First Revision No. 27-NFPA 801-2022 [Global Input]

[Change instances of 'glove box' to 'glovebox' and 'glove boxes' to 'gloveboxes'.]

3.3.22* ~~Glove Box~~Glovebox.

A sealed enclosure in which items inside the box are handled exclusively using long gloves sealed to ports in the walls of the enclosure.

7.1.6 Hot Cells, Caves, Hoods, and ~~Glove Boxes~~Gloveboxes.

7.1.6.1

Hot cells, caves, hoods, and ~~glove boxes~~gloveboxes shall be provided with fire detection unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.1.6.3*

Fire suppression shall be provided in hot cells, caves, hoods, and ~~glove boxes~~gloveboxes unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.1.6.5* ~~Glove Boxes~~Gloveboxes and ~~Glove Box~~Glovebox Features.

7.1.6.5.1

The ~~glove boxes~~gloveboxes and ~~glove box~~glovebox windows shall be of noncombustible construction.

7.1.6.5.8

If fixed extinguishing systems are utilized, the effects of system discharge on the integrity of the ~~glove box~~glovebox ~~integrity~~ shall be considered in evaluating the design of the system.

7.1.6.5.9*

A means shall be provided to restrict the passage of flame between ~~glove boxes~~gloveboxes that are connected.

7.4.2

Laboratory enclosures shall comply with the requirements for hot cells, ~~glove boxes~~gloveboxes, and hoods unless the fire hazards analysis in Section 4.3 dictates otherwise.

A.3.3.22 ~~Glove Box~~Glovebox.

The operator places his or her hands and forearms into the gloves from the room outside of the box ~~in order~~ to maintain physical separation from the ~~glove box~~glovebox environment. This ~~allows~~ enables the operator to ~~retain the ability to~~ manipulate items inside the box with relative freedom while viewing the operation through a window.

A.3.3.23 Hood.

The airflow is typically from the least contaminated area to the more contaminated area. Hoods are sometimes referred to as *sashhoods* when used as a means of introducing materials or items to a hood or ~~glove box~~glovebox.

A.7.1.3.3

Enclosed spaces refers to any enclosure within a building, including ~~glove boxes~~gloveboxes, hot cells, caves, plenums, and so forth.

A.7.1.6.5

The external radiation hazard present during fabrication of uranium 235 fuel elements is of a low order. Uranium 233 and plutonium 239 present severe inhalation hazards to personnel; therefore, an enclosed protection system should be required. These systems are called ~~glove boxes~~gloveboxes. ~~They~~ Gloveboxes can be extensive, with an appreciable amount of glass, and can present unique fire protection problems. Under normal conditions, substantial protection can be provided against the existing radiation hazard. On the other hand, if a criticality incident should occur, the type and quantity of radiation emitted can create grave hazards to personnel. Even a small fire within a ~~glove box~~glovebox can produce serious consequences if not controlled properly. Fire control systems and procedures for ~~glove boxes~~gloveboxes should be carefully developed and implemented before the boxes are used. Generally, such protective systems are custom-designed for the specific application.

A.7.1.4.5.3

Securing ~~of~~ the gloves outside the box positions them such that fixed fire suppression in the room can be more effective and the gloves do not contribute to the fuel loading in the ~~glove box~~glovebox or provide a source of ignition to other fuels in the ~~glove box~~glovebox. Positioning them outside also reduces the potential for gloves ~~contributing~~ to contribute to fires inside the ~~glove box~~glovebox.

A.7.1.4.5.4

Gloves should be removed if work has been completed and no additional work requiring access to the ~~glove box~~glovebox through the use of the specific gloves is identified, the ~~glove box~~glovebox will not remain in service, or fire hazards remaining in the ~~glove box~~glovebox dictate that the gloves be removed. Gloves should not be removed strictly because immediate or short term use is unnecessary. Unnecessary removal of gloves creates unnecessary generation of radioactive wastes as well as potential exposures to radioactive materials during change-out activities.

A.7.1.4.5.7

Fire suppression should be considered in addition to fixed inerting systems to address potential concerns during ~~glove box~~glovebox maintenance or failure of inerting systems.

Supplemental Information

File Name	Description	Approved
801_FR27_glovebox_Global.docx	Update 'glove box' to 'glovebox' and 'glove boxes' to 'gloveboxes'.	

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 13:27:30 EDT 2022

Committee Statement

Committee Statement:	The American Glovebox Society, DOE-STD-1066-2016, and Factory Mutual Data Sheet 7-61 all use "glovebox" as one word. This will ensure that this term in NFPA 801 is consistent with the industry.
Response Message:	FR-27-NFPA 801-2022

First Revision No. 40-NFPA 801-2022 [Global Input]

[Remove the terms "Standard for" from UL titles.]

3.3.19 Flame Spread Index.

A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, ~~*Standard for*~~ *Test for Surface Burning Characteristics of Building Materials*. [**5000,** 2024~~2018~~]

5.8.1

Interior wall and ceiling finish in areas for processing or storing radioactive materials shall have a flame spread index of not more than 25 and a smoke development index of not more than 450~~,~~ in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, ~~*Standard for*~~ *Test for Surface Burning Characteristics of Building Materials*.

5.9.3.1*

Air entry filters shall have approved filter media that comply with the requirements of UL 900, ~~*Standard for*~~ *Air Filter Units*.

A.3.3.14 Fire Resistance Rating.

Fire resistance ratings should comply with the test procedures of ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, ~~*Standard for*~~ *Fire Tests of Building Construction and Materials*.

Supplemental Information

File Name	Description	Approved
801_FR40_UL_Global.docx	UL reference title updates.	

Submitter Information Verification

Committee: FIF-AAA
Submittal Date: Thu Oct 13 16:33:24 EDT 2022

Committee Statement

Committee Statement: The terms “Standard for” have been deleted from UL reference titles because they are considered

redundant. All references to UL are standards. This aligns the UL titles with other NFPA documents.

Response Message: FR-40-NFPA 801-2022

Public Input No. 7-NFPA 801-2022 [Global Input]

First Revision No. 41-NFPA 801-2022 [Global Input]

[Revisions and additions to existing Chapter 7. See attached Word document.]

Supplemental Information

File Name	Description	Approved
801_FR41_Chapter_7_Global.docx	Revisions and additions to existing Chapter 7	
801_Global_FR-41_Ch_7_revisions_for_ballot.pdf	for ballot	

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Thu Oct 13 16:38:12 EDT 2022

Committee Statement

Committee Statement: These revisions provide the user with clarification with the expansion of Chapter 7 requirements in regards to applications of the fire hazards analysis and appropriate applications of both fire detection and fire suppression requirements for specific facilities, processes, and special hazards.

Response Message: FR-41-NFPA 801-2022

7.1.3.4*
~~Flammable~~In enclosed spaces in which flammable and combustible liquids~~ in enclosed spaces in which~~ vapors ~~have the potential to~~could accumulate outside of the storage vessels, piping~~,~~ and utilization equipment shall be installed with combustible-vapor analyzers designed for the vapors generated unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.1.3.9*
The production, storage, transfer, and use of hydrogen shall be done in accordance with NFPA 2 and NFPA 55.

A.7.1.3.9
NFPA 804 contains additional information pertaining to hydrogen systems.

7.1.5 Special Materials.

7.1.5.1
Combustible metals shall be stored and handled in accordance with NFPA 484.

7.1.5.2*
Operating controls and limits for the handling of pyrophoric materials shall be established to the satisfaction of the AHJ.

7.1.5.3
Pyrophoric material shall be stored and handled in an inert atmosphere.

7.1.5.4
A supply of an appropriate extinguishing medium shall be available in all areas where fines and cuttings of pyrophoric materials are present.

7.1.5.5
Solid and liquid oxidizing agents shall be stored and handled in accordance with NFPA 400.

7.1.6.5* Glove Boxes and Glove Box Features.

7.1.6.5.1
The glove boxes and glove box windows shall be of noncombustible construction.

7.1.6.5.2
The number of glovebox windows shall be limited to that required to provide acceptable visibility to ensure safe operations, cleanup, and maintenance activities can be performed.

7.1.6.5.3
Where combustible shielding is necessary for the radiation hazard, fire protection features shall be installed to compensate for the additional combustible loading unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.1.6.5.4*
When the gloves are not being used, they shall be withdrawn and secured outside the box if fire hazards are present inside the box.

7.1.6.5.5*

When the gloves are no longer needed for operations, they shall be removed.

7.1.6.5.5.1
Where gloves have been removed, ~~and~~noncombustible glove port covers shall be installed if fire hazards are present inside the box.

7.1.6.5.5.2
The glove port covers shall be held in place by a latch or other device constructed of noncombustible material suitable for the application.

7.1.6.5.6
Doors shall remain closed when not in use.

7.1.6.5.7
The concentration of combustibles shall be limited to the quantity necessary to perform the immediate task.

7.1.6.5.8
Radioactive contaminated combustible waste shall not be stored or allowed to accumulate in gloveboxes.

7.1.6.5.9
Gloveboxes used for handling the materials described in 7.1.5 shall be evaluated and comply with the fire hazards analysis in Section 4.3.

7.1.6.5.10*
Fixed inerting systems shall not be utilized in lieu of a fire suppression system.

7.1.6.5.11
If fixed extinguishing systems are utilized, the effects of system discharge on glove box integrity shall be considered in evaluating the design of the system.

7.1.6.5.12*
A means shall be provided to restrict the passage of flame between glove boxes that are connected.

7.1.8* Special Facilities.
Special facilities shall comply with the requirements of 7.1.8 unless the fire hazards analysis in Section 4.3 dictates otherwise.

A.7.1.8
Special facilities have unique characteristics that require the evaluation of the engineering and administrative controls via the fire hazards analysis.

7.1.8.1* Control Room Complex.

A.7.1.8.1
NFPA 804 contains additional information pertaining to the control room complex, which includes the kitchen area, office spaces, etc.

7.1.8.1.1
Automatic fire suppression systems shall be provided for the control room complex.

7.1.8.1.2
The control room complex shall be provided with fire detection.

7.1.8.1.3
The control room complex shall be isolated from areas of use by a fire barrier with a minimum 3-hour fire resistance rating.

7.1.8.2* Cable Concentrations.

A.7.1.8.2
NFPA 804 contains additional information pertaining to cable concentrations (cable spreading rooms, cable tunnels, and cable shafts and risers).

7.1.8.2.1
Automatic fire suppression systems shall be provided for cable spreading rooms, cable tunnels, and cable shafts and risers.

7.1.8.2.2
Cable spreading rooms, cable tunnels, and cable shafts and risers shall be provided with fire detection.

7.1.8.3 Plant Computer and Communications Rooms.

7.1.8.3.1
Automatic fire suppression systems shall be provided for plant computer and communications rooms.

7.1.8.3.2
Plant computer and communications rooms shall be provided with fire detection.

7.1.8.4 Switchgear and Relay Rooms.

7.1.8.4.1
Switchgear and relay rooms shall be provided with fire detection.

7.1.8.4.2
Automatic fire suppression systems shall be provided for switchgear and relay rooms.

7.1.8.5* Battery Rooms.

A.7.1.8.5
NFPA 804 contains additional information pertaining to battery rooms.

7.1.8.5.1
Battery rooms shall be protected as required by NFPA 855.

7.1.8.5.2
Automatic fire suppression systems shall be provided for battery rooms.

7.1.8.5.3
Battery rooms shall be provided with fire detection.

7.1.8.5.4

Battery rooms shall be isolated from areas of use by a fire barrier with a minimum 1-hour fire resistance rating.

7.1.8.6 Hydraulic Control Systems.

7.1.8.6.1*
Large hydraulic oil systems shall be isolated from areas of use by a fire barrier with a minimum 1-hour fire resistance rating.

A.7.1.8.6.1
Large hydraulic oil systems are typically considered to have an aggregate capacity greater than 3785 L (1000 gal) per fire area.

7.1.8.6.2*
The hydraulic control system shall use a listed fire-resistant fluid.

A.7.1.8.6.2
For hydraulic control systems above 379 L (100 gal) not using a listed fire-resistant fluid, see FM Data Sheet 7-32 and 7-98 for additional guidance.

7.1.8.7* Emergency and Standby Generators.

A.7.1.8.7
NFPA 804 contains additional information pertaining to emergency and standby generators.

7.1.8.7.1
The installation and operation of emergency and standby generators shall be in accordance with NFPA 37 or NFPA 110.

7.1.8.7.2
Automatic fire suppression systems shall be provided for emergency and standby generators.

7.1.8.7.3
Emergency and standby generators shall be provided with fire detection.

7.1.8.8* Diesel Fuel Storage and Transfer Areas. (Reserved)

A.7.1.8.8
NFPA 804 contains additional information pertaining to diesel fuel storage and transfer areas.

7.1.8.9*
Spent-fuel pool areas shall be provided with fire detection.

A.7.1.8.9
NFPA 804 contains additional information pertaining to spent-fuel pool areas.

7.1.8.10*
Fire barriers, fire detection, and automatic fire suppression shall be provided for radioactive waste and decontamination areas.

A.7.1.8.10

NFPA 804 contains additional information pertaining to radioactive waste and decontamination areas.

7.1.8.11
Record storage areas shall be located and protected in accordance with NFPA 232.

7.1.8.12*
Cooling towers shall be of noncombustible or limited-combustible construction.

A.7.1.8.12
NFPA 214 contains additional information pertaining to cooling towers.

7.1.8.13
Fire pumps shall meet the requirements of NFPA 20.

7.1.8.13.1
Fire pumps shall be automatic starting.

7.1.8.14*
Protection from exposures for transformers shall be provided.

A.7.1.8.14
NFPA 804, NFPA 850, and FM Data Sheet 5-4 contain additional information pertaining to transformers. Transformer protection methods could include fire barriers, adequate spatial separation, fire detection, or automatic fire suppression.

7.1.8.15*
Auxiliary boilers, their fuel-burning systems, their combustion product removal systems, and their related control equipment shall be installed and operated in accordance with NFPA 85.

A.7.1.8.15
NFPA 804 contains additional information pertaining to auxiliary boilers.

7.2* Hospitals.

7.2.1
Automatic fire suppression systems shall be provided for areas where radioactive materials are stored or used in hospitals unless the fire hazards analysis in Section 4.3 dictates otherwise.

~~**7.2.2**~~ [A.7.2.4-move]
~~Precautions shall be taken, as required, if the radioactive materials are stored or used in ways that cause them to be more susceptible to release from their containers.~~

7.2.2
Areas where radioactive materials are stored or used in hospitals shall be provided with fire detection unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.2.3*
Hot labs shall be isolated from areas of use by a fire barrier with a minimum 1-hour fire resistance rating unless the fire hazards analysis in Section 4.3 dictates otherwise.

A.7.2.3
Hot labs are rooms in nuclear medicine hospitals that have been specially designed to deliver, store, and prepare radioactive materials required for diagnostic imaging and radiotherapy. Types of Gamma emitters that could be stored in hot labs are Technetium-99, Iodine-131, β-alanine, Gallium-67, and Indium-111. Typically, the administration of radioactive material to patients is done via syringe, but capsules could also be administered.

7.2.4*
Where combustible shielding is necessary for the radiation hazard, fire protection features shall be installed to compensate for the additional combustible loading unless the fire hazards analysis in Section 4.3 dictates otherwise.

A.7.2.4
Precautions ~~shall~~should be taken, as required, if the radioactive materials are stored or used in ways that cause them to be more susceptible to release from their containers.

7.3 Uranium Enrichment, Fuel Fabrication, and Fuel Reprocessing Facilities.

7.3.1* General.
Special hazards related to protection from fire in uranium enrichment, fuel fabrication, and fuel reprocessing facilities shall be controlled by a defense-in-depth strategy that ~~utilizes a combination of the following:~~meets the applicable requirements of Section 7.1 or any other methods acceptable to the AHJ.

~~(1) Location and separation~~

~~(2) Safe operating procedures~~

~~(3) Fixed detection and suppression systems~~

~~(4) Inerting~~

~~(5) Any other methods acceptable to the AHJ~~

A.7.3.1
Based on the fire hazard analysis, the defense-in-depth strategy should use at least one of the following:

(1) Location and separation

(2) Safe operating procedures

(3) Fixed detection and suppression systems

(4) Inerting

7.3.2
Uranium enrichment, fuel fabrication, and fuel reprocessing facilities shall meet the applicable requirements of 7.1.8.

7.3.3
Automatic fire suppression systems shall be provided for uranium enrichment, fuel fabrication, and fuel reprocessing facilities unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.3.4
Uranium enrichment, fuel fabrication, and fuel reprocessing facilities shall be provided with fire detection unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.5* Research and Production Reactors.

A.7.5
NFPA 804 contains additional information pertaining to the reactor area and its associated processes and equipment.

7.6 Facilities Handling Waste. ~~(Reserved)~~

7.6.1
Facilities using compact presses shall meet the requirements of 7.1.8.6.

7.6.2*
Automatic fire suppression systems shall be provided for bituminization process areas unless the fire hazards analysis in Section 4.3 dictates otherwise.

A.7.6.2
Bituminization is the process used for the long-term storage of low and intermediate radioactive wastes.

There are some issues related to this process, as asphalt heats up and becomes liquid when mixed with radioactive wastes (which can cause a fire incident during the process) and self-ignition of bitumen compounds can occur while the mixed media is stored inside metallic drums.

Whenever feasible, other solutions, such as cementing and vitrification, are preferable for the long-term storage of low and intermediate radioactive wastes.

7.6.3* Treatment.

A.7.6.3
Treatment methods for radioactive waste to reduce its hazards can include oxidation, melting to reduce volume, etc.

7.6.3.1
Furnaces or ovens used for the treatment of radioactive wastes shall comply with the applicable requirements of NFPA 86.

7.6.4 Incinerators.

7.6.4.1
Incinerators used for the treatment of radioactive waste shall be in accordance with NFPA 82.

7.6.5 Storage.

7.6.5.1
Inside storage facilities for radioactive waste shall be of noncombustible construction.

7.6.5.2

Radioactive waste buildings, storage areas, and decontamination areas shall be isolated from areas of use by a fire barrier with a minimum 3-hour fire resistance rating unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.6.5.3
Outside storage facilities for radioactive waste shall be provided with containment and drainage to an approved location.

7.6.5.4
Radioactive waste shall be stored in noncombustible containers when located outside.

7.6.5.5
Radioactive waste stored outside shall be separated from combustible materials as determined by the fire hazards analysis in Section 4.3.

7.7 Accelerators. ~~**(Reserved)**~~

7.7.1
Accelerators and support facilities shall meet the applicable requirements of 7.1.8.

7.7.2
Data collection rooms and office areas shall be provided with fire detection unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.8 Process Facilities. ~~**(Reserved)**~~

7.8.1*
Special hazards related to protection from fire in process facilities shall be controlled by a defense-in-depth strategy that meets the applicable requirements of Section 7.1 or any other methods acceptable to the AHJ.

A.7.8.1
Based on the fire hazard analysis, the defense-in-depth strategy should use at least one of the following:

(1) Location and separation

(2) Safe operating procedures

(3) Fixed fire detection and fire suppression systems

(4) Inerting

7.8.2
Process facilities shall meet the applicable requirements of 7.1.8.

7.8.3
Process facilities shall be provided with fire detection unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.8.4
Automatic fire suppression systems shall be provided for process facilities unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.9 Irradiation Facilities. ~~(Reserved)~~

7.9.1
Irradiation facilities shall meet the applicable requirements of 7.1.8.

7.9.2
Irradiation facilities shall be provided with fire detection unless the fire hazards analysis in Section 4.3 dictates otherwise.

7.9.3
Automatic fire suppression systems shall be provided for irradiation facilities unless the fire hazards analysis in Section 4.3 dictates otherwise.

First Revision No. 12-NFPA 801-2022 [Detail]

[New section 7.1.1 to come before current section 7.1.1]

7.1.1* Noncombustible Material.

A.7.1.1

The provisions of 7.1.1 do not require inherently noncombustible materials to be tested in order to be classified as noncombustible materials. [**5000:**A.7.1.4.1]

7.1.1.1

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]

A.7.1.1.1(1)

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

7.1.1.2

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

7.1.2* Limited-Combustible Material.

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

(1) The conditions of 7.1.2.1 and 7.1.2.2, and the conditions of either 7.1.2.3 or 7.1.2.4, shall be met.

(2) The conditions of 7.1.2.5 shall be met.

[**5000:**7.1.4.2]

A.7.1.2

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]

7.1.2.1

The material does not comply with the requirements for a noncombustible material in accordance with 7.1.1. [**5000:**7.1.4.2.1]

7.1.2.2

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

7.1.2.3

The material shall have a structural base of noncombustible material with a surfacing not exceeding a thickness of 3.2 mm (1⁄8 in.) 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]

7.1.2.4

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]

7.1.2.5

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]

7.1.2.6

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

Submitter Information Verification

Committee: FIF-AAA
Submittal Date: Tue Sep 27 15:35:18 EDT 2022

Committee Statement

Committee Statement:	This revision extracts the definitions of noncombustible material and limited combustible material from NFPA 5000 aligning these definitions with other NFPA documents. See action taken on PI 14 and PI 15.
Response Message:	FR-12-NFPA 801-2022

Public Input No. 16-NFPA 801-2022 [Section No. A.3.3.26]

First Revision No. 22-NFPA 801-2022 [Detail]

[Add additional information references to Annex C.2.1.]

C.2.1 NFPA Publications.

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

NFPA 37,*Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*, 2024 edition.

NFPA 68,*Standard on explosion protection by deflagration venting*, 2023 edition.

NFPA 69,*Standard on Explosion Prevention Systems*, 2024 edition.

NFPA 72®,National Fire Alarm and Signaling Code®, 2019 edition.

NFPA 80A,*Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, 2022 edition.

NFPA 85,*Boiler and Combustion Systems Hazards Code*, 2023 edition.

NFPA 92,*Standard for Smoke Control Systems*, 2024 edition.

NFPA 99,*Health Care Facilities Code*, 2024 edition.

NFPA 110,*Standard for Emergency and Standby Power Systems*, 2025 edition.

NFPA 214,*Standard on Water-Cooling Towers*, 2021 edition.

NFPA 252,*Standard Methods of Fire Tests of Door Assemblies*, 2022 edition.

NFPA 259, *Standard Test Method for Potential Heat of Building Materials*, 2023 edition.

NFPA 520,*Standard on Subterranean Spaces*, 2021 edition.

NFPA 601,*Standard for Security Services in Fire Loss Prevention*, 2020 edition.

NFPA 652,*Standard on the Fundamentals of Combustible Dust*, 2019 edition.

NFPA 654,*Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids*, 2020 edition.

NFPA 703,*Standard for Fire-Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*, 2024 edition.

NFPA 770,*Standard on Hybrid (Water and Inert Gas) Fire-Extinguishing Systems*, 2021 edition.

NFPA 855,*Standard for the Installation of Stationary Energy Storage Systems*, 2023 edition.

NFPA 1600®,Standard on Continuity, Emergency, and Crisis Management, 2019 edition.

NFPA 2010,*Standard for Fixed Aerosol Fire-Extinguishing Systems*, 2020 edition.

Supplemental Information

File Name	Description	Approved
801_FR22_C_2_1.docx	Additional NFPA Information References	

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 11:38:49 EDT 2022

Committee Statement

Committee Statement: These informational references have been added to benefit the user with additional helpful information that users may otherwise be unaware of.

Response Message: FR-22-NFPA 801-2022

First Revision No. 36-NFPA 801-2022 [Detail]

[Add new informational references to C.2.2 Other Publications.]

C.2.2 Other Publications.

C.2.2.1 ASME Publications.

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

ASME NQA-1, *Quality Assurance Program Requirements for Nuclear Facility* Application, 2022.

C.2.2.2 ASTM Publications.

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

ASTM D92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester*, 2018.

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

ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*, 2019.

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-Shaped Airflow Stabilizer, at 750°C*, 2018.

ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter*, 2022.

ASTM E2690, *Standard Practice for Specimen Preparation and Mounting of Caulks and Sealants to Assess Surface Burning Characteristics*, 2017.

C.2.2.3 FM Global Publications.

FM Global, 270 Central Avenue, P.O. Box 7500, Johnston, RI 02919-4949.

FM Data Sheet 1-4, *Fire Tests*, 2019.

FM Data Sheet 7-61, *Facilities Processing Radioactive Materials*, 2012.

FM Data Sheet 7-73, *Dust Collectors and Collection Systems*, 2020.

FM Data Sheet 7-76, *Prevention and Mitigation of Combustible Dust Explosion and Fire*, 2020.

FM Data Sheet 7-78, *Industrial Exhaust Systems*, 2021.

FM Data Sheet 7-85, *Combustible and Reactive Metals*, 2022.

C.2.2.4 FPRF Publications.

Fire Protection Research Foundation, 1 Batterymarch Park, Quincy, MA 02169.

“Glovebox Fire Protection: A Literature Review,” September 2010.

C.2.2.5

The National Council on Radiation Protection and Measurement has issued a number of reports on specific radiation protection subjects. These reports are available from NCRP, 7910 Woodmont Avenue, Suite 400, Bethesda, MD 20814-3095, or from the U.S. Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001. Applicable publications include the following:

NCRP 30, *Safe Handling of Radioactive Materials-NBS Handbook 92*, 1964.

NCRP 38, *Protection Against Neutron Radiation*, 1971.

C.2.2.6

Standards of the U.S. Nuclear Regulatory Commission for protection against radiation are published in the Code of Federal Regulations, Part 20, Chapter 1, Title 10, available at most libraries. Revisions are printed in the Federal Register, available at subscribing libraries or by subscription from the U.S. Government Publishing Office.

C.2.2.7

Nuclear Safety, a bimonthly magazine, is available from the U.S. Government Publishing Office. It covers many areas of interest, including general safety, accident analysis, operating experiences, and current events.

C.2.2.8

Specific requirements for facilities handling radioactive materials have been issued by the American Nuclear Insurers, 95 Glastonbury Boulevard, Suite 300, Glastonbury, CT 06033-4453, and the MAERP Reinsurance Association, 1400 Renaissance Dr., Suite 208, Park Ridge, IL 60068.

C.2.2.9 OSHA Publications.

Occupational Safety and Health Administration, 200 Constitution Avenue, NW, Washington, DC 20210.

OSHA 3371-08, *Hazard Communication Guidance for Combustible Dusts*, 2009.

OSHA Safety and Health Information Bulletin, "Combustible Dust in Industry: Preventing and Mitigating the Effects of Fire and Explosions," 2005.

C.2.2.10 UL Publications.

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

UL 586, *High-Efficiency, Particulate, Air Filter Units*, 2009, revised 2022.

UL 2196, *Fire Test for Circuit Integrity of Fire-Resistive Power, Instrumentation, Control and Data Cables*, 2017, revised 2020.

C.2.2.11 Other Publications.

AGS-G010, *Standard of Practice for Glovebox Fire Protection*, 2011.

DOE-STD-1066, *Fire Protection*, 2016.

Fire Safety Science, "An Example of the Use of Standard Flammability Criteria for Performance Analysis of Materials: Polycarbonate and PMMA," 2005.

Fire Technology, "Characteristics of Nuclear Facility Waste Bag Fires," 2013.

NRC Information Notice No. 92-14, "Uranium Oxide Fires at Fuel Cycle Facilities," 1992.

Supplemental Information

File Name	Description	Approved
801_FR36_C_2_2.docx	Additional informational references	

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Mon Oct 03 14:32:12 EDT 2022

Committee Statement

Committee Statement: These informational references have been added to benefit the user with additional helpful information that users may otherwise be unaware of.

Response Message: FR-36-NFPA 801-2022

First Revision No. 37-NFPA 801-2022 [Detail]

[New definition in 3.3 General Definitions]

3.3.1 Bituminization.

The process of using bitumen to cover or impregnate radioactive waste to be stored until the radioactivity level drops to an acceptable level.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Mon Oct 03 14:40:43 EDT 2022

Committee Statement

Committee Statement: New definition of the term 'Bituminization' in the expansion of Chapter 7 requirements in regards to applications of the fire hazards analysis and appropriate applications of both fire detection and fire suppression requirements for specific facilities, processes, and special hazards.

Response Message: FR-37-NFPA 801-2022

First Revision No. 33-NFPA 801-2022 [Section No. 1.1.1]

1.1.1

This standard ~~addresses~~ shall specify the minimum fire protection requirements ~~intended to reduce the risk of fires and explosions at~~ for facilities handling radioactive materials during all phases of operation, including design, construction, operation, and decommissioning .

~~**A.1.1.1**~~

~~The objectives of this standard are to reduce personal hazards, provide protection from property damage, and minimize process interruption resulting from fire and explosion. Radioactive contamination might or might not be a factor in these risks.~~

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Mon Oct 03 13:58:07 EDT 2022

Committee Statement

Committee Statement: This revision provides clarification and alignment of the scope of NFPA 801 with other standards under the purview of this technical committee.

Response Message: FR-33-NFPA 801-2022

First Revision No. 34-NFPA 801-2022 [Section No. 1.2.1]

1.2.1

~~The purpose of this standard is to protect the safety of the public, facility personnel, and the environment from the effects of fire or explosions on radiological and other hazardous materials at facilities handling radioactive materials.~~ This standard shall apply to facilities handling radioactive materials by outlining the minimum fire protection requirements to reduce personal hazards, minimize the release of radioactive materials to the environment, provide protection from property damage, and minimize process interruption resulting from fire and explosions.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Mon Oct 03 14:03:41 EDT 2022

Committee Statement

Committee Statement: This revision provides clarification and alignment of the purpose of NFPA 801 with other standards under the purview of this technical committee.

Response Message: FR-34-NFPA 801-2022

First Revision No. 35-NFPA 801-2022 [Section No. 1.3]

1.3* Application.

These requirements shall be applicable to all locations where radioactive materials are stored, handled, or used in quantities and conditions requiring ~~government oversight (e.g., U.S. Nuclear Regulatory Commission, U.S. Department of Energy)~~ regulatory oversight or license to possess or use these materials and to all other locations with equal quantities or conditions.

A.1.3

The requirements apply regardless of whether a license is issued or not. Examples of oversight bodies include the U.S. Nuclear Regulatory Commission, U.S. Department of Energy, state regulators, and non-U.S. based regulatory bodies.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Mon Oct 03 14:06:46 EDT 2022

Committee Statement

Committee Statement: This revision relocates examples of regulatory bodies to the annex.

Response Message: FR-35-NFPA 801-2022

First Revision No. 15-NFPA 801-2022 [Section No. 2.2]

2.2 NFPA Publications.

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

NFPA 2, *Hydrogen Technologies Code,* 2023 edition.

NFPA 10, *Standard for Portable Fire Extinguishers,* ~~2018~~ 2022 edition.

NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam,* ~~2016~~ 2024 edition.

NFPA 12, *Standard on Carbon Dioxide Extinguishing Systems,* ~~2018~~ 2022 edition.

NFPA 12A, *Standard on Halon 1301 Fire Extinguishing Systems,* ~~2018~~ 2022 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems,* ~~2019~~ 2025 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems,* ~~2019~~ 2023 edition.

NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection,* ~~2017~~ 2022 edition.

~~NFPA 16, *Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems,* 2019 edition.~~

NFPA 17, *Standard for Dry Chemical Extinguishing Systems,* ~~2017~~ 2024 edition.

NFPA 17A, *Standard for Wet Chemical Extinguishing Systems,* ~~2017~~ 2024 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection,* ~~2019~~ 2025 edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection,* ~~2018~~ 2023 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances,* ~~2019~~ 2025 edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,* ~~2017~~ 2023 edition.

NFPA 30, *Flammable and Combustible Liquids Code,* ~~2018~~ 2024 edition.

NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines,* 2024 edition.

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals,* ~~2019~~ 2023 edition.

NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work,* ~~2019~~ 2024 edition.

NFPA 54, *National Fuel Gas Code,* ~~2018~~ 2024 edition.

NFPA 55, *Compressed Gases and Cryogenic Fluids Code,* ~~2016~~ 2023 edition.

NFPA 58, *Liquefied Petroleum Gas Code,* ~~2017~~ 2023 edition.

NFPA 70®, National Electrical Code®, ~~2017~~ 2023 edition.

NFPA 72®, National Fire Alarm and Signaling Code®, ~~2019~~ 2025 edition.

NFPA 75, *Standard for the Fire Protection of Information Technology Equipment,* ~~2017~~ 2024 edition.

NFPA 80, *Standard for Fire Doors and Other Opening Protectives,* ~~2019~~ 2025 edition.

NFPA 82, *Standard on Incinerators and Waste and Linen Handling Systems and Equipment,* ~~2019~~ 2024 edition.

NFPA 85, *Boiler and Combustion Systems Hazards Code,* 2023 edition.

NFPA 86, *Standard for Ovens and Furnaces,* ~~2019~~ 2023 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems,* ~~2018~~ 2024 edition.

NFPA 90B, *Standard for the Installation of Warm Air Heating and Air-Conditioning Systems,* ~~2018~~ 2024 edition.

NFPA 91, *Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and*

Particulate Solids, ~~2015~~ 2020 edition.

NFPA *101*®, *Life Safety Code*®, ~~2018~~ 2024 edition.

NFPA 110, *Standard for Emergency and Standby Power Systems,* 2025 edition.

NFPA 115, *Standard for Laser Fire Protection,* ~~2016~~ 2020 edition.

NFPA 204, *Standard for Smoke and Heat Venting,* ~~2018~~ 2024 edition.

NFPA 220, *Standard on Types of Building Construction,* ~~2018~~ 2024 edition.

NFPA 232, *Standard for the Protection of Records,* 2022 edition.

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations,* ~~2019~~ 2022 edition.

NFPA 253, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source,* ~~2019~~ 2023 edition.

NFPA 259, *Standard Test Method for Potential Heat of Building Materials,* 2023 edition.

NFPA 400, *Hazardous Materials Code,* ~~2019~~ 2025 edition.

NFPA 484, *Standard for Combustible Metals,* ~~2019~~ 2022 edition.

NFPA 600, *Standard on Facility Fire Brigades,* ~~2015~~ 2020 edition.

NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films,* ~~2019~~ 2023 edition.

NFPA 750, *Standard on Water Mist Fire Protection Systems,* ~~2019~~ 2023 edition.

NFPA 770, *Standard on Hybrid (Water and Inert Gas) Fire-Extinguishing Systems,* 2021 edition.

NFPA 780, *Standard for the Installation of Lightning Protection Systems,* ~~2017~~ 2023 edition.

NFPA 804, *Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants,* ~~2015~~ 2020 edition.

NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants,* ~~2015~~ 2020 edition.

NFPA 806, *Performance-Based Standard for Fire Protection for Advanced Nuclear Reactor Electric Generating Plants Change Process,* ~~2015~~ 2020 edition.

NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems,* 2023 edition.

NFPA 1500™, *Standard on Fire Department Occupational Safety, Health, and Wellness Program,* ~~2018~~ 2021 edition.

NFPA 2001, *Standard on Clean Agent Fire Extinguishing Systems,* ~~2018~~ 2022 edition.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 10:53:25 EDT 2022

Committee Statement

Committee Statement: Update NFPA reference dates to current edition to comply with the Manual of Style. References added based on action on PI-4 and PI-15.

Response Message: FR-15-NFPA 801-2022

Public Input No. 5-NFPA 801-2022 [Section No. 2.2]

First Revision No. 16-NFPA 801-2022 [Section No. 2.3]

2.3 Other Publications.

2.3.1 ASTM Publications.

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

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials,* ~~2016~~ 2022 .

ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C* , 2019a.

ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source,* ~~2017~~ 2019ae1 .

ASTM E814, *Standard Test Method for Fire Tests of Penetration Firestop Systems,* 2013a (2017).

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C* , 2018.

ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Consumption Calorimeter* , 2022.

ASTM E2690, *Standard Practice for Specimen Preparation and Mounting of Caulks and Sealants to Assess Surface Burning Characteristics* , 2017b.

2.3.2 UL Publications.

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

UL 723, ~~*Standard for*~~ *Test for Surface Burning Characteristics of Building Materials,* ~~2008, revised 2013~~ 2018 .

UL 900, ~~*Standard for*~~ *Air Filter Units,* 2015, revised 2022 .

UL 1479, *Fire Tests of Through-Penetration Fire Stops,* 2015, revised 2021 .

2.3.3 Other Publications.

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

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 11:10:49 EDT 2022

Committee Statement

Committee Statement: Update Other Publications references to current editions to comply with the Manual of Style. References added based on action on PI-1 and PI-16.

Response Message: FR-16-NFPA 801-2022

Public Input No. 8-NFPA 801-2022 [Section No. 2.3.2]

Public Input No. 10-NFPA 801-2022 [Section No. 2.3.1]

First Revision No. 17-NFPA 801-2022 [Section No. 2.4]

2.4 References for Extracts in Mandatory Sections.

NFPA 122, *Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities,* ~~2015~~ 2023 edition.

NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants,* ~~2015~~ 2020 edition.

NFPA 850, *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations,* ~~2015~~ 2020 edition.

NFPA 5000®, Building Construction and Safety Code®, ~~2018~~ 2024 edition.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 11:11:54 EDT 2022

Committee Statement

Committee Statement: Update References for Extracts in Mandatory Sections to current editions to comply with the Manual of Style.

Response Message: FR-17-NFPA 801-2022

First Revision No. 11-NFPA 801-2022 [New Section after 3.3.24]

3.3.26 Limited-Combustible Material.

See 7.1.2 . [**5000**, 2024]

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Tue Sep 27 15:28:09 EDT 2022

Committee Statement

Committee Statement: This revision extracts the definition of limited combustible material from NFPA 5000 aligning this definition with other NFPA documents.

Response Message: FR-11-NFPA 801-2022

Public Input No. 15-NFPA 801-2022 [New Section after 3.3.25.2]

First Revision No. 10-NFPA 801-2022 [Section No. 3.3.26]

3.3.28* Noncombustible Material.

~~In facilities handling radioactive materials, a material not capable of igniting and burning when subjected to fire conditions as defined in an approved fire test.~~ See 7.1.1 . [**5000,** 2024]

A.3.3.28 Noncombustible Material.

A material that 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°Degrees C* , is considered a noncombustible material. See 7.1.1 for additional information on noncombustible material. [**5000,** 2024]

FM Data Sheet 1-4, *Fire Tests* , states that UL 94, *Tests for Flammability of Plastic Materials for Parts in Devices and Appliances* , was designed primarily for testing small plastic parts for use in appliances and other products. UL 94 does not cover plastics used as building materials. The ratings resulting from the UL 94 tests are meant to guide the manufacturer and are not meant to be given to the final consumer as an indication of a hazard. The UL 94 rating should not be accepted in lieu of the other fire ratings specified in the codes.

~~The three terms used to describe the combustibility of materials — noncombustible, limited-combustible, and combustible — are based on specific criteria. When attempting to classify the combustibility of a material, ensure that the criteria for classifying a material based on any of the three terms are thoroughly understood. *(See NFPA 220 .)*~~

~~Materials that do not comply with the criteria for either noncombustible materials or for limited-combustible materials are considered combustible.~~

~~Materials that are reported as passing ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C,* are considered noncombustible materials.~~

~~The following are the criteria used in NFPA *101* and NFPA 220 for a material to be classified as a limited-combustible material. A limited-combustible material is a material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 8141 kJ/kg (3500 Btu/lb) where tested in accordance with NFPA 259 and complies with (1) or (2):~~

> ~~Materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of 3.2 mm (⅛ in.) that have 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.*~~
>
> ~~Materials that, in the form and thickness used, other than described in (1), have neither a flame spread index greater than 25, when tested in accordance with ASTM E84, nor exhibit evidence of continued progressive combustion and are of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion, when tested in accordance with ASTM E84 or UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* .~~

~~Materials subject to increase in combustibility or flame spread index beyond the limits established above through the effects of age, moisture, or other atmospheric condition are considered combustible.~~

Submitter Information Verification

Committee: FIF-AAA
Submittal Date: Tue Sep 27 15:13:31 EDT 2022

Committee Statement

Committee Statement: This revision extracts the definition of noncombustible material from NFPA 5000 aligning this definition with other NFPA documents. Additional annex material has been added and addresses Factory Mutual Data Sheet 1-4, Fire Tests, which discusses how UL 94 has been improperly used by groups other than Underwriters' Laboratories. These tests were designed primarily for testing small plastic parts for use in appliances and other products. The ratings resulting from these tests are meant to guide the manufacturer, and are not meant to be given to the final consumer as an indication of hazard. Building codes do not accept a UL 94 rating in lieu of the other fire ratings specified in the codes. Also, the results of most UL 94 flammability tests are not applicable to materials whose thickness exceeds 0.5 in. (13 mm).

Response Message: FR-10-NFPA 801-2022

Public Input No. 14-NFPA 801-2022 [Section No. 3.3.26]

First Revision No. 28-NFPA 801-2022 [Section No. 4.3.1.1]

4.3.1.1

The fire hazards analysis shall address the following goals and ~~objective to include the following~~ objectives :

(1) Nuclear safety goal

(2) Radioactive and hazardous material ~~real~~ release goal

(3) Life safety goal

(4) Nuclear safety objectives

(5) Radioactive and hazardous material release objective

(6) Life safety objectives

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 13:33:16 EDT 2022

Committee Statement

Committee Statement: This was an error in the 2020 edition. Corrected word 'real' to 'release' to align with Section A.4.3(2).

Response Message: FR-28-NFPA 801-2022

First Revision No. 3-NFPA 801-2022 [Section No. 5.3.1]

5.3.1

Temporary containment structures shall be constructed of noncombustible materials or ~~flame-resistant materials described in~~ ~~NFPA 701~~ limited combustible materials .

5.3.1.1*

Temporary interior containment structures such as huts, glove bags, barriers, and other fabrications that are used for ~~the purpose of~~ maintenance activities or modifications shall meet the requirements of ~~5.3.1~~ Test Method 2 of NFPA 701 and shall be evaluated for impacts on the facility.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Tue Sep 27 11:49:43 EDT 2022

Committee Statement

Committee Statement: This revision removes NFPA 701 for other than interior temporary structures since it does not qualify materials as flame resistant but simply determines whether or not they meet the associated flame propagation criteria. NFPA 701 is intended for textiles, films and decorative materials, which are typically flexible and not suitable for construction purposes and exhibit very poor fire performance. However, for temporary interior structures, material meeting Test Method 2 of NFPA 701 is the most commonly used and currently best available option.

In order for section 5.3.1 to be consistent with the fire safety requirements in these applications, the materials that should be called for are noncombustible or limited combustible materials, the requirements for which are extracted from NFPA 5000. See action taken on PI 15.

Response Message: FR-3-NFPA 801-2022

Public Input No. 12-NFPA 801-2022 [Section No. 5.3.1]

First Revision No. 32-NFPA 801-2022 [Section No. 5.7.2]

5.7.2*

Where combustible shielding is necessary for the radiation hazard, fire protection features shall be installed to compensate for the additional combustible loading unless the fire hazards analysis in Section 4.3 dictates otherwise.

A.5.7.2

Hot cells, caves, hoods, and gloveboxes are meant to be of noncombustible construction. The combustible shielding permitted by this section and Chapter 7 is not meant to apply to the construction of hot cells, caves, hoods, and gloveboxes, but is material provided in addition to that required for the standard construction of hot cells, caves, hoods, and gloveboxes for protection from radiation hazards.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 15:51:07 EDT 2022

Committee Statement

Committee Statement: This provides clarification that shielding material is not acceptable to be used as an alternative to the noncombustible construction requirements in Chapter 7 for Hot Cells, Caves, Hoods, and Gloveboxes.

Response Message: FR-32-NFPA 801-2022

First Revision No. 4-NFPA 801-2022 [Section No. 5.8]

5.8 Interior Finish.

Global FR-40

5.8.1

Interior wall and ceiling finish in areas for processing or storing radioactive materials shall have a flame spread index of not more than 25 and a smoke development index of not more than ~~450, in~~450 in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, ~~*Standard for*~~ *Test for Surface Burning Characteristics of Building Materials*.

5.8.2

Caulks and sealants used for interior wall and ceiling finish in areas processing or storing radioactive materials shall comply with all of the following:

(1) Have a flame spread index of not more than 25 and a smoke development index of not more than 450

(2) Have a test specimen prepared and mounted in accordance with ASTM E2690, *Standard Practice for Specimen Preparation and Mounting of Caulks and Sealants to Assess Surface Burning Characteristics, and tested in accordance with ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials*

5.8.3*

Interior floor finish in areas processing or storing radioactive materials shall be characterized by a critical radiant flux not less than 0.45 W/cm^2 in accordance with NFPA 253 or ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*.

A.5.8.3

Interior floor finish requirements apply to floor covering systems that are made up of a single material, a composite, or an assembly composed of the floor covering and related installation components, such as any adhesive or cushion. This includes floor mats laid on a main floor assembly to enhance the beauty, comfort, and utility of the floor assembly in areas processing or storing radioactive material.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Tue Sep 27 12:01:11 EDT 2022

Committee Statement

Committee Statement: Codes are often silent with regard to testing caulks and sealants for the assessment of flame spread index and smoke developed index as surface burning characteristics. The referenced standard practice describes specimen preparation and mounting procedures for such materials and products. Caulks and sealants used for interior wall and ceiling finishes must meet the requirements for flame spread index and smoke development.

The additional annex material provides clarification that floor coverings (e.g. area rugs, floor mats) that can be used to cover the entire floor are required to comply with the same interior finish requirements. This wording is consistent with NFPA 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

Response Message: FR-4-NFPA 801-2022

Public Input No. 1-NFPA 801-2020 [Section No. 5.8]

First Revision No. 29-NFPA 801-2022 [Section No. 6.3]

6.3* Valve Supervision.

All fire protection water system control valves shall be monitored under a periodic inspection program *(see Chapter 4)* and shall be supervised in accordance with NFPA 11 , NFPA 13, ~~NFPA 16~~ , NFPA 24, NFPA 25, or *NFPA 72*, as applicable.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 13:35:14 EDT 2022

Committee Statement

Committee Statement: NFPA 16 was withdrawn at the Fall 2020 revision cycle. NFPA 16 material has been incorporated into NFPA 11. The NFPA Council voted to approve the withdrawal of NFPA 16 on June 26, 2020.

Response Message: FR-29-NFPA 801-2022

First Revision No. 5-NFPA 801-2022 [Section No. 6.7.2]

6.7.2

Where fire suppression systems are required, the design, installation, maintenance, and testing of such systems shall be in accordance with the following NFPA standards, as applicable: NFPA 11, NFPA 12, NFPA 12A, NFPA 13, NFPA 14, NFPA 15, ~~NFPA 16~~ , NFPA 17, NFPA 17A, NFPA 25, NFPA 750, NFPA 770 , and NFPA 2001.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Tue Sep 27 12:11:34 EDT 2022

Committee Statement

Committee Statement: NFPA 770, Standard on Hybrid (Water and Inert Gas) Fire Extinguishing Systems has recently been published as a 2021 NFPA standard. Hybrid systems can be used as an effective fire extinguishing method on the fuels/hazards present in this standard. This revision also removes NFPA 16 which has been withdrawn and those requirements included in NFPA 11.

Response Message: FR-5-NFPA 801-2022

Public Input No. 4-NFPA 801-2022 [Section No. 6.7.2]

First Revision No. 14-NFPA 801-2022 [Section No. 7.1.5]

7.1.7* Construction, Demolition, and Renovation.

Construction, demolition, and ~~renovating~~ renovation activities shall conform to the requirements of NFPA 241~~, such as the following:~~ .

~~Scaffolding, formworks, decking, temporary enclosures, temporary containment structures, and partitions used inside buildings shall be noncombustible or fire-retardant treated.~~

~~If wood is used, it shall be one of the following:~~

~~Listed, pressure-impregnated, fire-retardant lumber~~

~~Treated with a listed fire-retardant coating~~

~~Timbers 15.2 cm × 15.2 cm (6 in. × 6 in.) or larger~~

~~Tarpaulins (fabrics) and plastic films shall be certified to conform to the weather-resistant and flame-resistant materials described in NFPA 701 .~~

A.7.1.7

The use of noncombustible or fire-retardant concrete formwork is especially important for large structures where large quantities of forms are used. Pressure-impregnated, fire-retardant lumber should be used in accordance with its listing and the manufacturer's instructions. Where exposed to the weather or moisture (e.g., concrete forms), the fire retardant used should be suitable for this exposure. Fire-retardant coatings are not acceptable on walking surfaces or surfaces subject to mechanical damage.

Use of fire-retardant paint requires special care. Inconsistent application and exposure to weather can reduce the effectiveness of fire-retardant coatings.

Large timbers are occasionally used to support large pieces of equipment during storage or maintenance. The size of these timbers makes them difficult to ignite, and they do not represent an immediate fire threat.

Some considerations for construction, demolition, and renovation activities include the following:

(1) Scaffolding, ~~formworks~~ formwork , decking, temporary enclosures, temporary containment structures, and partitions used inside buildings ~~shall~~ should be noncombustible or fire-retardant treated.

(2) If wood is used, it ~~shall~~ should be one of the following:

(a) Listed, pressure-impregnated, fire-retardant lumber

(b) Treated with a listed fire-retardant coating

(c) Timbers 15.2 cm × 15.2 cm (6 in. × 6 in.) or larger

(3) Tarpaulins (fabrics) and plastic films ~~shall~~ should be certified to conform to the weather-resistant and flame-resistant materials described in NFPA 701.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Tue Sep 27 16:35:13 EDT 2022

Committee Statement

Committee Statement: This revision relocates examples to the annex per the NFPA Manual of Style. NFPA 703 is not referenced in NFPA 241 and has not been included in this section.

Response Message: FR-14-NFPA 801-2022

Public Input No. 2-NFPA 801-2022 [Section No. 7.1.5]

First Revision No. 18-NFPA 801-2022 [Section No. C.1.1]

C.1.1 NFPA Publications.

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

NFPA 4, *Standard for Integrated Fire Protection and Life Safety System Testing*, ~~2018~~ 2024 edition.

NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*, ~~2017~~ 2022 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, ~~2019~~ 2025 edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection*, ~~2018~~ 2023 edition.

NFPA 30, *Flammable and Combustible Liquids Code*, ~~2018~~ 2024 edition.

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*, ~~2019~~ 2023 edition.

NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, ~~2019~~ 2024 edition.

NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, ~~2019~~ 2025 edition.

NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, ~~2017~~ 2022 edition.

NFPA 92, *Standard for Smoke Control Systems*, ~~2018~~ 2024 edition.

NFPA 99, *Health Care Facilities Code*, ~~2018~~ 2024 edition.

NFPA *101*®, *Life Safety Code*®, ~~2018~~ 2024 edition.

NFPA 204, *Standard for Smoke and Heat Venting*, ~~2018~~ 2024 edition.

NFPA 214 , *Standard on Water-Cooling Towers* , 2021 edition.

NFPA 220, *Standard on Types of Building Construction*, ~~2018~~ 2024 edition.

NFPA 252, *Standard Methods of Fire Tests of Door Assemblies*, ~~2017~~ 2022 edition.

NFPA 259, *Standard Test Method for Potential Heat of Building Materials*, ~~2018~~ 2023 edition.

NFPA 484, *Standard for Combustible Metals*, ~~2019~~ 2022 edition.

NFPA 600, *Standard on Facility Fire Brigades*, ~~2015~~ 2020 edition.

NFPA 601, *Standard for Security Services in Fire Loss Prevention*, ~~2015~~ 2020 edition.

NFPA 701 , *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films* , 2023 edition.

NFPA 804, *Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants*, ~~2015~~ 2020 edition.

NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants*, ~~2015~~ 2020 edition.

NFPA 806, *Performance-Based Standard for Fire Protection for Advanced Nuclear Reactor Electric Generating Plants Change Process*, ~~2015~~ 2020 edition.

NFPA 850 , *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations* , 2020 edition.

NFPA 901, *Standard Classifications for Fire and Emergency Services Incident Reporting ~~and Fire Protection Data~~* , ~~2016~~ 2021 edition.

NFPA 1500™, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, ~~2018~~ 2021 edition.

NFPA 1600®, *Standard on Continuity, Emergency, and Crisis Management*, 2019 edition.

NFPA 1620, *Standard for Pre-Incident Planning*, ~~2015~~ 2020 edition.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 11:15:32 EDT 2022

Committee Statement

Committee Statement: Update NFPA publications reference dates to the current edition to comply with the Manual of Style.

Response Message: FR-18-NFPA 801-2022

First Revision No. 19-NFPA 801-2022 [Section No. C.1.2]

C.1.2 Other Publications.

C.1.2.1 ASTM Publications.

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

~~ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , 2016.~~

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, ~~2016~~ 2020 .

ASTM E136, *Standard Test Method for ~~Behavior~~ Assessing Combustibility of Materials ~~in~~ Using a Vertical Tube Furnace at 750°C,~~2016a~~* 2019ae1 .

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C* , 2018.

C.1.2.2 EPA Publications.

Environmental Protection Agency, William Jefferson Clinton ~~East~~ Building, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.

EPA 520/1-75-001, *Manual of Protective Action Guide and Protective Actions for Nuclear Incidents*, 1992 .

C.1.2.3 FM Publications.

FM Global, 270 Central Avenue, P.O. Box 7500, Johnston, RI 02919-4949.

FM Data Sheet 1-4, *Fire Tests* , 2019.

FM Data Sheet 5-4, *Transformers* , 2019.

FM Data Sheet 7-32, *Ignitable Liquid Operations* , 2012.

FM Data Sheet 7-98, *Hydraulic Fluids* , 2003.

C.1.2.4 IEEE Publications.

IEEE, 3 Park Avenue, 17th Floor, New York, NY 10016-5997.

IEEE 383, *Qualifying Electric Cables and Splices for Nuclear Facilities,* 2015.

IEEE SI 10, *American National Standard for Metric Practice*, 2016.

C.1.2.5 OSHA Publications.

Occupational Safety and Health Administration, 200 Constitution Avenue, NW, Washington, DC 20210.

OSHA Title 29, Code of Federal Regulations, Part 1910.38, *~~Employee~~ Emergency Action Plans ~~and Fire Prevention~~* .

OSHA Title 29, Code of Federal Regulations, Part 1910.156, *Fire Brigades*.

C.1.2.6 UL Publications.

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

UL 263, ~~*Standard for*~~ *Fire Tests of Building Construction and Materials*, 2011, revised ~~2015~~ 2022 .

~~UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* , 2008, revised 2013.~~

UL 94, *Tests for Flammability of Plastic Materials for Parts in Devices and Appliances* , 2013, Revised 2022.

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Wed Sep 28 11:16:19 EDT 2022

Committee Statement

Committee Statement: Update Other Publications ASTM and UL reference dates to current edition to comply with the Manual of Style. References added with action on PI-14.

Response Message: FR-19-NFPA 801-2022

Public Input No. 9-NFPA 801-2022 [Section No. C.1.2.5]

Public Input No. 11-NFPA 801-2022 [Section No. C.1.2.1]

First Revision No. 21-NFPA 801-2022 [Section No. C.2.1]

Detail FR-22

C.2.1 NFPA Publications.

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

NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines,* 2024 edition.

NFPA 68, *Standard on explosion protection by deflagration venting,* 2023 edition.

NFPA 69, *Standard on Explosion Prevention Systems,* 2024 edition.

NFPA 72®, National Fire Alarm and Signaling Code®, ~~2019~~2025 edition.

NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures,* 2022 edition.

NFPA 85, *Boiler and Combustion Systems Hazards Code,* 2023 edition.

NFPA 92, *Standard for Smoke Control Systems,* 2024 edition.

NFPA 99, *Health Care Facilities Code,* 2024 edition.

NFPA 110, *Standard for Emergency and Standby Power Systems,* 2025 edition.

NFPA 214, *Standard on Water-Cooling Towers,* 2021 edition.

NFPA 252, *Standard Methods of Fire Tests of Door Assemblies,* 2022 edition.

NFPA 259 , *Standard Test Method for Potential Heat of Building Materials,* 2023 edition.

NFPA 520, *Standard on Subterranean Spaces,* 2021 edition.

NFPA 601, *Standard for Security Services in Fire Loss Prevention,* 2020 edition.

NFPA 652, *Standard on the Fundamentals of Combustible Dust,* 2019 edition.

NFPA 654, *Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids,* 2020 edition.

NFPA 703, *Standard for Fire-Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials,* 2024 edition.

NFPA 770, *Standard on Hybrid (Water and Inert Gas) Fire-Extinguishing Systems,* 2021 edition.

NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems,* 2023 edition.

NFPA 1600®, *Standard on Continuity, Emergency, and Crisis Management,* 2019 edition.

NFPA 2010, *Standard for Fixed Aerosol Fire-Extinguishing Systems,* 2020 edition.

Submitter Information Verification

Committee: FIF-AAA

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Committee Statement

Committee Update NFPA Publications reference dates to current to comply with the

Statement: Manual of Style.
Response Message: FR-21-NFPA 801-2022

First Revision No. 42-NFPA 801-2022 [Section No. C.3]

C.3 References for Extracts in Informational Sections. ~~(Reserved)~~

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

Submitter Information Verification

Committee: FIF-AAA

Submittal Date: Thu Oct 20 14:51:19 EDT 2022

Committee Statement

Committee Statement: This revision was developed by NFPA staff for editorial purposes, in accordance with 4.3.9.3.2 and 4.3.9.3.3 of the Regulations Governing the Development of NFPA Standards (www.nfpa.org/regs). See action on PI-14, annex material is extracted from NFPA 5000.

Response Message: FR-42-NFPA 801-2022