chains/cables, s-hooks, eyes, and other devices that operate as a result of the link melting to verify working condition (i.e., no kinked or pinched cable, no twisted or inflexible chain).

(3) Remove the link for testing every 4 years to ensure full closure and positive latching.

(4) Reinstall the link after testing is complete.

(5) Replace the link if damaged or painted with a link of the same size, temperature, and load rating.

11.2.3

A written record of the inspection shall be signed and kept for inspection by the AHJ.

11.3 Waste Compactors.

11.3.1

Waste compactors shall be inspected annually and maintained in accordance with manufacturers' instructions.

11.3.2

A written record of the inspection shall be signed and kept for inspection by the AHJ.

11.4 Waste Processing Equipment.

11.4.1

Waste processing equipment shall be inspected and maintained not less than annually in accordance with manufacturers' instructions.

11.4.2

A written record of the inspection shall be signed and kept for inspection by the AHJ.

11.5 Decommissioning of Waste and Linen Handling Systems and Equipment.

Section 11.5 shall apply where a waste or linen chute is taken out of service permanently.

11.5.1 Chute Intake Door.

The chute intake door shall be removed on all floors and the opening shall be filled with construction equivalent to the construction of the shaft or replaced with an access door with a fire protection rating in accordance with 6.2.3.1.3.

11.5.2 Chute Intake Room.

If the chute intake room is a fire resistance–rated room and is no longer used for storage of combustible materials, then the fire resistance rating of the room shall not be required to be maintained.

11.5.3 Chute Discharge Room.

11.5.3.1

Except as permitted by 11.5.3.2, the fire resistance rating of the chute discharge room shall be maintained and the door at the bottom of the chute shall be maintained in a closed position.

11.5.3.2

If the chute discharge room is no longer used for storage of combustible materials and the opening in the wall/floor accessing the chute is sealed with construction equivalent to the construction of the floor slab or replaced with a fire-rated access door with a fire rating in accordance with 6.2.3.1.3, the fire resistance rating of the room shall not be required to be maintained.

11.5.4 Chute Sprinkler System.

11.5.4.1

Sprinklers within the decommissioned chute shall be permitted to be taken out of service.

11.5.4.2

Where the sprinklers are not taken out of service, access to inspect and service the sprinklers in the chute shall be provided.

11.5.5 Waste Wash-Down System.

Wash-down systems within the decommissioned chute shall be taken out of service.

Annex A Explanatory Material

Annex A is not a part of the requirements of this NFPA document but is included for informational purposes only. This annex contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.3

It is recognized that there are many different incineration technologies and designs. There also is wide variation in the types of waste that can be incinerated, including solids, liquids, sludges and fumes. This standard is not intended to cover or include all the design and construction details for each incineration technology and application. However, all design, construction, control, and other features needed to reduce or minimize fire hazards shall be required for all new incineration facilities to satisfy the AHJ.

It is recognized that many different types of systems, equipment, and components are utilized for handling or transporting waste. This standard is not intended to cover or include all the design and construction details for each waste handling system and application. However, all design, construction, control, and other features needed to reduce or minimize fire hazards shall be required for such systems to satisfy the AHJ and to comply with other applicable standards.

A.3.2.1 Approved.

The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment, or materials, the “authority having jurisdiction” may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The “authority having jurisdiction” may also refer to the listings or labeling practices of an organization that is concerned with product evaluations and is thus in a position to determine compliance with appropriate standards for the current production of listed items.

A.3.2.2 Authority Having Jurisdiction (AHJ).

The phrase “authority having jurisdiction,” or its acronym AHJ, is used in NFPA standards in a broad manner because jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspectio department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.3.2.4 Listed.

The means for identifying listed equipment may vary for each organization concerned with product evaluation; some organizations do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A.3.3.1.2 Gravity Waste or Linen Chute.

A gravity chute also can be used to interface with a pneumatic transport system. Access of chute intake doors might or might not be limited to the use of keys.

A.3.3.6 Incinerator.

The most applicable systems under this definition include, but are not limited to, controlled air systems, rotary kiln systems, and multiple-chamber–type incineration systems. Some additional incinerator system definitions are as follows:

Chute-Fed Incinerator (Class IIA). An incinerator designed specifically to be fed refuse from one or more floors above the incinerator directly into the incinerator by a separate chute constructed with a positive means to avoid penetration by smoke or fumes and connected directly over the primary combustion chamber. The incinerator is built with a primary and a secondary combustion chamber and a settling chamber. It can include a flue gas washer or scrubber. A separate chimney serves to convey the combustion gases to the outdoors. This class of incinerator is suitable for Type 1 and Type 2 wastes. It generally is used in residential and institutional buildings, including apartments, clubs, dormitories, churches, schools, and other occupancies where Type 1 and Type 2 wastes are to be incinerated. [**211,** 2024]

Commercial-Industrial-Type Incinerator (Classes III, IV, V, VI, and VII). An incinerator having a charging capacity in excess of 0.14 m^3 (5 ft^3) and suitable for a variety of wastes as follows: (1) Class III — Waste Type 0, Type 1, or Type 2; (2) Class IV — Waste Type 3; (3) Class V— Waste Types 0–4 (municipal incinerators); (4) Class VI — Waste Type 4; (5) Class VII — Waste Types 5 and 6. [**211,** 2024]

Flue-Fed Incinerator (Class II). An incinerator served by a single chimney flue that serves also as the charging chute, where refuse is fed directly to the incinerator through this chimney flue from one or more floors above the incinerator. This class of incinerator is suitable for Type 1 and Type 2 waste materials and garbage incidental to residential occupancy in single-family and multifamily buildings. This class of incinerator is generally used in residential and institutional buildings, including apartments, clubs, dormitories, churches, schools, and other occupancies where Type 1 and Type 2 wastes are to be incinerated. [**211,** 2024]

Residential-Type Incinerator. An incinerator for the burning of ordinary combustible waste material and garbage (Type 2 waste) incidental to residential occupancy and having a firebox or charging compartment not greater than ~~5 ft^3 (0.14 m^3)~~ (5 ft^3) in capacity. Residential-type incinerators can be self-contained, factory-built units that do not necessitate field construction, or can be of a built-in type designed to be encased in masonry or installed in a masonry wall or chimney. [**211,** 2024]

Global S

A.4.3.1

The provisions of 4.3.1 do not require inherently noncombustible materials to be tested in order to be classified as noncombustible materials. [**5000:** A.7.1.4.1]

A.4.3.1.1(1)

Examples of such materials include steel, concrete, masonry, and glass.
[**5000:** A.7.1.4.1.1(1)]

A.4.3.2

Material subject to increase in combustibility or flame spread index beyond the limits herein established through the effects of age, moisture, or other atmospheric condition is considered combustible. *(See NFPA 259 and NFPA 220.)* [**5000:** A.7.1.4.2]

A.5.3

The changing composition of waste and regulations controlling temperatures and emissions have created very aggressive flue gases. Refractories that were suitable in the past can fail rapidly under existing conditions. There is no single material or family of materials suitable for ensuring fire safety under all conditions; therefore, no specific materials are identified in this annex. Critical temperatures, aggressive chemical components, and conditions creating aggressive flue gases are identified. Selection of materials for chimney construction should be based on those capable of withstanding these conditions.

Condensed Flue Acid Corrosives. Hydrochloric acid is formed when chloride-bearing materials are oxidized. Hydrochloric acid is corrosive to all chimney linings and can destroy most metals in concentrations as low as 26 ppm in flue gases. Acid concentration in flue gases ranges from 26 ppm to as high as 2095 ppm.

The acid dew point is about 62.7°C (145°F).

Sulfuric acid is formed when sulfur is oxidized to SO_2, which is further oxidized to SO_3, which combines readily with water to form sulfuric acid, H_2SO_4. This flue acid is aggressive to most chimney linings.

The acid dew point depends on the SO_3 content of the flue gases. The maximum theoretical acid dew point is about 204.4°C (400°F). Acid concentration can be as high as 80 percent but will rapidly self-dilute to 35 percent.

Sulfurous acid is formed when SO_2 combines with water. It condenses as sulfurous acid, H_2SO_3, at the water dew point, or about 54.4°C (130°F), but it is not as aggressive as sulfuric or hydrochloric acid and, therefore, does less damage.

Nitric acid is condensed in the water dew point area and also is not as aggressive to chimney materials as other flue acids. It pacifies the surface of stainless steel, reducing the corrosive effect of the other flue acids.

Miscellaneous Flue Acids. Other flue acids, formed by the halides, are very corrosive, but in lesser amounts than chlorides. Hydrochloric acid is, therefore, the controlling acid.

Other flue acids that condense at the water dew point are present; however, hydrochloric and sulfuric acids are the acids that cause the most corrosion in chimneys servicing incineration of general waste.

Alkali Corrosives. Alkalis are formed by the oxidation of metal oxides that are found in paints, ink, fillers, pigments, and so forth. The common alkalis are as follows:

(1) Soda (Na_2O)

(2) Potash (K_2O)

(3) Lithia (Li_2O)

Increases in the quantities of plastics that are components of waste increase alkali in flue gases.

Alkalis form low-temperature melts that distress refractories, particularly those of low density. Distress due to alkali attack can be observed as glazing or dripping of the refractory if the temperature is high enough or, at lower temperatures, as a shelling or disintegration of the surface.

Alkali disruption begins at about 871°C (1600°F) and increases as temperatures approach 1093°C (2000°F).

High-Temperature Acid Corrosives. Most common stainless steels show significant loss due to chloride or other halogen vapors in flue gases when temperatures exceed 315°C (600°F).

Flue temperatures over 982°C (1800°F) encourage reaction of hydrochloric vapors with calcium aluminate refractory binders. This reaction becomes more severe as temperatures approach and exceed 1204°C (2200°F).

Free Chlorides and Alkalis. Where free chlorides are present with alkalis, these compounds can condense within the lining, forming expansive alkali chloride phases. The presence of these phases can result in cracking of the refractory.

Chimney Systems Below 93.3°C (200°F) Mid-Flue Temperature Downstream of Scrubber. Chimney systems that allow flue surfaces to fall below 93.3°C (200°F) are subject to corrosion by halogen acids, nitric acid, and others, with the prime corrosive acid being hydrochloric acid.

Metal Linings Assuming HCl Content to Be 26 ppm or Above in the Flue Gases. Most common metals, such as Types 304, 304L, 316, and 316L stainless steels, and nickel-based alloys, such as 800, 600, 618, and 671, have shown significant corrosion when subjected to flue gases containing 26 ppm hydrochloric acid and are not acceptable as flue liners.

Materials that exhibit essentially no corrosion attack when subjected to flue gases containing 26 ppm hydrochloric acid are as follows:

(1) Austenitic stainless steels: 904L, 254 SLX, 254 SMO, AL-6X, and 22-13-5

(2) Ferritic stainless steels: Ebrite 26-1, NuMonit, and 29-4C

(3) Nickel-based alloys: 690, 625, 825, and Hastelloys N, F, G, and C-276

This information was obtained from *Technology Development for Corrosion Resistant Condensing Heat Exchangers* by Battelle, Columbus, OH.

Refractory and Other Linings. Refractory linings suitable for use downstream of scrubbers need to resist all of the condensed flue acids at low temperatures. The linings will become saturated and, therefore, need to resist stresses of expanding steam when temperatures elevate rapidly. They also need to resist thermal shock when heated refractory is suddenly exposed to water.

Products suitable for this service should show evidence of no more than 3 percent weight loss when subjected to the acid resistance test in ASTM C980, *Standard Specification for Industrial Chimney Lining Brick*, in boiling hydrochloric and sulfuric acids.

Chimney Systems Below 315.8°C (600°F) Mid-Flue Temperature. Chimney systems that allow flue surfaces in any portion of the system to fall below 315.8°C (600°F) can be subject to corrosion by sulfuric acid. These temperatures usually are associated with waste heat recovery boilers.

Lining suitable for this type of service should be dense, high in silica, and bonded with acid-resistant binders (calcium aluminate binders cannot pass the acid-resistant test unless co-bonded with potassium silicate). Material should withstand immersion in 5 percent sulfuric acid for 2000 hours at 21.1°C (70°F) with not more than 3 percent weight loss.

Chimney Systems 315.8°C to 815.6°C (600°F to 1500°F). These conditions existed prior to current regulations for incineration. This temperature range avoids condensed flue acid and problems with alkali. Refractories used in the past usually were lightweight with continuous service temperatures of 982.2°C (1800°F) with excursions to 1093.3°C (2000°F).

Listed Medium-Heat Chimneys. Listed medium-heat appliance chimneys can be used and should be installed in accordance with the conditions of the listing and the manufacturer's instructions.

Chimney Systems 815.6°C to 1204.4°C (1500°F to 2200°F). This temperature range requires more Al_2O_3 and less SiO_2 in the chemical composition. The material needs to meet the temperature limitations of the specific incinerator involved. It is subject to attack by both alkali and acid vapors, which become more severe as density is reduced; thus, high-density low-porosity material should be used.

A.5.3.3.3.2

Equivalent thickness is that thickness capable of providing the same insulating and structural values to limit skin temperatures to those temperatures specified in 5.2.2.5 under all intended operating conditions.

A.5.3.3.4.3

Equivalent thickness is that thickness capable of providing the same insulating and structural values to limit skin temperatures to those temperatures specified in 5.2.2.5 under all intended operating conditions.

A.5.3.6

Such materials can include fiberglass reinforced plastic (FRP), refractories, and mortars of special acid-resistant composition or specialized metals, such as Hastelloy or Inconel. *(See A.5.3 for further discussion.)*

A.5.3.8.7

This requirement was initiated to avoid the serious corrosion problems inherent with low-temperature incinerator flue gases. It also provides the high-temperature protection necessary when the special equipment is bypassed for any purpose, including power failure. In those cases where the bypass is such that the breaching also is bypassed, then the breaching need not be high-temperature protected, but it should be protected by an acid-resistant coating suitable for the operating conditions.

A.6.2

See Figure A.6.2(a) and Figure A.6.2(b) for examples of gravity chutes.

Figure A.6.2(a) Gravity Linen Chute.

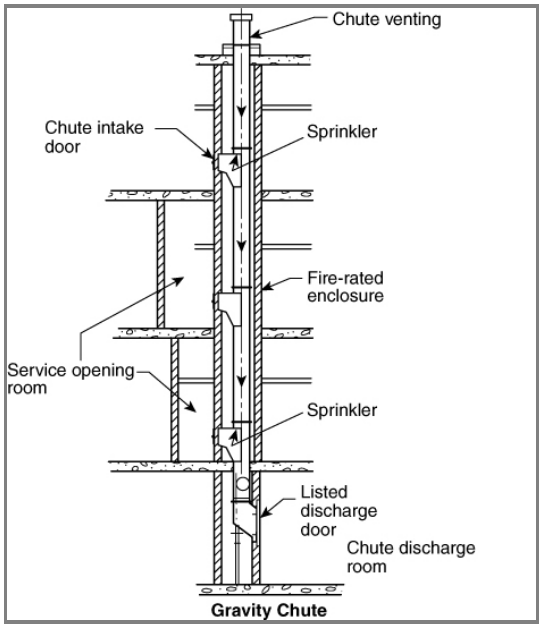
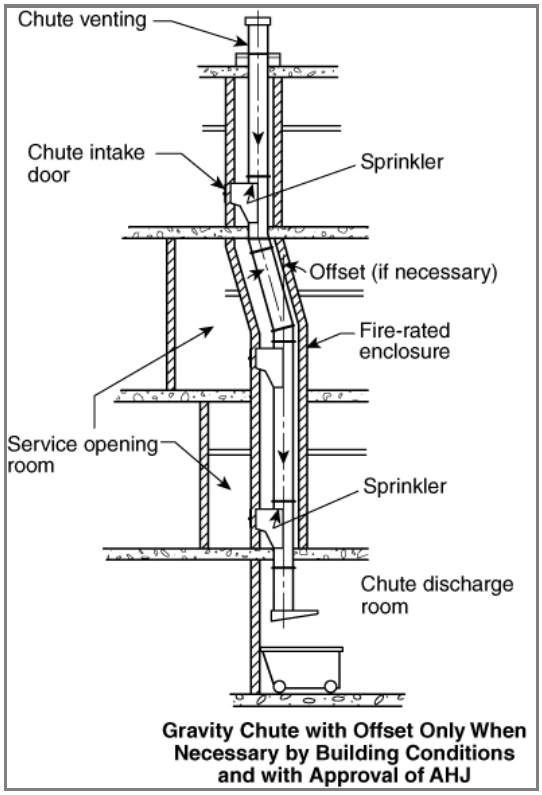


Figure A.6.2(b) Gravity Waste Chute.



A.6.2.3.2.1

The door or damper at the discharge opening of a waste chute is not required to be a labeled assembly; but rather should be of construction similar to a rated assembly to afford the protection required by 6.2.3.1.3.

A.6.2.3.3.1.1

Chute intake doors are proprietary doors manufactured, listed, and labeled specifically for use in chute applications.

A.6.2.5.2

Locking is required only for limited-access installations. One opening or the other should be locked, but both are not required to be locked.

A.6.3

Figure A.6.3(a) is an example of a full pneumatic system, and Figure A.6.3(b) through Figure A.6.3(e) are examples of engineered alternative systems.

Figure A.6.3(a) Full Pneumatic System.

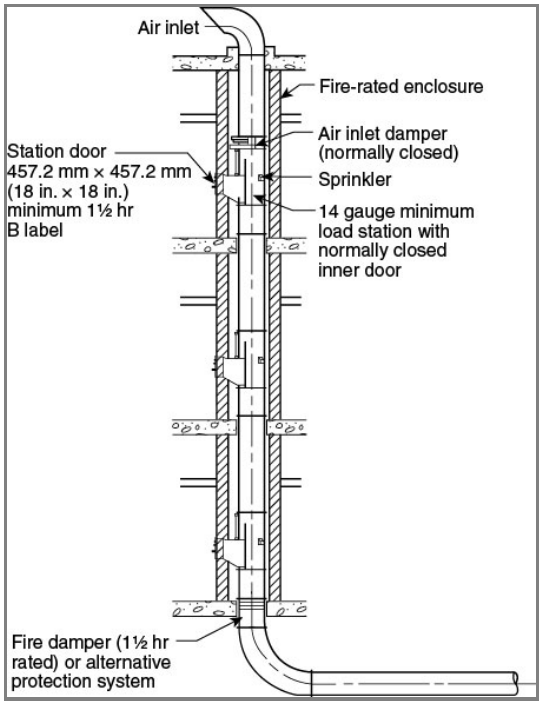


Figure A.6.3(b) Fire Damper Engineering Alternative for Penetration of Floor at Base of Shaft.

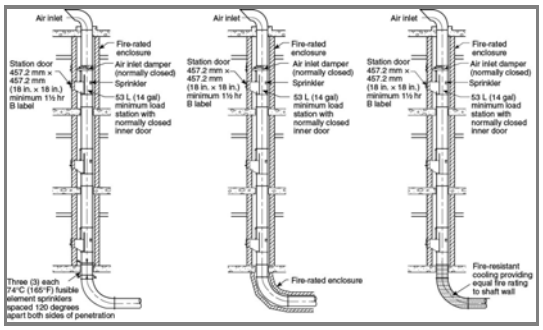


Figure A.6.3(c) Fire Damper Engineering Alternative for Penetration of Fire-Rated Enclosure.

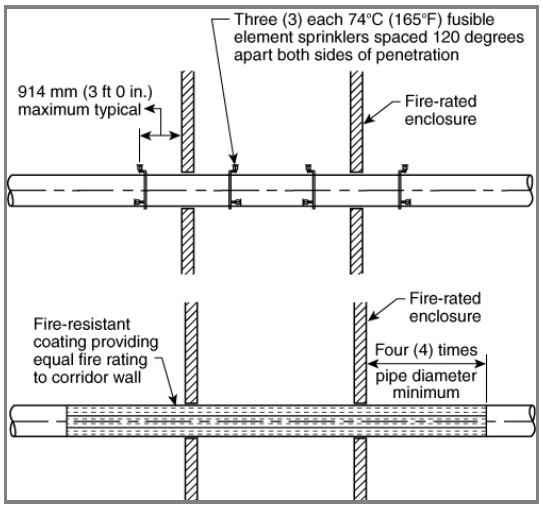


Figure A.6.3(d) Fire Damper Engineering Alternative for Penetration of Fire-Rated Wall.

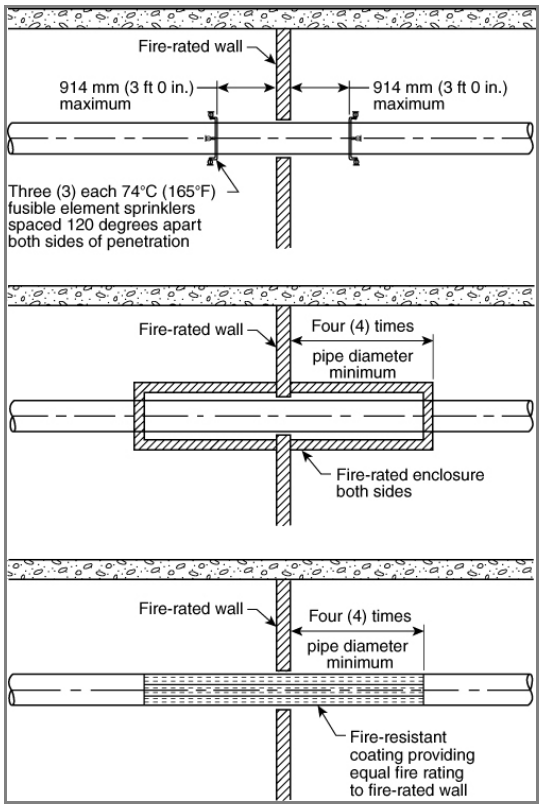
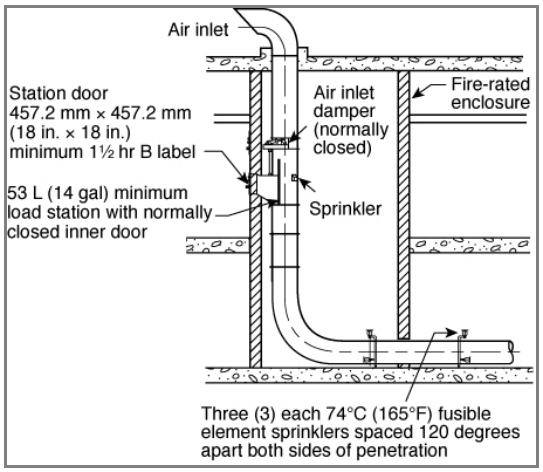


Figure A.6.3(e) Fire Damper Engineering Alternative for Penetration of Wall at Base of Shaft.



A.6.3.4

See Figure A.6.3(a).

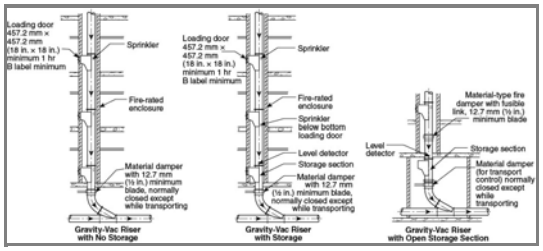
A.6.3.5.2.3

Examples of engineered alternative systems are shown in Figure A.6.3(b) through Figure A.6.3(e). Other engineered alternative systems are acceptable if approved by the AHJ.

A.6.4

Figure A.6.4 is an example of various gravity pneumatic system arrangements.

Figure A.6.4 Gravity Pneumatic System.



A.8.3.2

The intake door in this section is in reference to the door located in the building that is the access opening into the exterior waste compactor. The door opens into the hopper that extends to the compactor. The hopper extension should extend at least 1.83 m (6 ft) beyond the building so that the angle does not cause blockage or a buildup of waste. As always, waste compactors and components should be installed in accordance with the manufacturer's instructions.

A.8.3.3

The fire department access is typically a separate door into the compactor. This door allows fo the fire department to easily access any potential fire within the compactor.

A.9.1

One cubic yard is approximately equal to 202 gallons.

A.10.1

It is not the intent to consider portable shredders as waste processing equipment.

A.11.2.2

Waste and linen chutes and transport systems, including chute intake and discharge doors, should not be modified from the installation specifications provided in the listing or manufacturers' installation instructions. As an example, the installation of gaskets on chute intake doors that were not manufactured or listed with a gasket can cause the doors to fail to close and can violate the listing.

Annex B Informational References

B.1 Referenced Publications.

The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

B.1.1 NFPA Publications. (Reserved)

B.1.2 Other Publications.

B.1.2.1 ASTM Publications.

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

ASTM C980, *Standard Specification for Industrial Chimney Lining Brick*, 2017.

B.1.2.2 Other Publications.

Stickford, G.H., et al., *Technology Development for Corrosion Resistant Condensing Heat Exchangers*, Columbus, OH: Battelle Columbus Labs, 1985.

B.2 Informational References. (Reserved)

SR-5 Hide Legis

B.3 References for Extracts in Informational Sections.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel–Burning Appliances*, 2024 edition.

NFPA 5000® *, Building Construction and Safety Code*® , 2024 edition.

Public Comment No. 1-NFPA 82-2022 [Section No. 2.3.2]

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 (~~2018~~ 2022).

ASTM C199, *Standard Test Method for Pier Test for Refractory Mortars*, ~~1984 (~~ 2022~~)~~ .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2020~~ 2022 .

ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, ~~1958 (2019a)~~ 2022 .

Statement of Problem and Substantiation for Public Comment

date updates

Related Item

• fr10

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Street Address:
City:
State:
Zip:
Submittal Date: Wed Dec 28 15:14:52 EST 2022
Committee: ICN-AAA

Committee Statement

Committee Action: Rejected but see related SR
Resolution: SR-1-NFPA 82-2023
Statement: Revisions to titles and edition years of Other Publications.

Public Comment No. 2-NFPA 82-2023 [Section No. 3.3.8.2]

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~~ Assessing Combustibility of Materials ~~in~~ Using a Vertical Tube Furnace at 750°C*, shall be considered noncombustible materials. [**211,** 2016]

Statement of Problem and Substantiation for Public Comment

The title of ASTM E136 has changed.
The vast majority of NFPA documents have eliminated this definition in favor of presenting the information in the body of the standard, for 2 reasons:
(1) the first sentence and the second sentence of the definition are in conflict with each other and present two alternative approaches to declaring a material noncombustible, since ASTM E136 allows some burning and ignition and still declares that the material passes (see ASTM E136 language below).
(2) the "definition" is a requirement and NFPA definitions are not allowed to contain requirements as they are not enforceable.
The recommended language (for chapter 4) would be:

4.3 Noncombustible material A material that complies with any one of the following shall be considered a noncombustible material:
(1) The material, 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
(2) The material is reported as passing ASTM E 136, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C

The language regarding "passing" ASTM E136 is as follows:
"15.1 Report the material as passing the test if at least three of the four test specimens tested meet the individual test specimen criteria detailed either in 15.2 or in 15.3. The three individual test specimens do not need to meet the same individual test specimen criteria.
15.2 If the weight loss of an individual the test specimen is 50 % or less, that test specimen is considered as having met the individual test specimen criteria when all the criteria in 15.2.1 through 15.2.3 are met:
15.2.1 For the duration of the test, the recorded temperature of the surface thermocouple does not rise more than 30°C (54°F) above the stabilized furnace temperature established at T2 prior to the test.
15.2.2 For the duration of the test, the recorded temperature of the interior thermocouple does not rise more than 30°C (54°F) above the stabilized furnace temperature established at T2 prior to the test.
15.2.3 There is no flaming from the test specimen after the first 30 s."

Related Item

• pc1 • fr10

Submitter Information Verification

Submitter Full Name: Marcelo Hirschler
Organization: GBH International
Street Address:
City:
State:

Zip:

Submittal Date: Tue Jan 03 13:22:52 EST 2023

Committee: ICN-AAA

Committee Statement

Committee Action: Rejected but see related SR

Resolution: SR-6-NFPA 82-2023

Statement: Revisions made to the definitions of combustible material, limited-combustible material, and noncombustible material and to add a new section in Chapter 4 for noncombustible materials and limited-combustible materials. Revisions also reflect that previous extracted definitions for combustible and noncombustible material from NFPA 211 have been replaced by material extracted from NFPA 5000.

NATIONAL FIRE PROTECTION ASSOCIATION
The leading information and knowledge resource on fire, electrical and related hazards

M E M O R A N D U M

TO: Technical Committee on Incinerators and Waste Handling Systems

FROM: Sarah Caldwell, *Committee Administrator*

DATE: June 27, 2023

SUBJECT: NFPA 82 Second Draft Technical Committee FINAL Ballot Results (F2023)

According to the final ballot results, all ballot items received the necessary affirmative votes to pass ballot.

10 Members Eligible to Vote
3 Members Not Returned (*Hebert, Inmon, Whitaker*)

The attached report shows the number of affirmative, negative, and abstaining votes as well as the explanation of the vote for **each** revision**.**

To pass ballot, **each** revision requires: (1) a simple majority of those eligible to vote and (2) an affirmative vote of $^{2}/_{3}$ of ballots returned. See Sections 3.3.4.3.(c) and 4.3.10.1 of the ***Regulations Governing the Development of NFPA Standards***.

Second Revision No. 6-NFPA 82-2023 [Global Comment]

See attached Word document for extracts from NPA 5000 that include revisions to definitions of Combustible and Noncombustible Material in Chapter 3 and new section added to Chapter 4.

Supplemental Information

File Name	Description	Approved
82_SR6_Combustible_and_Noncombustible_Material_NFPA5000_Extracts.docx	Combustible, Limited Combustible, and Noncombustible Material Updates	
82_Global_SR-6_For_Ballot.pdf		

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Wed May 17 08:38:38 EDT 2023

Committee Statement

Committee Statement: Revisions made to the definitions of combustible material, limited-combustible material, and noncombustible material and to add a new section in Chapter 4 for noncombustible materials and limited-combustible materials. Revisions also reflect that previous extracted definitions for combustible and noncombustible material from NFPA 211 have been replaced by material extracted from NFPA 5000.

Response Message: SR-6-NFPA 82-2023

Public Comment No. 2-NFPA 82-2023 [Section No. 3.3.8.2]

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All
0 Affirmative with Comments
0 Negative with Comments

0 Abstention

Not Returned

Hebert, Steven

Inmon, Steve

Whitaker, Richard

Affirmative All

Beebe, Chad E.

Boustani, Hadi C.

Bracken, Michael F.

Buchanan, James R

Hart, Sarina L.

Peterkin, James S.

Polk, Brian N.

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3.3.8 Material.

3.3.8.1 Combustible (Material).
A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible. [**5000,** 2024]~~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]~~

3.3.8.2 Limited-Combustible (Material).
See 4.3.2.

3.3.8.3 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]~~See 4.3.1.

4.3 Materials

4.3.1* Noncombustible Material.

A.4.3.1
The provisions of 4.3.1 do not require inherently noncombustible materials to be tested in order to be classified as noncombustible materials. [**5000:**A.7.1.4.1]

4.3.1.1

A material that complies with any one of the following shall be considered a noncombustible material:

(1) *The material, 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.

(2) The material is reported as passing ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C.*

(3) The material is reported as complying with the pass/fail criteria of ASTM E136 when tested in accordance with the test method and procedure in ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-Shaped Airflow Stabilizer, at 750°C.*

[**5000:**7.1.4.1.1]

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A.4.3.1.1(1)
Examples of such materials include steel, concrete, masonry, and glass. [**5000:**A.7.1.4.1.1(1)]

4.3.1.2

Where the term *limited-combustible* is used in this document, it shall also include the term noncombustible. [**5000:**7.1.4.1.2]

4.3.2* Limited-Combustible Material.

A material shall be considered a limited-combustible material where one of the following is met:

(1) The conditions of 4.3.2.1 and 4.3.2.2, and the conditions of either 4.3.2.3 or 4.3.2.4, shall be met.

(2) The conditions of 4.3.2.5 shall be met.

[**5000:**7.1.4.2]

A.4.3.2
Material subject to increase in combustibility or flame spread index beyond the limits herein established through the effects of age, moisture, or other atmospheric condition is considered combustible. *(See NFPA 259 and NFPA 220.)* [**5000:**A.7.1.4.2]

4.3.2.1

The material does not comply with the requirements for a noncombustible material in accordance with 4.3.1. [**5000:**7.1.4.2.1]

4.3.2.2

The material, in the form in which it is used, exhibits a potential heat value not exceeding 3500 Btu/lb (8141 kJ/kg) when tested in accordance with NFPA 259. [**5000:**7.1.4.2.2]

4.3.2.3

The material shall have a structural base of noncombustible material with a surfacing not exceeding a thickness of 1⁄8 in. (3.2 mm) where the surfacing exhibits a flame spread index not greater than 50 when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*. [**5000:**7.1.4.2.3]

4.3.2.4

The material shall be composed of materials that in the form and thickness used neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723 and are of such composition that all surfaces that would be exposed by cutting through the material on any plane would neither exhibit a flame spread index greater than 25 nor

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exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723. [**5000:**7.1.4.2.4]

4.3.2.5

Materials shall be considered limited-combustible materials where tested in accordance with ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter*, at an incident heat flux of 75 kW/m^2 for a 20-minute exposure, and both the following conditions are met:

(1) The peak heat release rate shall not exceed 150 kW/m^2 for longer than 10 seconds.

(2) The total heat released shall not exceed 8 MJ/m^2.

[**5000:**7.1.4.2.5]

4.3.2.6

Where the term *limited-combustible* is used in this standard, it shall also include the term *noncombustible*. [5000:7.1.4.2.6]

Second Revision No. 1-NFPA 82-2023 [Section No. 2.3]

2.3 Other Publications.

2.3.1 ASHRAE Publications.

ASHRAE, ~~Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329-2305~~ 180 Technology Parkway, Peachtree Corners, GA 30092 .

ASHRAE *Handbook — HVAC Systems and Equipment,* 2020.

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 (~~2018~~ 2022).

ASTM C199, *Standard Test Method for Pier Test for Refractory Mortars*, ~~1984 (~~ 2022~~)~~ .

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2020~~ 2022 .

ASTM E136, *Standard Test Method for ~~Behavior~~ Assessing Combustibility of Materials ~~in~~ Using a Vertical Tube Furnace at 750°C*, ~~1958 (2019a)~~ 2022 .

2.3.3 UL Publications.

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

UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised 2022.

2.3.4 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, ~~2003~~ 2020 .

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Mon May 08 09:37:24 EDT 2023

Committee Statement

Committee Statement: Revisions to titles and edition years of Other Publications.
Response Message: SR-1-NFPA 82-2023

Public Comment No. 1-NFPA 82-2022 [Section No. 2.3.2]

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All

0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Hebert, Steven
Inmon, Steve
Whitaker, Richard

Affirmative All

Beebe, Chad E.
Boustani, Hadi C.
Bracken, Michael F.
Buchanan, James R
Hart, Sarina L.
Peterkin, James S.
Polk, Brian N.

Second Revision No. 4-NFPA 82-2023 [Section No. 2.4]

2.4 References for Extracts in Mandatory Sections.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel–Burning Appliances*, 2024 edition.

NFPA 5000 ®, *Building Construction and Safety Code* ®, 2024 edition.

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Mon May 15 14:17:54 EDT 2023

Committee Statement

Committee Statement: Revision added NFPA 5000 to References for Extracts in Mandatory Sections.
Response Message: SR-4-NFPA 82-2023

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Hebert, Steven
Inmon, Steve
Whitaker, Richard

Affirmative All

Beebe, Chad E.
Boustani, Hadi C.
Bracken, Michael F.
Buchanan, James R
Hart, Sarina L.
Peterkin, James S.

Polk, Brian N.

Second Revision No. 7-NFPA 82-2023 [New Section after 5.2.1.5]

5.2.1.6 Crematoriums.

5.2.1.6.1

Crematoriums shall be installed and operated according to the manufacturer's specifications.

5.2.1.6.2

The crematorium exhaust stack shall be tested in accordance with the manufacturer, local AHJ, or local regulations.

5.2.1.6.3

Maintenance shall be conducted in accordance with a schedule provided by the manufacturer or developed by the owner or operator.

Supplemental Information

File Name	Description	Approved
82_SR7_New_Section_5.2.1.6.docx	New Section 5.2.1.6 on crematorium requirements.	

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Wed May 17 08:42:05 EDT 2023

Committee Statement

Committee Statement: Revision made to add new requirements for crematoriums.
Response Message: SR-7-NFPA 82-2023

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Hebert, Steven

Inmon, Steve

Whitaker, Richard

Affirmative All

Beebe, Chad E.

Boustani, Hadi C.

Bracken, Michael F.

Buchanan, James R

Hart, Sarina L.

Peterkin, James S.

Polk, Brian N.

Second Revision No. 3-NFPA 82-2023 [New Section after 6.2.3.3.1.4]

6.2.3.3.1.5

The force required to open the chute door leaf shall not exceed 30 lbf (133 N) to set the leaf in motion and 15 lbf (67 N) to open the leaf to the required width.

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Mon May 15 13:05:14 EDT 2023

Committee Statement

Committee Statement: New section added to clarify that the chute intake doors are part of fire door assembly and require increased door opening forces to maintain self closing and latching requirements.

Response Message: SR-3-NFPA 82-2023

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Hebert, Steven
Inmon, Steve
Whitaker, Richard

Affirmative All

Beebe, Chad E.
Boustani, Hadi C.
Bracken, Michael F.
Buchanan, James R
Hart, Sarina L.
Peterkin, James S.

Polk, Brian N.

Second Revision No. 2-NFPA 82-2023 [New Section after 6.3.3.2.4]

6.3.3.2.5

The force required to open the chute door leaf shall not exceed 30 lbf (133 N) to set the leaf in motion and 15 lbf (67 N) to open the leaf to the required width.

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Mon May 15 12:49:20 EDT 2023

Committee Statement

Committee Statement: New section added to clarify that the chute intake doors are part of fire door assembly and require increased door opening forces to maintain self closing and latching requirements.
Response Message: SR-2-NFPA 82-2023

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Hebert, Steven
Inmon, Steve
Whitaker, Richard

Affirmative All

Beebe, Chad E.
Boustani, Hadi C.
Bracken, Michael F.
Buchanan, James R
Hart, Sarina L.
Peterkin, James S.

Polk, Brian N.

Second Revision No. 5-NFPA 82-2023 [Section No. B.3]

B.3 References for Extracts in Informational Sections.

NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel–Burning Appliances*, 2024 edition.

NFPA 5000 ®, *Building Construction and Safety Code* ®, 2024 edition.

Submitter Information Verification

Committee: ICN-AAA
Submittal Date: Mon May 15 14:21:07 EDT 2023

Committee Statement

Committee Statement: Revision adds NFPA 5000 to References for Extracts in Informational Sections.
Response Message: SR-5-NFPA 82-2023

Ballot Results

✔ **This item has passed ballot**

10 Eligible Voters
3 Not Returned
7 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Hebert, Steven
Inmon, Steve
Whitaker, Richard

Affirmative All

Beebe, Chad E.
Boustani, Hadi C.
Bracken, Michael F.
Buchanan, James R
Hart, Sarina L.
Peterkin, James S.

Polk, Brian N.