



Second Revision No. 10-NFPA 75-2023 [Global Comment]

[See attached word document for proposed reorganization of Chapter 5.]

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
75_ELT_AAA_F2023_SDM_Chapter5.docx	For staff use only	
75_Global_SR-10_Ch05_FINAL.pdf	for balloting	

Submitter Information Verification

Committee: ELT-AAA

Submittal Date: Tue Apr 25 11:59:13 EDT 2023

Committee Statement

Committee Statement: Revisions improve readability of Chapter 5 and logically order the requirements within the chapter.

Response Message: SR-10-NFPA 75-2023

[Public Comment No. 16-NFPA 75-2023 \[Chapter 5\]](#)

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Chapter 5 Performance-Based Design Approach

5.1 Performance-Based Design ApproachGeneral.

~~The requirements of Chapter 5 shall apply to recognize performance-based practices.~~

Commented [VJ1]: Text is moving to new sub 5.1.1 below.

5.1.1

The requirements of Chapter 5 shall apply to ~~recognize~~ recognized performance-based practices.

5.7.15.1.2 General.

The performance-based design approach shall include all of the following components:

- (1) Goals and objectives specified in Section 5.2
- (2) Performance criterion specified in ~~5.7.2~~ Section 5.3
- (3) Fire risk assessment elements specified in 4.2.3

5.2 Goals and Objectives.

The performance-based design shall meet the following goals and objectives:

- (1) The performance-based approach allows the alternative means to be utilized for the elements of the ITE systems, ITE rooms, and ITE areas as permitted in this standard.
- (2) The risk analysis, design criteria, design brief, system performance, and testing criteria are developed in accordance with this section.
- (3) The design meets the scope and purpose of the standard as detailed in Sections 1.1 and 1.2.
- (4) The performance-based design provides equivalent performance to the prescriptive requirements of this standard.

5.7.25.3 Performance Criterion.

ITE systems and ITE areas shall be protected from damage by fire or its associated effects, including smoke, corrosion, heat, and water.

5.7.35.4 Stakeholders.

The stakeholders shall be part of the performance-based design approach and include the owner or owner's representative, a licensed design professional experienced in the design of fire and life safety systems for ITE and ITE areas, insurance representatives, the authority having jurisdiction (AHJ), and representatives of the emergency response entities.

5.35.5* Qualifications.

The performance-based design documents shall be prepared by a licensed design professional with experience in fire protection, and be acceptable to the AHJ.

A.5.3A.5.5

It is essential that the design professional recognize the possibility of fire in ITE facilities. Licensed design professionals who develop performance-based design documents should be

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well versed in the science of fire, the effects of fire on ITE systems and operations, and options for mitigation of the risk to persons, equipment, and operations presented by fire in ITE facilities.

5.7.45.6* Design Brief.

~~The design of the ITE area shall include a design brief that is prepared using recognized performance-based design practices.~~

Commented [VJ2]: Text is moving to new sub 5.6.1 below.

A.5.7.4A.5.6

The Society of Fire Protection Engineers' *Engineering Guide to Performance-Based Fire Protection* is a recommended guide that should be used in the development of a design brief and performance-based design. The intent of the permitted deviation would be stated in the design brief or an informational annex of the design brief. The deviation can be permitted as long as the equivalent performance features are maintained.

5.6.1

The design of the ITE area shall include a design brief that is prepared using recognized performance-based design practices.

5.7.4.15.6.2

Any deviation from a prescriptive requirement shall be detailed in the design brief.

5.7.4.25.6.3

Design specifications and briefs used in the performance-based design shall be clearly stated and shown to be realistic and sustainable.

5.7.4.35.6.4

Specific inspection, testing, or maintenance requirements that are necessary to maintain reliable performance of the fire safety features of the ITE area shall be stated in the design brief.

5.45.7* Independent Review.

The AHJ shall be permitted to require an approved, independent third party to review the proposed design brief based on the documented fire risk assessment accepted by the AHJ to provide an evaluation of the design.

A.5.4A.5.7

The [Society of Fire Protection Engineers' SFPE-Guidelines for Peer Review in the Fire Protection Design Process](#) provides guidance concerning the peer review process for fire protection designs.

5.55.8 Final Determination.

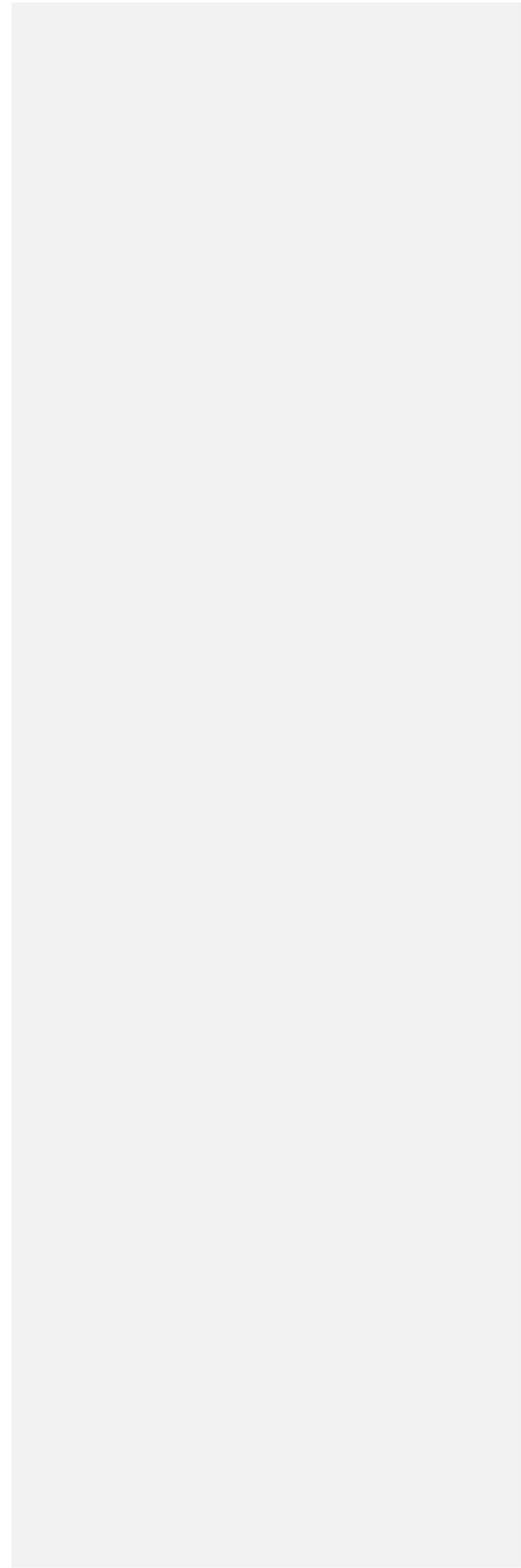
The ~~authority having jurisdiction~~ [AHJ](#) shall make the final determination as to whether the performance objectives have been met.

5.65.9 Maintenance of Design Features.

The design features required for the ITE area to continue to meet the performance goals and objectives of this standard shall be maintained for the life of the building.

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| **5.7 Performance Criteria.**





Second Revision No. 25-NFPA 75-2023 [Section No. 2.2]

2.2 NFPA Publications.

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

NFPA 1, *Fire Code*, 2021 ~~2024~~ edition.

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

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

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

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2022 edition.

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

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

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

NFPA 76, *Standard for the Fire Protection of Telecommunications Facilities*, 2024 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*, 2021 ~~2024~~ edition.

NFPA 101[®], *Life Safety Code*[®], 2021 ~~2024~~ edition.

NFPA 105, *Standard for Smoke Door Assemblies and Other Opening Protectives*, 2022 edition.

NFPA 220, *Standard on Types of Building Construction*, 2021 ~~2024~~ edition.

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

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

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

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

NFPA 1225, *Standard for Emergency Services Communications*, 2022 edition.

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

Submitter Information Verification

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Committee Statement

Committee Statement: Removed NFPA 780, as the only reference to it is deleted in 11.6.2.

Response Message: SR-25-NFPA 75-2023



Second Revision No. 11-NFPA 75-2023 [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*, 2021a 2023 .

ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*, 2019a- 2022.

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

ASTM E1354, *Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*, 2022a 2023 .

ASTM E1537, *Standard Test Method for Fire Testing of Upholstered Furniture*, 2022.

ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-Shaped Airflow Stabilizer, at 750°C*, 2018 2022 .

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

2.3.2 UL Publications.

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

UL 72, *Tests for Fire Resistance of Record Protection Equipment*, 2020.

UL 242, *Nonmetallic Containers for Waste Paper*, 2018.

UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018.

UL 900, *Air Filter Units*, 2015 2022 .

UL 1315, *Metal Containers for Waste Paper Containers*, 2017 2022 .

UL 1449, *Surge Protective Devices*, 2021 2022 .

UL 1479, *Fire Tests of Penetration Firestops*, 2021.

UL 60950, *Information Technology Equipment*, 2000, including revisions through October 30, 2007.

UL 60950-1, *Information Technology Equipment — Safety — Part 1: General Requirements*, 2019.

UL 62368-1, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, 2021.

2.3.3 Other Publications.

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

Submitter Information Verification

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Committee Statement

Committee Statement: Revised to align with the most recent editions of referenced publications.

Response Message: SR-11-NFPA 75-2023

Public Comment No. 7-NFPA 75-2022 [Section No. 2.3.1]



Second Revision No. 23-NFPA 75-2023 [Section No. 2.4]

2.4 References for Extracts in Mandatory Sections.

NFPA 1, *Fire Code*, 2021 ~~2024~~ edition.

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

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2021 ~~2024~~ edition.

NFPA 101[®], *Life Safety Code*[®], 2021 ~~2024~~ edition.

NFPA 111, *Standard on Stored Electrical Energy Emergency and Standby Power Systems*, 2022 edition.

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

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

Submitter Information Verification

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Committee Statement

Committee Statement: Revised to add NFPA 5000 extract reference, as it was added in section 6.2 revisions.

Response Message: SR-23-NFPA 75-2023



Second Revision No. 2-NFPA 75-2023 [Section No. 3.3.4]

3.3.4 Battery Types, Stationary.

3.3.4.1 ~~Lithium Ion~~ Lithium-Ion Battery.

A storage battery that consists of lithium ions imbedded in a carbon graphite or nickel metal-oxide substrate. The electrolyte is a carbonate mixture or a gelled polymer. The lithium ions are the charge carriers of the battery. [1,2024 2024]

3.3.4.2 Nickel Cadmium (NiCd NiCad) Battery.

An alkaline storage battery in which the positive active material is nickel oxide, the negative contains the cadmium, and the electrolyte is potassium hydroxide. [1,2024 2024]

3.3.4.3* Valve-Regulated Lead-Acid (VRLA).

A lead-acid battery consisting of sealed cells furnished with a valve that opens to vent the battery whenever the internal pressure of the battery exceeds the ambient pressure by a set amount. [1, 2024]

3.3.4.4* Vented (Flooded).

A lead-acid battery consisting of cells that have electrodes immersed in liquid electrolyte.

Submitter Information Verification

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Committee Statement

Committee Statement: This revision updates extracted text in accordance with the Extract Policy. For substantiation on any changes, see the first and second draft reports for the source document.

Added extract tags to 3.3.4.3 and 3.3.4.4, as they are the exact language from NFPA 1 definitions.

Response Message: SR-2-NFPA 75-2023



Second Revision No. 13-NFPA 75-2023 [New Section after 3.3.15]

3.3.16 ITE Immersion Cooling Liquid.

An insulating liquid (dielectric) used for the purpose of cooling ITE through direct contact that is contained within the ITE system.

Submitter Information Verification

Committee: ELT-AAA

Submittal Date: Wed Apr 26 14:53:02 EDT 2023

Committee Statement

Committee Statement: There is a lack of guidance for safe design and operation of systems and components unique to this area of ITE immersion cooling. Introduction of a definition for an ITE Immersion Cooling Liquid will address this gap and ease the drafting of further guidance for this technology area.

Response Message: SR-13-NFPA 75-2023

Public Comment No. 13-NFPA 75-2023 [New Section after 3.3.17]



Second Revision No. 26-NFPA 75-2023 [New Section after 3.3.20]

3.3.22 Off-Gas.

The event in which the [battery] cell case vents due to a rise in internal pressure of the cell.
[855, 2023]

Submitter Information Verification

Committee: ELT-AAA

Submission Date: Thu May 18 11:06:22 EDT 2023

Committee Statement

Committee Statement: Adding the definition of Off-Gas to clarify how it is used in the standard. Adjusted the extract for how the term is used within NFPA 75.

Response Message: SR-26-NFPA 75-2023

Public Comment No. 4-NFPA 75-2022 [New Section after 3.3.20]



Second Revision No. 21-NFPA 75-2023 [Section No. 6.2]

6.2* Combustibility of Materials.

A.6.2

The provisions of Section 6.2 do not require inherently noncombustible materials to be tested in order to be classified as noncombustible materials. [~~101~~ **5000** :A.4.6.13 A.7.1.4.1]

6.2.1 Noncombustible Material.

6.2.1.1

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.

A.6.2.1.1(1)

Examples of such materials include steel, concrete, masonry, and glass. [~~101~~ **5000** :A.4.6.13.1(1) A.7.1.4.1.1(1)]

- (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*.

[~~101~~: 4.6.13 **5000**: 7.1.4.1.1]

6.2.1.2

Where the term *limited-combustible* is used in this standard, it shall also include the term *noncombustible*. [~~101~~ **5000** :4.6.13.2 7.1.4.1.2]

6.2.2 Limited-Combustible Material.

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

- (1) The conditions of 6.2.2.1 and 6.2.2.2, and the conditions of either 6.2.2.3 or 6.2.2.4, shall be met.
- (2) The conditions of 6.2.2.5 shall be met.

[~~101~~: **5000**: 4.6.14 7.1.4.2]

6.2.2.1

The material does not comply with the requirements for a noncombustible material in accordance with 6.2.1. [~~101~~ **5000** :4.6.14.1 7.1.4.2.1]

6.2.2.2

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. [~~401~~ **5000** :4.6.14.2 7.1.4.2.2]

6.2.2.3

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*. [~~401~~ **5000** :4.6.14.3 7.1.4.2.3]

6.2.2.4*

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, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*, 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. [~~401~~ **5000** :4.6.14.4 7.1.4.2.4]

A.6.2.2.4

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.) [~~401~~ **5000** :A.4.6.14 A.7.1.4.2]

6.2.2.5

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/m² for a 20-minute exposure, and both the following conditions are met:

- (1) The peak heat release rate shall not exceed 150 kW/m² for longer than 10 seconds.
- (2) The total heat released shall not exceed 8 MJ/m².

[~~401~~: **5000**: 4.6.14.5 7.1.4.2.5]

6.2.2.6

Where the term *limited-combustible* is used in this standard, it shall also include the term *noncombustible*. [~~401~~ **5000** :4.6.14.6 7.1.4.2.6]

Supplemental Information

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
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Committee Statement

**Committee
Statement:
Response
Message:**

NFPA 101 is now extracting these sections from NFPA 5000, so these extracted sections are revised to be extracted from the correct source material.
SR-21-NFPA 75-2023



Second Revision No. 4-NFPA 75-2023 [Section No. 6.6.1]

6.6.1

Cable penetrations or other penetrations through required fire-rated assemblies shall be firestopped with a listed firestop system that has a rating as specified in 6.6.1.1 and 6.6.1.2 where tested with minimum positive furnace pressure differential of 2.5 Pa (0.01 in. of water) under ASTM E814, *Standard Test Method for Fire Tests of Penetration Firestop Systems*, or UL 1479, *Fire Tests of Penetration Firestops*.

6.6.1.1 F Ratings.

Firestop systems and devices shall have an F rating of not less than 1 hour, and not less than the required fire resistance rating of the fire barrier penetrated. [101:8.3.4.2.3]

6.6.1.2 T Ratings.

Penetrations in ~~fire-resistance-rated~~ fire-resistance-rated horizontal assemblies shall have a T rating of not less than 1 hour, and not less than the fire resistance rating of the horizontal assembly. [101:8.3.4.2.4.1]

6.6.1.2.1

A T rating shall not be required for either of the following:

- (1) Floor penetrations contained within the cavity of a wall assembly
- (2) Penetrations through floors or floor assemblies where the penetration is not in direct contact with combustible material

[101:8.3.4.2.4.2]

Submitter Information Verification

Committee: ELT-AAA

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Committee Statement

Committee Statement: This revision updates extracted text in accordance with the Extract Policy. For substantiation on any changes, see the first and second draft reports for the source document.

Response Message: SR-4-NFPA 75-2023



Second Revision No. 15-NFPA 75-2023 [Section No. 8.2 [Excluding any Sub-Sections]]

If the design of the unit is such that oil or equivalent liquid is required for lubrication, ~~cooling,~~ or hydraulic purposes, it shall have a closed-cup flash point of 149°C (300°F) or higher, and ~~the a container shall be that is~~ of a sealed construction, incorporating automatic pressure relief devices.

Submitter Information Verification

Committee: ELT-AAA

Submittal Date: Wed Apr 26 14:59:50 EDT 2023

Committee Statement

Committee Statement: Removed the term “cooling” as it is covered in the listing standard for ITE equipment.

Response Message: SR-15-NFPA 75-2023

[Public Comment No. 9-NFPA 75-2022 \[Section No. 8.2 \[Excluding any Sub-Sections\]\]](#)



Second Revision No. 16-NFPA 75-2023 [New Section after 8.2.1]

8.2.2 ITE Immersion Cooling System.

8.2.2.1 Immersion Cooling Unit Installation.

Manufacturers' instructions shall be followed for installation, maintenance, and operation for all immersion cooling units.

8.2.2.2 ITE Immersion Cooling Liquid.

Insulating liquids shall be noncombustible or have a closed-cup flash point of 135°C (275°F) or higher.

8.2.2.3 ITE Immersion Cooling Unit - Single-Phase.

A system designed for the purpose of single-phase immersion cooling of ITE using insulating liquids shall comply with the following:

- (1) Have a lid or access point
- (2) Use closed piping
- (3) Be listed or approved

8.2.2.4 ITE Immersion Cooling Unit - Two-Phase. (Reserved)

Submitter Information Verification

Committee: ELT-AAA

Submittal Date: Wed Apr 26 15:01:30 EDT 2023

Committee Statement

Committee Statement: Added requirements for ITE Immersion cooling systems because there are systems currently in use and under development that are listed, and are necessary to maintain safety standards.

Response Message: SR-16-NFPA 75-2023

[Public Comment No. 15-NFPA 75-2023 \[New Section after 8.2.1\]](#)

[Public Comment No. 14-NFPA 75-2023 \[New Section after 8.2.1\]](#)



Second Revision No. 20-NFPA 75-2023 [Section No. 11.2]

11.2* Coolant Systems.

If a separate coolant system is required for operation of an ITE installation, the system shall be provided with an approved alarm to indicate loss of liquid.

A.11.2

For more information on immersion cooling liquids, refer to Section 8.2 8.2. For classification of compressed gas or flammable refrigerants, refer to NFPA 55 .

Submitter Information Verification

Committee: ELT-AAA

Submission Date: Thu May 11 07:47:01 EDT 2023

Committee Statement

Committee Statement: Added an annex note to provide additional guidance on coolant systems.

Response Message: SR-20-NFPA 75-2023

Public Comment No. 10-NFPA 75-2022 [Section No. 11.2]



Second Revision No. 5-NFPA 75-2023 [Section No. 11.5.1]

11.5.1 UPS Systems.

UPS systems installed within the information technology equipment [ITE] room, and their supply and output circuits, shall comply with 11.4.5, except for the following installations and constructions:

- (1) Installations complying with Parts I and II of Article 685
- (2) Power sources limited to 750 volt-amperes or less derived either from UPS equipment or from battery circuits integral to electronic equipment

[70:645.11]

11.5.1.1

The disconnecting means shall also disconnect the battery from its load. [70:645.11]

11.5.1.2

Storage battery systems in the ITE area shall comply with the requirements of Article 480 of *NFPA 70*.

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Response Message: SR-5-NFPA 75-2023



Second Revision No. 9-NFPA 75-2023 [Section No. 11.5.4]

11.5.4* Other Battery Types.

Battery types other than those addressed in 11.5.3 shall comply with Chapter 52 of NFPA 1.

A.11.5.4

Section 8.3 8.3 contains more information on ITE incorporating integral battery backup.

11.5.4.1* Lithium-Ion Batteries.

Where installed, off-gas detection systems that monitor for electrolyte vapor released prior to thermal runaway shall be listed or approved, and installed in accordance with the manufacturer's published instructions.

A.11.5.4.1

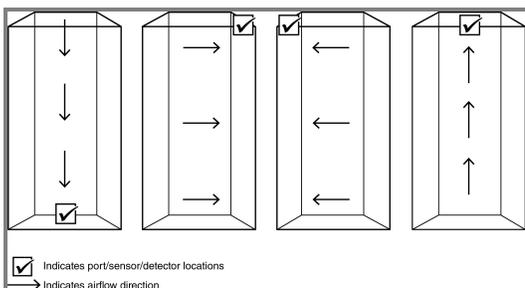
Gas detection for the purpose of detecting flammable or explosive levels of gas should not be used as a means to detect thermal runaway. Gases produced during the off-gas event that precedes thermal runaway are flammable. However, during this early off-gas stage, limited amounts of gas are produced that would not register with flammable gas sensors that are meant to prevent explosive atmospheres. During the off-gas phase, specialized detection devices are needed that can detect trace amounts of the vaporized electrolyte that can be present at the low ppm or ppb level. Additional information on explosion protection can be found in NFPA 68 and NFPA 69 .

For off-gas detection, the detection devices should be placed near or on the battery rack to detect off-gas events from the rack. While airflow is not required for sensor operation, the airflow patterns should be taken into consideration when positioning the detection devices. Sampling ports in an aspirated gas sensing system should follow similar positioning guidance. Several examples of potential airflow patterns and their corresponding sensor placement are shown in Figure A.11.5.4.1 . In any case, manufacturer's published instructions should be followed.

Thermal runaway can also be detected using highly sensitive particulate detection. For example, an aspirated detection system that has sensing technology to allow for the detection of particles given off during the off-gas event prior to thermal runaway.

Actions to be taken once the off-gas event has been detected will depend upon a number of factors, including the design of the battery management system, lithium-ion cell chemistry, and others.

Figure A.11.5.4.1 Examples of Potential Airflow Patterns and Corresponding Sensor Locations.



11.5.4.2

When lithium-ion batteries in a UPS are replaced with new batteries, replacement batteries shall be in accordance with the listing of the UPS.

Supplemental Information

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Committee Statement

Committee Statement: Added requirements for electrolyte vapor gas detection, if installed. Electrolyte vapor gas detection is being installed in lithium-ion battery installations associated with UPS systems and these sections give additional guidance on how to install them appropriately.

11.5.4.2 clarifies the need to use replacement batteries that maintain the listing of the UPS system.

Response Message: SR-9-NFPA 75-2023

[Public Comment No. 2-NFPA 75-2022 \[New Section after 11.5.4\]](#)

[Public Comment No. 3-NFPA 75-2022 \[New Section after 11.5.4\]](#)

[Public Comment No. 11-NFPA 75-2022 \[Section No. 11.5.4\]](#)



Second Revision No. 18-NFPA 75-2023 [Section No. 11.6]

11.6 Alternative Energy Systems.

11.6.1*

~~Where provided, alternative energy systems shall comply with applicable codes and standards.~~

A.11.6.1

~~Examples of alternative energy system types include, but are not limited to, photovoltaic, fuel cell, microturbine, and wind turbine.~~

~~See NFPA 853 for the installation of stationary fuel cell power systems. See Article 690 of NFPA 70 for solar photovoltaic (PV) systems; Article 692 for fuel cell systems; and Article 694 for small wind electric systems. See NFPA 855 for energy storage systems (ESSs). Note that ESSs as covered by NFPA 855 provide on-demand power, and a UPS provides standby power. However, the distinction is not always clear. When a UPS is used to provide on-demand power, feed the grid, or cycle for peak load shaving, it functions as an ESS and should also comply with NFPA 855.~~

11.6.2

~~If installed in lightning-prone areas, the alternative energy installation shall comply with NFPA 780.~~

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Submission Date: Wed Apr 26 15:11:48 EDT 2023

Committee Statement

Committee Statement: Alternative energy systems are outside the scope of NFPA 75.

Response Message: SR-18-NFPA 75-2023

[Public Comment No. 17-NFPA 75-2023 \[Section No. 11.6\]](#)



Second Revision No. 6-NFPA 75-2023 [Section No. A.3.3.20]

A.3.3.21 Modular Data Center (MDC).

Equipment enclosures housing only support equipment (e.g., HVAC or power distribution equipment) that are not part of a specific modular data center are not considered a modular data center ~~as defined in this article~~ . [70:646-2 646.1 Informational Note No. 4 5]

Submitter Information Verification

Committee: ELT-AAA

Submittal Date: Mon Apr 24 23:53:04 EDT 2023

Committee Statement

Committee Statement: This revision updates extracted text in accordance with the Extract Policy. For substantiation on any changes, see the first and second draft reports for the source document.

Response Message: SR-6-NFPA 75-2023



Second Revision No. 19-NFPA 75-2023 [Section No. A.9.6]

A.9.6

Some ITE facilities are essential elements of the public safety network, providing communities with connectivity to 911 and E911 as well as processing alarms and other signals. ITE equipment might not have been designed or tested for immunity at the power levels and frequencies commonly used in responder radios. ITE rooms are not publicly accessible and the number of incidents requiring responder access ~~are~~ is low compared to many other occupancies. Because these facilities are unique occupancies with such an important function, close cooperation between the facility operator and the emergency response organization(s) should be encouraged to assure responder activities are not unduly impaired and the ITE remains functioning. ~~Two-way radio~~ In-building emergency responder communications enhancement systems deployed in common areas, stairwells, lobbies, and other nonequipment room locations within ITE buildings are less of a concern.

Submitter Information Verification

Committee: ELT-AAA

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Committee Statement

Committee Statement: Changed "are" to "is" to align with "number" which is singular. Modified language in last sentence to align with NFPA 1225 and terminology used in the body of this standard.

Response Message: SR-19-NFPA 75-2023

[Public Comment No. 5-NFPA 75-2022 \[Section No. A.9.6\]](#)



Second Revision No. 8-NFPA 75-2023 [Section No. A.11.3.1]

A.11.3.1

For the installation of electrical equipment and wiring and optical fiber cabling to conform to *NFPA 70*, the applicable articles in the *NEC* need to be identified. The first step in applying the *NEC* is to review the definition of *modular data center* in 646.2. If the data center is determined to be modular, then the installation is required to conform to Article 646 and all other sections of the *NEC* that are referenced therein.

If the data center is not modular, the next step is to determine if Article 645 applies. Since Article 645 covers ITE in an ITE room, the definitions of *ITE* and *ITE room* in 645.2 should be reviewed. If the installation comprises ITE in an ITE room, Article 645 could be applicable to the installation.

Article 645 is permissive. Section 645.4 states: "This article shall be permitted to provide alternate wiring methods to the provisions of Chapter 3 and Article 708 for power wiring, Parts I and III of Article 725 for signaling wiring, and Parts I and V of Article 770 for optical fiber cabling where all of the following conditions are met."

There are six conditions. See 645.4 of the *NEC* to review the conditions.

If an installation does not meet the six conditions, then Article 645 is not permitted to be used, the provisions of Chapter 3 must be followed for power wiring, and the provisions of Article 725 and Article 770 must be followed for data wiring and optical fiber cabling. Even if a data center meets the six conditions, it is permissible to opt out of Article 645 and follow all the rules in Chapter 3, Article 725, and Article 770.

Regardless of whether Article 645 is used, installations of power wiring must comply with Chapters 1, 2, and 4 of the *NEC*, and installations of communications wiring must comply with Chapter 8 of the *NEC*.

~~The bonding requirements in the product standards governing this listed equipment ensure that it complies with Article 250 [of *NFPA 70*]. [**70:** 645.15 Informational Note 1]~~

~~Where isolated grounding-type receptacles are used, see 250.146(D) and 406.3(D) [of *NFPA 70*]. [**70:** 645.15 Informational Note 2] See 250.146(D) and 406.3(E) [of *NFPA 70*] for information on isolated grounding-type receptacles. [**70:** 645.15 Informational Note]~~

Submitter Information Verification

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Committee Statement

Committee Statement: This revision updates extracted text in accordance with the Extract Policy. For substantiation on any changes, see the first and second draft reports for the source document.

Response Message: SR-8-NFPA 75-2023



Second Revision No. 24-NFPA 75-2023 [Section No. G.1.1]

G.1.1 NFPA Publications.

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

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

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

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

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2022 edition.

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

NFPA 68, *Standard on Explosion Protection by Deflagration Venting*, 2023 edition.

NFPA 69, *Standard on Explosion Prevention Systems*, 2023 edition.

NFPA 70[®], National Electrical Code[®], 2023 edition.

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

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

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

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

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

NFPA 551, *Guide for the Evaluation of Fire Risk Assessments*, 2022 edition.

NFPA 730, *Guide for Premises Security*, 2023 edition.

NFPA 731, *Standard for the Installation of Premises Security Systems*, 2023 edition.

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

~~NFPA 853, *Standard for the Installation of Stationary Fuel Cell Power Systems*, 2020 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 1660, *Standard for Emergency, Continuity, and Crisis Management: Preparedness, Response, and Recovery*, 2024 edition.

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

Fire Protection Research Foundation (FPRF), "Validation of Modeling Tools for Detection Design in High Air Flow Environments," 2012.

Fire Protection Research Foundation (FPRF), "Validation of Modeling Tools for Detection Design in High Air Flow Environments — Phase II," 2014.

Submitter Information Verification

Committee: ELT-AAA

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Committee Statement

Committee Statement: Added NFPA 55 reference, which was added in a proposed revision to section 11.2. Added NFPA 68 and 69 references based on proposed addition of A.11.5.4.1.

Response Message: SR-24-NFPA 75-2023



Second Revision No. 12-NFPA 75-2023 [Section No. G.1.2]

G.1.2 Other Publications.

G.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*, 2021a 2023 .

G.1.2.2 BMS CAT Publications.

BMS CAT, Inc., International Headquarters, 303 Arthur Street, Fort Worth, TX 76107.

“Electronics & Magnetic Media Recovery.”

G.1.2.3 BSI Publications.

British Standards Institute, 12950 Worldgate Drive, Suite 800 Herndon, VA 20170.

BS 6266, *Fire Protection for Electronic Equipment Installations — Code of Practice*, 2011 2016 .

G.1.2.4 FM Publications.

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

Thumuluru, Sai, et al., “Experimental Data for Model Validation of Smoke Transport in Data Centers,” 2014.

G.1.2.5 FSSA Publications.

Fire Suppression Systems Association, 3601 East Joppa Road, Baltimore, MD 21234.

FSSA white paper, “Effect of Sound Waves on Data Storage Devices: Fire Protection Systems Protecting Data Centers,” 2019.

G.1.2.6 IEEE Publications.

IEEE, ~~3 Park Avenue, 17th Floor, New York, NY 10016-5997~~ Operations Center, 445 Hoes Lane, Piscataway, NJ 08854-4141 .

IEEE 1635/ASHRAE 21, *Guide to Battery Room for the Ventilation and Thermal Management of Batteries for Stationary Applications* , 2018 2022 .

G.1.2.7 SFPE Publications.

Society of Fire Protection Engineers, 9711 Washingtonian Boulevard, Suite 380, Gaithersburg, MD 20878.

Engineering Guide to Performance-Based Fire Protection, Second Edition, 2007.

Guidelines for Peer Review in the Fire Protection Design Process, 2009.

Bukowski, Richard W., “Risk Considerations for Data Center Fire Protection,” Proc 2013 SFPE Engineering Conference and Expo, Austin, TX, October 26–30, 2013.

G.1.2.8 Telcordia Publications.

Telcordia Technologies, Inc., One Ericsson Drive, RRC 4A-1060, Piscataway, NJ 08854-4156.

Telcordia GR-63-CORE, *Network Equipment Building System (NEBS)™ Requirements: Physical Protection*, 2017.

G.1.2.9 UL Publications.

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

UL 268, *Smoke Detectors for Fire Alarm Systems*, 2016 2021 .

UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018.

UL 60950-1, *Information Technology Equipment — Safety — Part 1: General Requirements*, 2019.

UL 62368-1, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, 2021.

UL 2755, *Outline of Investigation for Modular Data Centers*, 2018.

UL 2436, *Outline of Investigation for Spill Containment for Stationary ~~Lead~~ Acid and Alkaline Battery Systems*, 2020.

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Committee Statement

Committee Statement: Updated to align with most recent editions of referenced publications.

Response Message: SR-12-NFPA 75-2023

Public Comment No. 8-NFPA 75-2022 [Section No. G.1.2.1]



Second Revision No. 22-NFPA 75-2023 [Section No. G.3]

G.3 References for Extracts in Informational Sections.

NFPA 1, *Fire Code*, 2021 2024 edition.

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

NFPA 101[®], *Life Safety Code*[®], 2021 2024 edition.

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

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Committee: ELT-AAA

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Committee Statement

Committee Statement: Added NFPA 5000 reference, as it was added in revisions to A.6.2.

Response Message: SR-22-NFPA 75-2023