

NFPA® 75

Standard for the Fire Protection of Information Technology Equipment

2013 Edition



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NFPA® 75

Standard for the

Fire Protection of Information Technology Equipment

2013 Edition

This edition of NFPA 75, *Standard for the Fire Protection of Information Technology Equipment*, was prepared by the Technical Committee on Electronic Computer Systems. It was issued by the Standards Council on July 9, 2012, with an effective date of July 29, 2012, and supersedes all previous editions.

This edition of NFPA 75 was approved as an American National Standard on July 29, 2012.

Origin and Development of NFPA 75

The Committee on Electronic Computer Systems was formed by the action of the NFPA Board of Directors in January 1960, following a request for standardization of fire protection recommendations by the computer industry.

The committee first submitted the *Standard for the Protection of Electronic Computer Systems* to the 1961 NFPA Annual Meeting, and it was tentatively adopted. At the 1962 Annual Meeting, it was officially adopted as an NFPA standard. Revisions were adopted in 1963, 1964, 1968, 1972, 1976, 1981, 1987, and 1989. The document was completely rewritten for the 1992 edition. The document was revised in 1995, 1999, and again in 2003. The 2003 edition incorporated the *Manual of Style for NFPA Technical Committee Documents* revisions.

In editions of this standard prior to 2003, the terms “electronic computer/data processing equipment” and “electronic computer system” were used where the current terms “information technology equipment” and “information technology equipment system,” respectively, are used. Similarly, the terms “computer room” and “computer area” were replaced by “information technology equipment room” and “information technology equipment area,” respectively. While the title and some terminology were changed in the 2003 edition to more closely align this standard’s terminology with terminology being used in other standards, such as NFPA 70, *National Electrical Code*, and UL 60950, *Safety of Information Technology Equipment*, the scope of this standard and any definitions associated with those like terms remained the same.

For the 2009 edition, Section 4.2, Telecommunications Risks, was updated; many of the UL references were updated; new requirements were added for signage to indicate that equipment will remain energized where continuous power is provided; and flame spread indexes were provided for many of the materials listed in the standard.

For the 2013 edition, the title has again been changed to better reflect the scope of the document and to be clear that the standard is strictly for fire protection. The 2013 edition features a new section on the emerging use of aisle containment systems for information technology equipment and how these systems must be assessed for their interaction with fire protection features. A number of definitions have been extracted from NFPA 70, *National Electrical Code*, to define words used in the body of the standard that previously were not defined.



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

Committee Scope: This Committee shall have primary responsibility for documents on the protection of electronic computer equipment, components, and associated records.



Contents

Chapter 1 Administration	75- 4	Chapter 8 Fire Protection and Detection Equipment	75-10
1.1 Scope	75- 4	8.1 Automatic Fire Protection Systems	75-10
1.2 Purpose	75- 4	8.2 Automatic Detection Systems	75-10
1.3 Application	75- 4	8.3 Portable Extinguishers and Hose Lines	75-10
1.4 Retroactivity	75- 4	8.4 Gaseous Total Flooding Extinguishing Systems	75-10
1.5 Equivalency	75- 4	8.5 Warning Signs	75-11
1.6 Special Note on Chapter 10	75- 4	8.6 Training	75-11
Chapter 2 Referenced Publications	75- 4	8.7 Expansion or Renovations	75-11
2.1 General	75- 4	8.8 Water Mist Fire Protection Systems	75-11
2.2 NFPA Publications	75- 4	Chapter 9 Records Kept or Stored in Information Technology Equipment Rooms	75-11
2.3 Other Publications	75- 5	9.1 Protection Required for Records Within the Information Technology Equipment Room	75-11
2.4 References for Extracts in Mandatory Sections	75- 5	9.2 Records Stored Outside the Information Technology Equipment Room	75-11
Chapter 3 Definitions	75- 5	Chapter 10 Utilities	75-11
3.1 General	75- 5	10.1 Heating, Ventilating, and Air Conditioning (HVAC)	75-11
3.2 NFPA Official Definitions	75- 5	10.2 Coolant Systems	75-11
3.3 General Definitions	75- 5	10.3 Electrical Service	75-11
3.4 Aisle Containment	75- 6	10.4 Supply Circuits and Interconnecting Cables	75-12
Chapter 4 Risk Considerations	75- 6	Chapter 11 Emergency and Recovery Procedures	75-13
4.1 Fire Risk Analysis Factors	75- 6	11.1 Emergency Fire Plan	75-13
4.2 Telecommunications Risks	75- 7	11.2 Damage Control Plan	75-13
Chapter 5 Construction Requirements	75- 7	11.3 Recovery Procedures Plan	75-13
5.1 Building Construction	75- 7	Annex A Explanatory Material	75-13
5.2 Location of Information Technology Equipment Area Within the Building	75- 7	Annex B What to Do in the First 24 Hours for Damaged Electronic Equipment and Magnetic Media	75-18
5.3 Information Technology Equipment Area Interior Construction Materials	75- 7	Annex C Risk Considerations, Business Interruption, and Temperature Considerations	75-20
5.4 Raised Floors	75- 7	Annex D General Guidance for Gaseous Agent Systems in Information Technology Equipment Spaces	75-20
5.5 Penetrations and Openings in Fire-Resistant-Rated Enclosures	75- 8	Annex E Informational References	75-22
5.6 Aisle Containment and Hot Air Collar Systems for Information Technology Equipment	75- 8	Index	75-23
Chapter 6 Materials and Equipment Permitted in the Information Technology Equipment Area	75- 9		
6.1 General	75- 9		
6.2 Record Storage	75- 9		
6.3 General Storage	75- 9		
Chapter 7 Construction of Information Technology Equipment	75- 9		
7.1 Information Technology Equipment	75- 9		
7.2 Construction Features	75- 9		

NFPA 75

Standard for the

Fire Protection of Information Technology
Equipment

2013 Edition

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Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex E. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

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

Chapter 1 Administration

1.1 Scope. This standard covers the requirements for the protection of information technology equipment and information technology equipment areas.

1.2* Purpose. The purpose of this standard is to set forth the minimum requirements for the protection of information technology equipment and information technology equipment areas from damage by fire or its associated effects — namely, smoke, corrosion, heat, and water.

1.3 Application. The application of this standard is based on the risk considerations outlined in Chapter 4.

1.3.1 A documented risk assessment shall be the basis for implementation of this standard.

1.3.2 The mere presence of the information technology equipment shall not constitute the need to invoke the requirements of this standard.

1.4 Retroactivity.

1.4.1 The provisions of this standard reflect a consensus of what is necessary to provide an acceptable degree of protec-

tion from the hazards addressed in this standard at the time the standard was issued.

1.4.2 Unless otherwise specified, the provisions of this standard shall not apply to facilities, equipment, structures, or installations that existed or were approved for construction or installation prior to the effective date of the standard. Where specified, the provisions of this standard shall be retroactive.

1.5 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard. Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency. The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

1.6 Special Note on Chapter 10. Chapter 10 contains text extracted from NFPA 70, *National Electrical Code*, Article 645. The text is identified by a citation in brackets following the paragraph. Only editorial changes were made to make the text consistent with this standard. Requests for interpretations or revisions of the extracted text will be referred to Panel No. 12 of the National Electrical Code Committee.

Chapter 2 Referenced Publications

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

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

NFPA 10, *Standard for Portable Fire Extinguishers*, 2010 edition.

NFPA 12, *Standard on Carbon Dioxide Extinguishing Systems*, 2011 edition.

NFPA 12A, *Standard on Halon 1301 Fire Extinguishing Systems*, 2009 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 2013 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2010 edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2011 edition.

NFPA 70®, *National Electrical Code*®, 2011 edition.

NFPA 72®, *National Fire Alarm and Signaling Code*, 2013 edition.

NFPA 76, *Standard for the Fire Protection of Telecommunications Facilities*, 2012 edition.

NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, 2013 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2012 edition.

NFPA 101®, *Life Safety Code*®, 2012 edition.

NFPA 105, *Standard for Smoke Door Assemblies and Other Opening Protectives*, 2013 edition.

NFPA 220, *Standard on Types of Building Construction*, 2012 edition.

NFPA 232, *Standard for the Protection of Records*, 2012 edition.

• NFPA 750, *Standard on Water Mist Fire Protection Systems*, 2010 edition.

NFPA 2001, *Standard on Clean Agent Fire Extinguishing Systems*, 2012 edition.



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 E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, 2007.

ASTM E 136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, 1999.

ASTM E 814, *Standard Method of Fire Tests of Through-Penetration Fire Stops*, 1997.

ASTM E 1537, *Standard Test Method for Fire Testing of Upholstered Furniture*, 2007.

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

ANSI/UL 72, *Standard for Tests for Fire Resistance of Record Protection Equipment*, 2001, including revisions through November 6, 2009.

ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, 2008, including revisions through September 13, 2010.

ANSI/UL 900, *Standard for Air Filter Units*, 2004, including revisions through November 6, 2009.

ANSI/UL 60950, *Safety of Information Technology Equipment*, 2000, including revisions through October 30, 2007.

ANSI/UL 60950-1, *Information Technology Equipment — Safety — Part 1: General Requirements*, 2007.

2.3.3 Other Publications.

California Technical Bulletin 133, *Flammability Test Procedure for Seating Furniture for Use in Public Occupancies*, State of California, Department of Consumer Affairs, 3485 Orange Grove Avenue, North Highlands, CA 95660-5595.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 70®, *National Electrical Code*®, 2011 edition.

NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*, 2012 edition.

Chapter 3 Definitions

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

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

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

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

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

3.2.5 Shall. Indicates a mandatory requirement.

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

3.3 General Definitions.

3.3.1 Abandoned Cables. Installed cables that are not terminated at equipment and not identified for future use with a tag.

3.3.2 Air Space. The space below a raised floor or above a suspended ceiling used to circulate environmental air within the information technology equipment room/information technology equipment area.

3.3.3 Automated Information Storage System (AISS). An enclosed storage and retrieval system that moves recorded media between storage and information technology equipment systems.

3.3.4 Business Interruption. The effect on business operations from the time that equipment was initially lost or damaged until it has been restored to the former level of operation.

3.3.5 Communications Circuit. The circuit that extends voice, audio, video, data, interactive services, telegraph (except radio), outside wiring for fire alarm and burglar alarm from the communications utility to the customer's communications equipment up to and including terminal equipment such as a telephone, fax machine, or answering machine. [70:800.2]

3.3.6 Communications Equipment. The electronic equipment that performs the telecommunications operations for the transmission of audio, video, and data, and includes power equipment (e.g., dc converters, inverters, and batteries) and technical support equipment (e.g., computers). [70:100]

3.3.7 Detector.

3.3.7.1 Heat Detector. A fire detector that detects either abnormally high temperatures or rate of temperature rise, or both.

3.3.7.2 Smoke Detector. A device that senses visible or invisible particles of combustion.

3.3.8 Electronically Interconnected. Units that must be connected by a signal channel to complete a system or perform an operation.

3.3.9 Fire-Resistant-Rated Construction. Construction in which the structural members, including walls, partitions, columns, floors, and roof construction, have fire resistance

ratings of time duration not less than that specified in this standard.

3.3.10 Fire Risk Analysis. A process to characterize the risk associated with fire that addresses the fire scenario or fire scenarios of concern, their probability, and their potential consequences.

3.3.11* Information Technology Equipment (ITE). Equipment and systems rated 600 volts or less, normally found in offices or other business establishments and similar environments classified as ordinary locations, that are used for creation and manipulation of data, voice, video, and similar signals that are not communications equipment as defined in Part I of Article 100 and do not process communications circuits as defined in 800.2 [of *NFPA 70, National Electrical Code*.] [70:645.2]

3.3.12 Information Technology Equipment Area. An area of a building where the information technology equipment room is located, including support rooms served by the same special air-conditioning/air-handling equipment as the information technology equipment room.

3.3.13 Information Technology Equipment Room. A room within the information technology equipment area that contains the information technology equipment.

3.3.14 Information Technology Equipment System. Any electronic digital or analog computer, along with all peripheral, support, memory, programming, or other directly associated equipment, records, storage, and activities.

3.3.15 Interconnecting Cables. Signal and power cables for operation and control of a system.

3.3.16 Noncombustible. A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire. Materials, when tested in accordance with ASTM E 136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, and conforming to the criteria contained in Section 8 of the referenced standard, are considered as noncombustible.

3.3.17 Optical Fiber Cable. A factory assembly of one or more optical fibers, having an overall covering, that transmits light for control, signaling, and communications. [70:770.2]

3.3.18 Plenum. A compartment or chamber to which one or more ducts are connected and that forms part of the air distribution system. [90A, 2012]

3.3.19* Raceway. An enclosed channel of metal or nonmetallic materials designed expressly for holding wires, cables, or busbars, with additional functions as permitted in *NFPA 70, National Electrical Code*.

3.3.20* Raised Floor. A platform with removable panels where equipment is installed, with the intervening space between it and the main building floor used to house the interconnecting cables and at times is used as a means for supplying conditioned air to the information technology equipment and the room.

3.3.21 Records.

3.3.21.1 Important Records. Records that could be reproduced only at considerable expense and labor or only after considerable delay.

3.3.21.2 Master Record. An information record on a medium that can be referred to whenever there is a need to rebuild a data base.

3.3.21.3 Vital Records. Records that are irreplaceable, such as records of which a reproduction does not have the same value as an original; records needed to sustain the business promptly or to recover monies used to replace buildings' equipment, raw materials, finished goods, and work in progress; and records needed to avoid delay in restoration of production, sales, and service.

3.3.22 Remote Disconnect Control. An electric device and circuit that controls a disconnecting means through a relay or equivalent device. [70:645.2]

3.3.23 Separate Fire Division. A portion of a building cut off from all other portions of the building by fire walls, fire doors, and other approved means adequate to prevent any fire that can occur in one fire division from extending to another fire division.

3.3.24* Support Equipment. Permanently installed equipment that is essential to the operation as well as equipment temporarily used for maintenance, installation or de-installation of information technology equipment.

3.3.25 Water Sensor. A device or means that will detect the presence of water.

3.3.26 Zone. A physically identifiable area (such as barriers or separation by distance) within an information technology equipment room, with dedicated power and cooling systems for the information technology equipment or systems. [70:645.2]

3.4 Aisle Containment.

3.4.1* Aisle. The passageway between ITE or between ITE and a wall that allows personnel access to the ITE for service or operation of the equipment.

3.4.2* Aisle Containment. An HVAC method deployed in the occupied area of an air-cooled ITE space utilizing physical separation of hot exhaust air from cooler intake air between equipment cabinets, rows of ITE, or associated power and cooling infrastructure; containment is typically above and at both ends of a hot aisle or a cold aisle, in whole or part.

3.4.3* Cold Aisle. The aisle in front of the airflow intakes on the ITE where HVAC cooling airflow is controlled.

3.4.4* Hot Air Collar. An air conveyance assembly used to direct heated exhaust air from ITE cabinet(s), enclosure(s), or rack(s) directly to a return air path.

3.4.5* Hot Aisle. The aisle at the rear of the ITE where heated exhaust air is controlled and directed into the aisle for return to the HVAC equipment.

Chapter 4 Risk Considerations

4.1 Fire Risk Analysis Factors.

4.1.1* A fire risk analysis shall be permitted to be used to determine the construction, fire protection and fire detection requirements for information technology equipment, information technology rooms, and information technology areas where specifically permitted by Chapters 5 and 8.

4.1.2 The fire risk analysis conducted in 4.1.1 shall be documented.

