NFPA 232
Standard for the Protection of Records

1995 Edition

National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101
An International Codes and Standards Organization

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NFPA 232

Standard for the

Protection of Records

1995 Edition

This edition of NFPA 232, *Standard for the Protection of Records*, was prepared by the Technical Committee on Record Protection and acted on by the National Fire Protection Association, Inc., at its Annual Meeting held May 22-25, 1995, in Denver, CO. It was issued by the Standards Council on July 21, 1995, with an effective date of August 11, 1995, and supersedes all previous editions.

This edition of NFPA 232 was approved as an American National Standard on August 11, 1995.

Changes other than editorial are indicated by a vertical rule in the margin of the pages on which they appear. These lines are included as an aid to the user in identifying changes from the previous edition.

Origin and Development of NFPA 232

The destructive fire in the general offices of the Chicago, Burlington, and Quincy Railway in Chicago on March 25, 1922, was clear proof that valuable and often irreplaceable business records, unless properly protected, can be destroyed even in so-called "fire-resistive" buildings. Following this destructive fire, the Committee on Record Protection was organized. Reports were submitted annually from 1923 through 1936 and again in 1939. In 1947, a standard was developed from the officially adopted committee reports of 1942 to 1946. In 1960, the standard underwent major editorial revision and was revised again in 1963, 1967, and 1970. In 1975, it was reconfirmed. The 1980 edition reformatted the standard to conform to the NFPA *Manual of Style* and revised the detail specifications to performance-oriented requirements. The 1986 edition was a reconfirmation of the 1980 edition.

Changes to the 1991 edition included a reclassification of certain types of records. New provisions were added for the construction, arrangement, and protection of file rooms. These changes further increased the chance that vital documents are spared during most fire events.

The 1995 edition incorporated several editorial changes, the inclusion of a retroactivity clause, and further addressed the protection requirements for non-paper records media.

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

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

Committee Scope: This Committee shall have primary responsibility for documents on the protection of books, papers, plans, and other records from loss incident to fire.

Contents

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Appendix A. Information on referenced publications can be found in Chapter 6 and Appendix B.

Chapter 1* Introduction

1-1 Scope. This standard provides requirements for records protection equipment, facilities, and records handling techniques that provide protection from the hazards of fire. It does not consider forcible entry.

1-1.1 Because of the volume of records, this standard does not cover large archives or records storage buildings. *See NFPA 232A, Guide for Fire Protection for Archives and Records Centers.*

1-1.2 This standard does not cover the storage and handling of cellulose nitrate film records. *See NFPA 40, Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film.*

1-2 Purpose. This standard is prepared for the use and guidance of those charged with purchasing, designing, constructing, installing, inspecting, approving, listing, operating, or maintaining equipment and facilities that protect records against fire and its associated effects.

This standard also is intended for the use and guidance of those charged with planning, surveying, classifying, retaining, disposing, and otherwise handling records.

1-3 Retroactivity Clause. The provisions of this document shall be considered necessary to provide a reasonable level of protection from loss of life and property from fire. They reflect situations and the state of the art at the time the standard was issued.

Unless otherwise noted, it is not intended that the provisions of this document be applied to facilities, equipment, structures, or installations that were existing or approved for construction or installation prior to the effective date of this document.

Exception: This standard shall apply in those cases where it is determined by the authority having jurisdiction that the existing situation involves a distinct hazard to life or property.

1-4 Planning. It might be necessary for many of those charged with planning, inspecting, approving, operating, and maintaining records facilities, equipment, and techniques to consult with an experienced and competent fire protection engineer or records protection consultant.

1-5 Equivalency Concepts. Nothing in this standard is intended to prevent the use of buildings, systems, methods, or devices that provide a level of fire safety for records equivalent to that prescribed herein. Any building, system, method, or device that differs from those detailed in this standard shall be permitted to be examined or tested, or both, by the authority having jurisdiction in accordance with the intent of this standard and, if found equivalent, shall be permitted to be approved.

1-6 Provisions in Excess of Requirements. Nothing in this standard shall be construed to prohibit better or safer conditions than those required by this standard.

1-7 Definitions. For the purpose of this standard, the following terms have the meanings specified below:

Approved.* Acceptable to the authority having jurisdiction.

Authority Having Jurisdiction.* The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

File Processing Area. A work surface used for preparing records for filing or for retrieving records from or filing records to storage.

File Room. A fire-resistive enclosure that provides less fire protection than a vault and is used exclusively for the storage of records. An ordinary file room utilizes totally enclosed storage devices; an open-shelf file room uses open shelving and additional protection features.

File Room Door. An approved assembly that protects paper records against fire for the duration of its rated exposure.

Fire-Resistive Building.* A building of Type I or Type II-222 construction, as described in NFPA 220, *Standard on Types of Building Construction*, in which the structural members, including walls, partitions, columns, floors, and roofs, are of noncombustible or limited-combustible materials.

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.

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 identified standards or has been tested and found suitable for a specified purpose.

Mobile Shelving. A system of records storage in which sections or rows of shelves are moved on tracks to provide access aisles. Also called track files, compaction files, or movable files. They can be moved manually or electrically. Mobile shelving is usually a type of open-shelf file equipment.

Nonfire-Resistive Building. A building of that type of construction in which the structural members, including walls, partitions, columns, floors, and roofs, do not qualify as fire-resistive as defined herein.

Open-Shelf File Equipment. Any shelving that does not enclose file compartments on six sides.

Records Classes.*

Vital Records. Those that are irreplaceable or that contain information for which temporary unavailability could constitute a serious legal or business impairment. Examples are records for which a reproduction cannot be substituted for the original; records needed promptly to sustain business or to recover monies with which to replace buildings equipment, raw materials, finished goods, and work in process; and records needed to avoid delay in restoration of production, sales, and service.

Important Records. Those for which a reproduction, while acceptable as a substitute for the original, could be obtained only at considerable expense and labor or only after considerable delay.

Shall. Indicates a mandatory requirement.

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

Slab. A poured concrete floor-ceiling assembly.

Standard Records Vault. A completely fire-resistive enclosure used exclusively for records storage.

Ground-Supported Vault. A vault that is supported from the ground up and that is structurally independent of the building in which it is located.

Structure-Supported Vault. A vault that is supported by the framework of a fire-resistive building and that can be supported individually on any floor of such a building.

Vault Door. An approved assembly that protects paper records against fire for the duration of its rated exposure.

Vault Floor. The ground-supported slab or the slab between vaults in a tier.

Vault Roof. The ceiling or roof of a single vault and the ceiling or roof of the top vault of a tier, but not the slab between vaults in a tier, which is classified as a floor.

Chapter 2 Standard Records Vault

2-1 General.

2-1.1 The vault shall be equipped, maintained, and supervised to minimize the possibility of origin of fire within and to prevent entrance of fire from outside for a specified period of time.

2-1.2 To resist the maximum expected exposure fire, a vault shall be constructed as specified herein and in accordance with the ratings in Chapter 5.

2-2 Design.

2-2.1 In a fire-resistive building, the vault shall be of either the ground-supported or the structure-supported type.

2-2.2 In a nonfire-resistive building, the vaults shall be of the ground-supported type. The walls of a building shall not be used as walls of vault, since collapse of the building can cause damage to the vault and its contents.

2-2.3* Plans and specifications shall be prepared and construction shall be supervised by a licensed or registered structural engineer or architect.

2-2.4 Proper design and construction of a vault shall consider its qualities as a flame barrier and as a heat-retardant, its ability to avoid settlement and consequent cracking, and its ability to maintain the integrity of the vault structure under the stresses and impacts to which it can be subjected during a fire, including impact from falling objects and stresses, strains, and erosion due to sudden cooling with fire hose streams.

2-3 Location.* Because of the difficulty of providing resistance to severe impact, vaults in nonfire-resistive buildings shall be located where they are not exposed to the fall of a heavy object such as a safe, machine, or water tank in the event of collapse of the building as the result of a fire.

2-4 Size. For the purpose of restricting the quantity of vital records exposed to destruction by fire in a single enclosure and to reduce the possibility of fire originating within a vault, a vault shall not exceed 5000 ft^3 (142 m^3) in volume, and the interior height shall not exceed 12 ft (3.7 m). (*For conditions requiring storage of a larger volume of vital records, see Section 2-14.*)

2-5 Foundations.

2-5.1 Ground-Supported Vaults. Foundations for vaults shall carry the entire load of the vault or tier of vaults and contents without settlement or cracking. Unburied structural members supporting vaults shall have fire resistance at least equal to that of the vault.

2-5.2 Structure-Supported Vaults.

2-5.2.1* The supporting structures for vaults shall be of adequate strength to carry the full load, including the wet weight of the vault structure and its contents.

2-5.2.2 There shall be no combustible material in any portion of the building members that supports the vault. All building structural members that support the vault shall have fire resistance at least equal to that of the vault.

2-5.2.3 The walls of a structure-supported vault shall follow the column lines of the building wherever possible and shall extend from slab to slab in each story where a vault is located. If vaults are located on more than one floor of a building, they shall be placed, preferably one above the other, in each story.

2-6 Floor.

2-6.1 Floors shall be noncombustible and shall have floor surfacing limited to concrete sealer.

2-6.2 In structure-supported vaults, the floor of the fire-resistive building shall be permitted to serve as the floor of the vault, provided it is of noncombustible construction throughout and complies with the following:

(a) Floors above grade shall be adequate to support the full load (wet weight) and shall have unrestrained fire resistance equivalent to that required for the walls of the vault. (*See Section 2-7.*)

(b) Floors above grade shall not be pierced for any purpose.

2-7 Walls.

2-7.1 Walls shall be noncombustible and of fire-resistive construction throughout.

2-7.2 Reinforcing rods in concrete shall be located to avoid failure from fire exposure.

2-7.3 Noncombustible material shall be used for trim or partitions.

2-7.4* The design shall provide the necessary minimum resistance to fire and fire hose streams according to structural consideration and variations in the quality of materials and workmanship. The walls shall have sufficient lateral strength to withstand impact due to collapsing structural members, toppling machinery, toppling building equipment, or combination thereof.

2-7.5 Openings in Walls.

2-7.5.1 The walls of vaults shall have no openings other than those necessary for access, electric lighting, power-limited circuits, and sprinkler piping. (*See 2-14.1.*)

2-7.5.2 Door openings shall be protected with approved vault doors. Doors shall not open into elevator, conveyor, or other shafts, and there shall be no openings from one vault into another.

2-7.5.3 The number of door openings shall not exceed two for any single vault and shall be limited in size to that necessary for convenient ingress and egress and for ventilation.

2-7.5.4 Wall penetrations for sprinkler, electric lighting, and limited-energy circuits shall be as small as possible and shall be sealed with approved or listed fire-rated material to prevent smoke, heat, flame, or water penetration. Conduit, if used, shall be sealed inside and outside.

2-7.5.5* Walls shall not be pierced for ventilation.

2-7.6 Bonding.

2-7.6.1 Vault walls of masonry units shall be laid with corners that are well-bonded for their full height.

2-7.6.2 Where the floor construction of a fire-resistive building forms the roof of the vault, the joint between the top of the vault wall and the underside of the floor arch or slab shall be finished tightly and filled thoroughly with mortar or cement grout.

2-7.6.3 If any wall of a building is of suitable construction to form part of the vault enclosure, the wall or walls of the vault that intersect with the building wall shall, where practicable, be bonded or keyed into it, or both, for the full height and width of the vault wall or walls.

2-8 Independence from Building Structure.

2-8.1 Vault construction shall not be used as a support or bearing for the structural members of the building.

2-8.2 In ground-supported vaults, the walls and supports of vaults shall be structurally independent of the building.

2-9 Roof.

2-9.1 In nonfire-resistive buildings, the roofs of vaults shall be entirely independent of the wall, floor, ceiling, columns, piers, or roof construction of the building.

2-9.2 In structure-supported vaults, the roof or the floor of the fire-resistive building shall be permitted to serve as the roof of the vault, provided it is of noncombustible construction throughout and complies with the following:

(a) The roof of the vault shall be reinforced concrete or reinforced concrete on protected steel supports.

(b) The roof of the vault shall have a fire resistance at least equivalent to that of the walls and shall have structural strength adequate to carry the design load or greater if subject to unusual impact or if exposed to fire from outside the vault.

(c) All interior supports shall have fire resistance equivalent to that of the walls.

(d) The roofs of vaults shall not be pierced for any purpose.

2-10* Vault Door.

2-10.1* Each wall opening in the vault shall be provided with a listed or labeled vault door tested in accordance with ANSI/UL 155, *Test for Fire Resistance of Vault and File Storage Room Doors.* The vault door shall have a rating, in hours of fire resistance, equivalent to the rating of the walls of the vault, as follows:

4-hour vault — 4-hour door
6-hour vault — 6-hour door.

Figure 2-10.1(a) The 2-story vault [*see Figure 2-10.1(b)*] was in this sprinklered 4-story brick, plank-on-timber hardware factory in Syracuse, NY. The $977,000 fire was detected by the security guard. After this fire of suspicious origin was extinguished, sprinkler valves were found shut off.

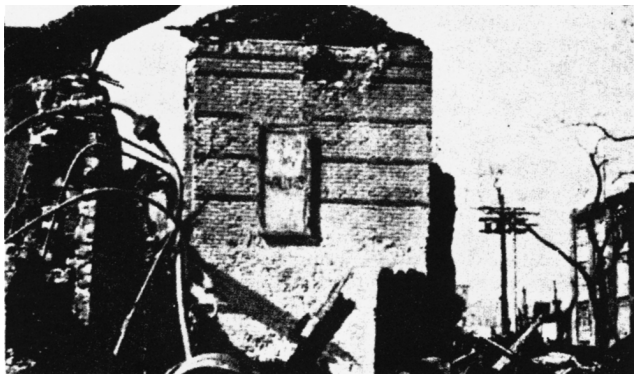

Figure 2-10.1(b) Satisfactory performance of a labeled vault door saved records in the upper story of this 2-story vault. A labeled fire door (not a vault door) on the first story was damaged, and records in the first story were destroyed. Figure 2-10.1(a) shows the fire exposure to vault.

2-10.2 Installation of the vault door unit shall be made in conformity with instructions supplied by the manufacturer and shall be entrusted only to those experienced in such installation work.

2-10.3* The door-locking mechanism shall permit the door to be opened easily from the inside to prevent an individual from accidentally being locked in the vault.

2-10.4 Doors shall be equipped with an automatic closing device and a heat-actuated or smoke-actuated release for doors which are held in the open position.

2-11 Electrical Service.

2-11.1 All electrical service within the vault shall be enclosed in conduit and installed in accordance with NFPA 70, *National Electrical Code®*.

2-11.2 The wiring shall provide as many fixed lamps as needed for adequate illumination. No pendant lamp or extension cord shall be used within a vault. Fixed lighting shall be adequate for illumination of all portions of the vault to preclude the use of matches or other hazardous lighting.

2-11.3 Necessary lighting shall be limited to vaporproof or explosionproof lamps controlled by a two-pole switch outside the vault. No other electrical devices or appliances, shall be permitted within the vault.

Exception: Low energy devices shall be permitted within the vault.

2-12 Operating Practices.

2-12.1 Filing equipment shall be noncombustible throughout. All records shall be stored in fully enclosed noncombustible containers. (*For storage of records in open-type equipment see Chapter 3.*)

2-12.2 The records in the filing equipment shall be not less than 3 in. (76 mm) above the floor of the vault.

2-12.3 The vault shall be under responsible supervision from opening until closing time, and inspections shall be made daily, particularly before closing time, to ensure that all containers are closed, no records are left on top of the containers or are elsewhere exposed, all waste paper is removed, and the vault doors are closed and locked.

2-12.4 Vaults shall not be used as working spaces. Persons other than those authorized to handle the records shall not be permitted in the vaults.

2-12.5 General housekeeping shall be of the highest order.

2-12.6 Smoking inside vaults shall not be permitted. Matches and lighters shall not be permitted inside vaults.

2-12.7 Records containers shall be separated by at least 6 in. (152 mm) from piping and conduit that penetrates the wall. Where sprinklers are installed, records containers shall be kept 18 in. (457 mm) below sprinkler deflectors.

2-13 Fire Suppression and Signaling Equipment.

2-13.1* Other than power-limited circuits, automatic or manual fire protection devices shall be limited to those not requiring wall penetration.

Exception: Wall penetration necessary for supplying automatic sprinklers shall be permitted. (See also Section 2-14.)

2-13.2 Portable fire extinguishers of a type suitable for Class A fires in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*, or standpipe systems with small hose suitable for use by occupants of the building in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, shall be provided at a conveniently accessible location outside the door of the vault.

2-13.3 Where automatic fire detection systems are installed for providing warning of fire inside the vault, they shall be in accordance with NFPA 72, *National Fire Alarm Code*. The systems shall be relied upon only where reliable prompt response of alarms is ensured.

2-14 Oversize Vault.

2-14.1* Where the volume of vital records (*see definition in Section 1-7*) exceeds that which can be stored in a record vault of maximum permitted size (5000 ft^3 [142 m^3]), an oversize vault of not greater than 25,000 ft^3(708 m^3) designed and constructed as a standard vault and equipped with automatic sprinkler protection installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall be permitted.

2-14.2 Filing equipment shall be noncombustible but shall not be required to be completely enclosed. Where mobile shelving is used, smoke detection in accordance with 2-13.3 shall be provided in addition to automatic sprinklers. In accordance with 2-11.3, no electrically operated mobile shelving shall be permitted.

Chapter 3 File Rooms

3-1 General.

3-1.1 All file rooms shall be provided with automatic sprinkler protection.

Exception: Sprinklers shall not be required where all storage is held in six-sided noncombustible containers.

3-1.2* File rooms shall be used exclusively for the storage and handling of important records and shall be equipped, maintained, and operated to minimize the effects of fires of both internal and external origin. Vital records shall not be stored in a file room.

3-1.3 To minimize the effects of fires of both internal and external origin, a file room shall be constructed and operated as specified in this chapter and in accordance with the ratings in Chapter 5.

3-2 Design and Location.

3-2.1 Plans and specifications shall be prepared and construction shall be supervised by a licensed or registered structural engineer or architect in consultation with a licensed or registered fire protection engineer.

3-2.2 Fire resistance ratings prescribed for file rooms shall be of the duration that materials or assemblies have been shown to withstand a fire exposure established in accordance with the test procedures of NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials.*

3-2.3* File rooms shall not be located below ground level.

Exception: Underground storage and basement storage areas specifically designed by licensed or registered fire protection engineers to mitigate the inherent problems of subterranean storage.

3-2.4 File rooms shall be located to prevent severe impact by a falling machine, safe, water tank, or other heavy object or structure.

3-3 Size. The volume of file rooms shall not exceed 50,000 ft^3 (1416 m^3).

3-4 Supporting Structure.

3-4.1* The supporting structures for file rooms shall be of adequate strength to carry the full load, including the wet weight of the file room structure and its contents.

3-4.2 There shall be no combustible material in any portion of the building members that supports the file room. All building structural members that support the file room shall have fire resistance at least equal to that of the file room.

3-4.3 The walls of a structure-supported file room shall follow the column lines of the building wherever possible and shall extend from floor to floor in each story where a file room is located. If file rooms are located on more than one floor of a building, they shall be placed, preferably one above the other, in each story.

3-5 Floor.

3-5.1 In structure-supported file rooms, the floor of the fire-resistive building shall be permitted to serve as the floor of the file room, provided it is of noncombustible construction throughout and complies with the following:

(a) Floors above grade shall be adequate to support the full load (wet weight) and shall have unrestrained fire resistance equivalent to that required for the walls of the file room.

(b) Floors above grade shall not be pierced for any purpose.

3-5.2 Reinforcing rods in concrete shall be so located as to avoid failure from fire exposure.

3-6 Walls.

3-6.1 Walls shall be constructed of noncombustible or limited-combustible materials.

3-6.2 Noncombustible material shall be used for trim or partitions within the file room.

3-6.3 Openings in Walls.

3-6.3.1 The walls of file rooms shall have no openings other than those necessary for access, electric lighting, power-limited circuits, sprinkler piping, and hot water or low pressure steam piping. The sealing requirements of 2-7.5.4 shall apply.

3-6.3.2 Door openings shall be protected with approved file room doors. Doors shall not open into elevator, conveyor, or other shafts.

3-6.3.3 Walls shall not be pierced for ventilation.

3-6.4 Bonding. If any wall of a building is of suitable construction to form part of the file room enclosure, the wall or walls of the file room that intersect with the building wall shall, where practicable, be bonded into it for the full height and width of the file room wall or walls.

3-7 Roof.

3-7.1 In nonfire-resistive buildings, the roof of the file room shall be entirely independent of the wall, floor, ceiling, columns, piers, or roof construction of the building.

3-7.2 In fire-resistive buildings, the roof or the floor shall be permitted to serve as the roof of the file room, provided it is of limited-combustible or noncombustible construction throughout and complies with the following:

(a) The roof of the file room shall be reinforced concrete or reinforced concrete on protected steel supports.

(b) The roof of the file room shall have a fire resistance at least equivalent to that of the walls and shall have structural strength adequate to carry the design load or greater if subject to unusual impact or if exposed to fire from outside the file room.

(c) All interior supports shall have fire resistance equivalent to that of the walls.

(d) The roofs of the file rooms shall not be pierced for any purpose.

3-8 File Room Door.

3-8.1 Each wall opening in the file room shall be provided with doors tested in accordance with ANSI/UL 155, *Tests for Fire Resistance of Vault and File Storage Room Doors*. The file room door shall have a rating, in hours of fire resistance, equivalent to the rating of the walls of the file room, as follows:

6-hour file room — 6-hour door
4-hour file room — 4-hour door
2-hour file room — 2-hour door
1-hour file room — 1-hour door.

3-8.2 Installation of the file room door unit shall be made in conformity with instructions supplied by the manufacturer and shall be entrusted only to those experienced in such installation work.

3-8.3* The door-locking mechanism shall permit the door to be opened from the inside to prevent an individual from accidentally being locked in the file room.

3-8.4 Doors shall be equipped with an automatic closing device operated by a heat-actuated or smoke-actuated release.

3-9 Dampproofing. Where the walls, floor, or roof of a file room are dampproofed, the methods and materials used shall be such that the desired fire resistance of the file room shall not be impaired.

3-10 Electrical Service.

3-10.1 All electrical service within the file room shall be enclosed in conduit and installed in accordance with NFPA 70, *National Electrical Code*.

3-10.2 The wiring shall provide as many fixed lamps as needed for adequate illumination. No pendant lamp or extension cord shall be used within a file room. Fixed lighting shall be adequate for illumination of all portions of the file room to preclude the use of temporary lighting.

3-10.3 Necessary lighting shall be limited to vaporproof or explosionproof lamps controlled by a two-pole switch equipped with a pilot light outside the file room. No other electrical devices or appliances shall be permitted within the file room.

Exception No. 1: File maintenance equipment specifically designed and approved for installation and use.

Exception No. 2: Power-limited circuits shall be permitted within the file room.

3-11 Heating and Ventilation.

3-11.1 Heating shall be by means of hot water or steam. Where steam heating is used, the coils or radiators shall be located to avoid the possibility of records coming in contact with them. Piping shall be placed overhead. Where the pipe is carried through the wall, the holes shall be made as small as practicable, the pipe shall be provided with a close-fitting noncombustible sleeve, and the space around the inside of the sleeve shall be filled completely with approved material. Floors and roofs of file rooms shall not be pierced for piping. No devices such as open-flame heaters and electrical heaters shall be used.

Exception: Slab floors on grade shall be permitted to be pierced for piping.

3-11.2* Ventilation of the interior shall be through a door opening.

3-12 Fire Suppression and Signaling Equipment.

3-12.1 All file rooms shall be provided with an automatic sprinkler fire extinguishing system.

Exception: Where all storage is held in six-sided noncombustible containers.

3-12.1.1* If automatic sprinklers are installed, conveniently located sprinkler alarms and shutoff valves outside the file room shall be provided to allow water to be turned off promptly after the fire is extinguished.

3-12.1.2 Automatic sprinkler systems shall be designed and installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems.*

Exception: Where modified by this section.

3-12.1.2.1 Paper Records. Where paper records are stored on open-shelf file equipment and at heights of 12 ft (3.7 m) or less, the design criteria shall be in accordance with, Ordinary Hazard Group 2.

Where paper records are stored in excess of 12 ft (3.7 m), the design criteria of NFPA 231, *Standard for General Storage* or NFPA 231C, *Standard for Rack Storage of Materials* shall apply. Storage shall be considered to be Class III commodity.

3-12.1.2.2 Other Media Records. Where records storage consists of other media with combustion characteristics that differ from paper (such as magnetic tape and audio visual materials) and is stored in open file storage equipment and at a height of 12 ft (3.7 m) or less, the requirements of NFPA 13, *Standard for the Installation of Sprinkler Systems* shall apply.

For storage in excess of 12 ft (3.7 m), the requirements of NFPA 231, *Standard for General Storage* or NFPA 231C, *Standard for Rack Storage of Materials* shall apply.

3-12.1.2.3 Where records media are mixed (e.g., paper and magnetic tape) the design shall be for the highest hazard commodity.

3-12.2 Portable fire extinguishers of a type suitable for Class A fires, in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*, or standpipe systems with small hose suitable for use by occupants of the building, in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, shall be provided at a conveniently accessible location outside the door of the file room.

3-12.3 Smoke detection systems, connected to notify the fire department when activated shall be provided for the following:

(a) File rooms having open-shelf file equipment, including mobile shelving, that has concealed spaces more than 6 ft (1.8 m) wide.

(b) File rooms having all storage held in six-sided noncombustible containers and a file processing area not exceeding 10 percent of the total file room floor area.

3-12.4 Where automatic fire detection systems are installed for providing warning of fire inside of the file room, they shall be in accordance with NFPA 72, *National Fire Alarm Code*. The systems shall be relied upon only where reliable prompt response of alarms is ensured.

3-13 Operating Practices.

3-13.1 The file room shall be under responsible supervision from opening until closing time, and inspections shall be made daily, particularly before closing time, to ensure that all containers are closed, no records are left on top of containers or are elsewhere exposed, all waste paper is removed, and file room doors are closed and locked.

3-13.2 File rooms shall not be used as working spaces. No work stations shall be permitted. Persons other than those authorized to handle records shall not be permitted in the file rooms.

Exception No. 1: Fully sprinklered file rooms.

Exception No. 2: File rooms with smoke detection and all storage held in six-sided noncombustible containers.

3-13.3 Records in the filing equipment shall be not less than 3 in. (76 mm) above the floor.

3-13.4 General housekeeping shall be of the highest order.

3-13.5 Smoking inside file rooms shall not be permitted. Matches and lighters shall not be permitted inside file rooms.

3-13.6 Records containers shall be separated by at least 6 in. (152 mm) from piping and conduit that penetrate the wall. Where sprinklers are installed, records containers shall be kept 18 in. (457 mm) below sprinkler deflectors.

Exception: Where sprinklers are located in each aisle.

Chapter 4 Records Protection Equipment

4-1* General. Records protection equipment is movable and includes fire-resistant safes and cabinets. These devices are intended to provide protection for various types of records for various durations of fire exposure by segregating them from surrounding fire exposure.

4-2* Classification of Devices. Only listed or labeled records protection equipment shall be used.

4-3 Selection of Equipment.

4-3.1 The selection of the class of record protection equipment shall be based on the requirements in this section and in Chapter 5.

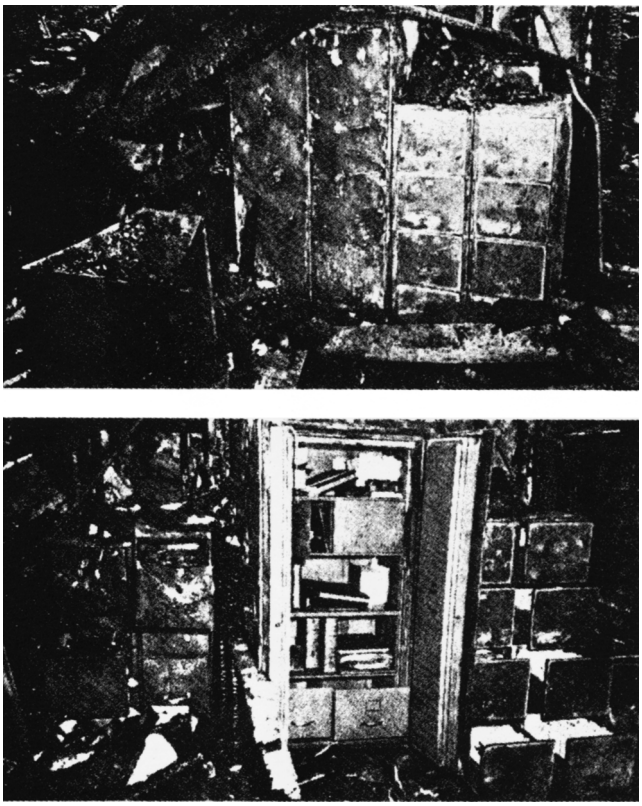

Figure 4-3.1 These two photographs of the same equipment graphically show the value of fire-rated containers for protection of records. These containers were in a 1-story brick and steel building destroyed by fire. The 1-hr rated equipment at the right and the 2-hr rated safe in the center protected their contents. Records in the nonrated equipment at left were destroyed.

4-3.2 The label on the device shall include the name of the equipment, the temperature rating, and the time rating. The label shall be applied to the equipment and shall be located to be readily visible after the equipment has been installed.

4-3.3* Cabinets made of wood, fiberboard, or other combustible materials shall not expose containers housing vital or important records.

Chapter 5 Preservation of Records

5-1 General.

5-1.1* The fire-resistance requirements for vaults, file rooms, and records protection devices shall be in accordance with the type of construction (e.g., fire-resistive or nonfire-resistive), the total combustibles exposing the vault, file room, or records protection device, and the records media being protected as specified in Chapters 2, 3, and 4. (*See A-5-1.1 for guidance on protection of records other than those defined as vital or important.*)

5-1.2 Some records are better protected by duplication. Where this method is used, the duplicated records shall be stored in a separate location not subject to the same fire.

5-2 Fire-Resistive Buildings.

5-2.1 The devices required to protect records adequately in a fire-resistive building shall be determined by the following:

(a) The total combustible contents per floor in the building, and

(b) The percentage of combustibles that are in an exposed position on any given floor.

The conditions of 5-2.1(a) and (b) are summarized in Table 5-2.1.

5-3 Nonfire-Resistive Buildings.

5-3.1 To adequately protect records in a nonfire-resistive building, the devices required shall be determined by the total weight of combustibles per floor, as shown in Table 5-3.1.

5-3.2 Any device located in a nonfire-resistive building shall be rated for impact resistance.

Table 5-2.1 Equipment for a Fire-Resistive Building

Total Combustible Contents per Floor, Including any Combustible Flooring, Partitions, and Trim *(See A-5-1.1A7)* [lb/ft² (kg/m²) of floor area]	Noncombustible Desks, Filing Cabinets, Lockers, and Other Closed Containers. Not over 30 Percent of Combustible Exposed	Combustible Desks, Filing Cabinets, Shelving, Containers, Etc.
Less than 5 (2.27)	1-hr device (without impact) or file room	1-hr device (without impact) or file room
5 to 10 (2.27 to 4.53)	1-hr device (without impact) or file room	1-hr device (with impact) or file room
10 to 15 (4.53 to 6.80)	1-hr device (without impact)	2-hr device or file room
15 to 20 (6.80 to 9.07)	1-hr device (with impact) or file room	2-hr device or file room
20 to 30 (9.07 to 13.60)	1-hr device (with impact) or file room	4-hr device, file room, or vault
30 to 35 (13.60 to 15.86)	2-hr device or file room	4-hr device, file room, or vault
35 to 45 (15.86 to 20.40)	2-hr device or file room	6-hr vault or file room
45 to 50 (20.40 to 22.66)	4-hr device, file room, or vault	6-hr vault or file room
50 to 60 (22.66 to 27.20)	4-hr device, file room, or vault	6-hr device or file room with no combustibles near door

Table 5-3.1 Equipment for a Nonfire-Resistive Building

Total Weight of Combustibles, Including Contents and Building Members of All Floors Including Roof, but not Exterior Walls (*See A-5-1.1A7*) [lb/ft² (kg/m²) of ground area]	Record Container Rating
Less than 25 (11.33)	2-hr device or file room, except in 1-story and basement buildings (or 2-story without basement) 1-hr device (with impact) or file room. Where impacts or blanketing of ruins by collapse of masonry wall or adjoining building is possible, a device or file room of 2-hr or higher rating shall be used.
25 to 50 (11.33 to 22.66)	2-hr device or file room.
50 to 100 (22.66 to 45.33)	4-hr device, file room, or vault. 4-hr vault for basement or ground story, 2-hr or above.
100 to 150 (45.33 to 67.99)	Vault, file room, or device: basement or ground (first) story, 6-hr; first floor, 4-hr; upper floors, 2-hr.
Over 150 (67.99)	Vault, file room, or device: shall not be located in basement or ground story without basement; first floor, 6-hr; second floor, 4-hr; upper floors, 2-hr.

NOTE: Wood weighs approximately 36 lb/ft³ (577kg/m³).

Chapter 6 Referenced Publications

6-1 The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for each reference is the current edition as of the date of the NFPA issuance of this document.

6-1.1 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 10, *Standard for Portable Fire Extinguishers*, 1994 edition.

NFPA 13, *Standard for the Installation of Sprinkler Systems*, 1994 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 1993 edition.

NFPA 70, *National Electrical Code*, 1996 edition.

NFPA 72, *National Fire Alarm Code*, 1993 edition.

NFPA 220, *Standard on Types of Building Construction*, 1995 edition.

NFPA 231, *Standard for General Storage*, 1995 edition.

NFPA 231C, *Standard for Rack Storage of Materials*, 1995 edition.

NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials*, 1995 edition.

6-1.2 Other Publications.

6-1.2.1 ANSI/UL Publications. American National Standards Institute, 1430 Broadway, New York, NY 10018, or Underwriters Laboratories Inc., 333 Pfingsten Rd., Northbrook, IL 60062.

ANSI/UL 72, *Standard for Tests for Fire Resistance of Record Protection Equipment.*

ANSI/UL 155, *Test for Fire Resistance of Vault and File Storage Room Doors.*

Appendix A Explanatory Material

This appendix is not a part of the requirements of this NFPA document but is included for informational purposes only.

A-1 Businesses have been forced to close due to the insurmountable task of replacing organizational and operational records. While accurate nationwide statistics are needed, it is known that the losses sustained in fires by such businesses has had the adverse effect of lowering their credit ratings and that some went out of business because of the destruction of their records.

Since the turn of the century, the volume of records, especially of business records, has increased rapidly. These records have to be stored. This need, stimulated by competition among manufacturers, led to the development of better records containers, especially that of lighter weight containers with greater capacity and fire resistance. The heavy, old-line safes of uncertain fire resistance could no longer meet the needs of business and have been replaced largely by modern fire-resistive containers. Newer techniques of records keeping (e.g., microfilm and electronic computers) are creating new problems and new demands.

The biggest issues facing the records protection field today are better acknowledgment and increased study of the records protection problem. Technically, the equipment needed to provide the necessary protection has been produced and rigorously tested. It is now the responsibility of records owners and custodians to learn how to estimate the protection needed and the responsibility of architects, contractors, and builders, as well as custodians, to understand how to provide this protection.

A-1-7 Approved. The National Fire Protection Association does not approve, inspect, or certify any installations, procedures, equipment, or materials; nor does it approve or evaluate testing laboratories. In determining the acceptability of installations, procedures, equipment, or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure, or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations that is in a position to determine compliance with appropriate standards for the current production of listed items.

A-1-7 Authority Having Jurisdiction. The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A-1-7 Fire-Resistive Building. (*See Table A-1-7.*)

A-1-7 Listed. The means for identifying listed equipment may vary for each organization concerned with product evaluation, some of which do not recognize equipment as listed unless it is also labeled. The authority having jurisdiction should utilize the system employed by the listing organization to identify a listed product.

A-1-7 Records Classes. Records of exceptionally high intrinsic value, such as those of financial securities, or records that also are rare artifacts could necessitate individualized protection measures outside the scope of this standard. Records essential to the reconstruction of other records also should be considered for special protection.

A-2-2.3 Vaults require unusually good design and construction to ensure that the structure satisfactorily withstands all of the conditions that could be imposed upon it by fire.

A-2-3 Vaults below grade are undesirable because under certain conditions sufficient burning or smoldering debris can accumulate in a basement to produce a "cooking effect" of such duration that the effects of combustion cannot be resisted by construction alone (within practical limitations). Also, vaults located below grade might be damp, causing destruction of records by the formation of mold, and can be subject to flooding under either flood or fire conditions, with consequent damage to records.

A-2-5.2.1 The wet weight of records is approximately 2.4 times the dry weight. Dry correspondence files weigh approximately 30 lb/ft^3 (480 kg/m^3).

A-2-7.4 Traditionally recognized construction that meets these requirements is as follows:

(a) Reinforced concrete with steel rods at least $^1/_2$ in. (13 mm) in diameter spaced 6 in. (152 mm) on center and running at right angles in both directions. Rods are wired securely at intersections not over 12 in. (305 mm) apart in both directions and installed centrally in the wall or panel.

(b) A structural steel frame protected with at least 4 in. (102 mm) of concrete, brickwork, or its equivalent tied with steel ties or wire mesh equivalent to No. 8 ASW gauge wire on an 8-in. (203-mm) pitch. Any brick protection used is filled solidly to the steel with concrete.

Table A-1-7 Fire Resistance Requirements for Type I through Type V Construction

	Type I		Type II			Type III		Type IV	Type V	
	443	332	222	111	000	211	200	2HH	111	000
Exterior Bearing Walls –										
Supporting more than one floor, columns, or other bearing walls.....	4	3	2	1	0[1]	2	2	2	1	0[1]
Supporting one floor only.....	4	3	2	1	0[1]	2	2	2	1	0[1]
Supporting a roof only.....	4	3	1	1	0[1]	2	2	2	1	0[1]
Interior Bearing Walls –										
Supporting more than one floor, columns, or other bearing walls.....	4	3	2	1	0	1	0	2	1	0
Supporting one floor only.....	3	2	2	1	0	1	0	1	1	0
Supporting roofs only.....	3	2	1	1	0	1	0	1	1	0
Columns –										
Supporting more than one floor, columns, or other bearing walls.....	4	3	2	1	0	1	0	H[2]	1	0
Supporting one floor only.....	3	2	2	1	0	1	0	H[2]	1	0
Supporting roofs only.....	3	2	1	1	0	1	0	H[2]	1	0
Beams, Girders, Trusses & Arches –										
Supporting more than one floor, columns, or other bearing walls.....	4	3	2	1	0	1	0	H[2]	1	0
Supporting one floor only.....	3	2	2	1	0	1	0	H[2]	1	0
Supporting roofs only.....	3	2	1	1	0	1	0	H[2]	1	0
Floor Construction	3	2	2	1	0	1	0	H[2]	1	0
Roof Construction	2	1$^1/_2$	1	1	0	1	0	H[2]	1	0
Exterior Nonbearing Walls	0[1]	0[1]	0[1]	0[1]	0[1]	0[1]	0[1]	0[1]	0[1]	0[1]

Those members that shall be permitted to be of approved combustible material.

[1] See NFPA 220, A-3-1 (Table).
[2] "H" indicates heavy timber members; see NFPA 220 for requirements.

(c) Fire resistance is determined by wall thickness as follows:

1. Minimum thickness of a 4-hour vault wall is 12 in. (305 mm) for brick and 8 in. (203 mm) for reinforced concrete.

2. Minimum thickness of a 6-hour vault wall is 12 in. (305 mm) for brick and 10 in. (254 mm) for reinforced concrete.

(d) Walls of ground-supported vaults are of greater thickness than those described herein where it is necessary to account for such factors as unusual structural conditions and loads.

A-2-7.5.5 Environmental requirements such as heating, cooling, and humidity control, may be permitted to be provided by controlling the environment outside of the vault.

A-2-10 Vault doors are capable of the following:

(a) Preventing the passage into the vault chamber of flame or heat above a specified temperature for the time period indicated on the label;

(b) Withstanding the stresses and strains due to fire or the application of a fire hose stream while the unit is in a highly heated condition without materially reducing its fire resistance.

A-2-10.1 Ordinary fire doors such as hollow metal, tinclad, sheet metal, or metalclad types; steel-plate type; and file room doors may not be permitted to be used as vault doors.

A-2-10.3 Interior emergency lighting might be necessary.

A-2-13.1 Sprinklers in vaults on grade may be permitted to be supplied by pipes that rise through the floor.

A-2-14.1 Automatic sprinklers are the best fire protection devices. Records custodians, librarians, and others responsible for maintaining documents gradually are coming to accept the use of automatic sprinklers for the protection of books and records with the understanding that the sprinklers add negligible water hazards and mitigate serious fire hazards.

The following is an example of the role sprinklers play as a possible records protection medium.

The Factory Mutual engineering division ran a test on sprinklered and unsprinklered four-tier, steel, open deck library stacks. Two fires of identical nature were started in a test section containing 11,000 books. The first test used automatic sprinklers and the second did not.

In the sprinklered test, the fire burned unhampered for 3 minutes and 43 seconds when the first sprinkler opened. All fire spread halted at this point. Another sprinkler opened at 7 minutes and 53 seconds, and they both discharged for the remainder of the test (30 minutes from start). Combined, their output was 41 gal/min (26 L/sec) for a total of 978 gal (3701 L) discharged on 27 percent of the books. Wetting of the books ranged from slightly damp to soaked. Ten percent of the books were fire damaged within a range from slight charring to deep burns. No book was knocked from its shelf by the sprinklers.

In the unsprinklered test, the fire burned unhampered for 10 minutes when all four tiers were heavily involved. Hoses were applied, since the test structure was in danger. A 1-in. (25.4-mm) hose line was tried first but had little effect, and a $2^1/_2$-in. (63.5-mm) line discharging 265 gal/min (162 L/sec) had to be brought in 17 seconds later in order to save the test structure. Books were knocked onto the floor of the tiers and out of the stack. As a result, 89 percent of the books were charred deeply or destroyed, $2^1/_2$ percent were scorched, and the remaining $8^1/_2$ percent were soaked.

Sprinklers work effectively to provide protection for records. The sprinkler performance history shows premature operation of sprinklers to be a negligible problem.

The provision of sprinklers does not ensure that no records are destroyed by fire, but it can minimize the probability of a disastrous records fire.

A-3-1.2 Volumes of vital records too small to require a standard vault should not be exposed to the severe fire loading present in a file room, even where it is protected by an automatic fire suppression system. Such records could be stored in appropriate fire-rated file devices in an ordinary office environment, which poses a fire exposure that is less hazardous.

> NOTE: The presence of filing personnel and processing operations within the file room, the additional hazards of lighting and heating equipment, and the greater volume of records likely to be exposed at one time add to the possibility of origin of fire and destruction of records within the enclosure.

A-3-2.3 File rooms should not be located underground because, under certain conditions, burning or smoldering debris can accumulate in a basement in sufficient quantities to produce a "cooking effect" of such duration that it cannot be resisted by construction alone (within practical limitations). Underground storage imposes risk factors such as inaccessibility, delayed or impaired access, smoke and heat ventilation, water accumulation, and availability of safe refuge.

A-3-4.1 The wet weight of records is approximately 2.4 times the dry weight. Dry correspondence files weigh approximately 30 lb/ft^3 (480 kg/m^3).

A-3-8.3 Interior emergency lighting might be necessary.

A-3-11.2 Where the natural circulation of air through the door opening does not provide sufficient ventilation, an electric fan may be permitted to be placed close to the door and directed through the door opening. Such fans may be permitted to be mounted conveniently near the top of the door. Fans should be located so that they do not obstruct the closing of the door.

A-3-12.1.1 Sprinklers in file rooms on grade may be permitted to be supplied by pipes that rise through the floor.

A-4-1 Protection of records from the effects of fire is considered to have begun about 1910 when Underwriters Laboratories Inc. conducted the first test in which both the temperatures of the furnace and of the air inside the record container under test were recorded. While the container first tested was lacking in fire-resistive properties and the test was crude compared with present-day tests of equipment, the method used set a precedent that was destined to exert an influence not only on the testing of record containers but upon fire tests in general.

To establish the fire-resistive rating of a records container, it is necessary to measure interior temperatures and set the maximum allowable temperatures. In view of the fact that the rate of temperature rise inside a safe is influenced by the temperature of the furnace fire, the new method called for closer furnace control and the use of a specific schedule of furnace fire temperatures. Gradually, as fire tests increased, practices tended toward uniformity and led eventually to the standard curve now in use.

The maximum permitted interior temperature originally was set at 350°F (177°C) in order to provide a safety factor, since the ignition temperature of most paper is somewhat

higher. This limit was set before the standard time-temperature curve was adopted and helped to emphasize the desirability of a uniform rule for regulation of testing furnace temperatures. The adoption of a temperature rise limit meant that records containers were to be rated on a quantitative basis.

Recently, requirements for records containers other than paper records storage (e.g., magnetic data processing and photographic media) were developed. The requirements provide limits for interior temperature and humidity due to their affect on the integrity of such media. The limits for maximum interior temperature and humidity are 150°F (66°C) and 85 percent RH, respectively.

It has been determined that these limits provide adequate protection for most of the magnetic and photographic media available today.

A-4-2

(a) Records protection equipment is classified in terms of an interior temperature limit and a time in hours. Two temperature and humidity limits are employed: 150°F (65.6°C) with 85 percent RH, which is regarded as limiting conditions for photographic, magnetic, or similar nonpaper records, and 350°F (196°C) with 100 percent RH, which is regarded as limiting conditions for paper records. The time limits employed are 4 hours, 3 hours, 2 hours, and 1 hour. The complete rating means that the specified interior temperature and humidity limits are not exceeded when the record protection equipment is exposed to a standard fire test for the length of time specified.

(b) Ratings are assigned to various categories as follows:

Insulated Record Containers	— Class 150 — 4 hours
	Class 150 — 3 hours
	Class 150 — 2 hours
	Class 150 — 1 hour
	Class 350 — 4 hours
	Class 350 — 2 hours
	Class 350 — 1 hour
Fire-Resistant Safes	— Class 350 — 4 hours
	Class 350 — 2 hours
	Class 350 — 1 hour
Insulated Filing Devices	— Class 350 — 1 hour
Insulated File Drawer	— Class 350 — 1 hour

(c) Insulated records containers and fire-resistant safes are effective in withstanding exposure to a standard test fire before and after an impact due to a fall of 30 ft (9.1 m). Insulated filing devices and file drawers are not subjected to an impact test and are not required to have the strength to endure such an impact.

(d) Insulated records containers and fire-resistant safes rated Class 350 1 hour afford more protection to records than insulated filing devices and file drawers rated Class 350 1 hour because of differences in thermocouple locations within the records protection equipment during fire tests.

(e) Insulated records containers, fire-resistant safes, and insulated filing devices can withstand a sudden exposure to 2000°F (1093°C) temperature without exploding as a result of such exposure.

(f) Noncombustible cabinets with cellular or solid insulation of less than 1-in. (25-mm) thickness have been found to have less than a 20-minute rating under standard test conditions for insulated filing devices. The exact rating depends upon the thickness and character of the insulation and other factors. Noncombustible uninsulated steel files and cabinets have been found to obtain about a 5-minute rating under standard test conditions for insulated filing devices.

NOTE: This equipment is tested in accordance with ANSI/UL 72, *Standard for Tests for Fire Resistance of Record Protection Equipment.*

A-4-3.3 In many fires, records protection equipment is subjected to severe impact. At times, in nonfire-resistive buildings, floors collapse, and the records devices fall one or more stories. The resistance of records protection equipment to impact where highly heated differs markedly from its resistance where cold. It is essential that, where these devices are intended for a location where impact is probable their classification should indicate resistance to impact.

For protection of vital or important records, it has been demonstrated that it is not good practice to rely on records protection equipment having less resistance to heat and fire than required for the fire hazard in its vicinity.

The fire records of the past 25 or 30 years show that many so-called "old line" or "iron" safes (safes of the types made prior to approximately 1917, i.e., safes made before the availability of standards and testing facilities and before the availability of present-day construction methods and materials) involved in fires in nonfire-resistive buildings did not protect their contents due to their inability to withstand stress and strain due to the following:

(a) Impact caused by falling one or more floors as a result of building collapse, or

(b) Resistance to fire exposure that was less than assumed (prior to approximately 1917, safes were usually not labeled with their fire rating; today the fire resistance of such safes is considered "uncertain"). It is obviously not good practice to rely on any safe of unknown or uncertain resistance to fire or impact for use in the protection of valuable records.

The selection of a suitable rating for a records device involves the exercise of a certain degree of judgment. When in doubt, it is obviously best to let judgment err on the side of making certain that vital and important records survive a fire that completely consumes the combustibles (fuel) in the fire area of the records enclosure.

If many and various degrees of fire hazards exist where vital and important records are or could be stored or used, it is advisable to use a standard classification or rating that preserves such records at the location of greatest hazards so that, in the event a records enclosure is shifted from a location of lightest fire hazard to a location of greatest hazard, the safety of the records is not jeopardized. Increased protection from external fires can be provided by placing the records in rated containers in a vault or a file room.

Uninsulated steel containers (closed on six sides) provide housing protection where records stored in fire-resistive vaults or file rooms where all combustible material (other than records in the containers) are completely excluded. Such installations provide less opportunity for fire to originate and have a decided retarding effect on the spread of fire, thereby reducing the possibility of a free sweep of flames or the buildup of room temperatures above the ignition point of ordinary combustible materials. Also, the files are protected from fires originating outside the vault or file room.

A-5-1.1 Protection of Nonvital Records.