

# NFPA<sup>®</sup> 40

## Standard for the Storage and Handling of Cellulose Nitrate Film

### 2025 Edition



NFPA, 1 Batterymarch Park, Quincy, MA 02269-9101  
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## NFPA® 40

### Standard for the

## Storage and Handling of Cellulose Nitrate Film

### 2025 Edition

This edition of NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Film*, was prepared by the Technical Committee on Hazardous Chemicals. It was issued by the Standards Council on April 22, 2024, with an effective date of May 12, 2024, and supersedes all previous editions.

This edition of NFPA 40 was approved as an American National Standard on May 12, 2024.

### Origin and Development of NFPA 40

NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Film*, was developed by the National Board of Fire Underwriters Committee of Consulting Engineers and was first adopted by NFPA in 1910, under the title *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*. Amendments were adopted in 1915, 1919, 1922, and 1926. A complete revision was adopted in 1931, with further amendments in 1936, 1939, 1946, and 1947. Extensive revisions were also made in 1953. The technical requirements of the early editions of NFPA 40 were based on extensive fire tests conducted by motion picture film manufacturers. With the reorganization of the committee in 1960, the Technical Committee on Explosives was given responsibility for NFPA 40. However, in 1970, responsibility was transferred to the Technical Committee on Storage, Handling, and Transportation of Hazardous Chemicals. The 1953 edition of NFPA 40 was reconfirmed in 1962. Amendments were adopted in 1967, and the 1967 edition was reconfirmed in 1974.

In 1979, the Technical Committee on Storage, Handling, and Transportation of Hazardous Chemicals debated whether to withdraw the document because cellulose nitrate motion picture film had not been manufactured for more than 20 years. However, due to the large quantities of cellulose nitrate motion picture film in various archives, the committee decided to revise NFPA 40 and to maintain it as an active NFPA standard as long as archive collections are being maintained. (The Library of Congress, the Smithsonian Institution, the U.S. military services, and others have great quantities of such film, which is slowly being reprinted onto safety film.) An updated edition was adopted in 1982 and reconfirmed in 1988.

The 1994 edition of NFPA 40 reflected a partial revision of the standard to improve its usability, adoptability, and enforceability, and to update old terminology. In addition, the Technical Committee on Hazardous Chemicals clarified the requirements relating to protection of film cabinets and vaults with automatic sprinkler protection, as well as clarifying the requirements for decomposition vents.

For the 1997 edition, the terminology and provisions relating to long-term storage of cellulose nitrate motion picture film were updated to be consistent with the terminology used in the film storage industry. This was done in response to new storage facilities for cellulose nitrate films that were being built, and clarification was needed for consistency between the standard's provisions for vault construction and various building code requirements. Those changes were reflected throughout the standard. Provisions for handling cellulose nitrate motion picture films also were updated within the safety limits previously established by the Technical Committee on Hazardous Chemicals. However, the committee reduced the number of rolls of cellulose nitrate motion picture film allowed to be present in a shipping room to reduce the potential hazard to persons working in the area. Other changes were editorial in nature to bring the document into conformance with the 1986 edition of the *Manual of Style for NFPA Technical Committee Documents*.

The 2001 edition expanded the scope of the document to include flat film, making NFPA 40 the single document that addressed cellulose nitrate film storage. Before that revision, NFPA 42, *Code for the Storage of Pyroxylin Plastic*, had covered flat film storage, but the requirements did not address it adequately. Several changes were made to the storage chapter of NFPA 40 to reflect the safety

concerns with flat film. Restructuring changes also were made to make the document conform to the 2000 edition of the *Manual of Style for NFPA Technical Committee Documents*, including eliminating several exceptions, changing the chapter order, and moving nonmandatory material to the annexes. In addition, the title of the standard was changed to *Standard for the Storage and Handling of Cellulose Nitrate Film*.

The 2007 edition was essentially a reconfirmation of the 2001 edition of the document.

The 2011 edition included amendments to the requirements for applying the standard to new and existing facilities so that the equivalency provision applied correctly. Research by FM Global that was concluded in 2000 was incorporated in revisions to film vault fire protection. The committee provided an annex item that provided information on converting sheets of flat film to roll film equivalencies because storage requirements in the standard are based on roll film quantities. The committee also revised the standard to comply with the 2004 edition of the *Manual of Style for NFPA Technical Committee Documents*.

The 2016 edition clarified how the storage requirements in NFPA 40 apply to both motion picture film and flat film. Explanatory material expanded on the flat-film to roll-film equivalencies developed in the 2011 edition to include mass, volume, and number of rolls or sheets of film. The committee also revised recommendations for the inspection, reformatting, and disposal of unstable nitrate film to accurately reflect the variable nature of nitrate decay.

In the 2019 edition, the terms *standard roll* and *single- and double-roll containers* were replaced by terminology used by modern archivists. A new definition for *decomposition* was added, along with a new requirement for inspection and maintenance of portable fire extinguishers to comply with NFPA 10. Changes were made to the extended term storage vault requirements to allow for flexible storage configurations. Requirements for openings in, and exhaust capacities of, projection booths were revised to reflect modern practices and equipment, and a new requirement for temperature and humidity control was added.

For the 2022 edition, the term *extended term storage* was changed to *permanent storage* to reflect current terminology. The requirement for buildings to be of Type I construction was modified to apply to permanent storage and not to areas under a certain quantity threshold of film. Other revisions included an allowance to store film in freezers or refrigerators depending on the quantity, a reference to an applicable test method to determine fire resistance ratings of partitions and fire doors, and new annex material to provide examples of DOT-authorized containers for storing film.

For the 2025 edition, the requirements in Chapter 4, Construction Requirements and Arrangements of Buildings, were revised to remove language that previously allowed other tests that were considered to be “equivalent” to ASTM E119 for approved fire doors having a 1-hour fire resistance rating.

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**Committee Scope:** This Committee shall have primary responsibility for documents on, and maintain current codes for, classes of hazardous chemicals and codes for specific chemicals where these are warranted by virtue of widespread distribution or special hazards.

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## NFPA 40

## Standard for the

## Storage and Handling of Cellulose Nitrate Film

2025 Edition

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

## Chapter 1 Administration

## 1.1\* Scope.

**1.1.1\*** This standard shall apply to all facilities that are involved with the storage and handling of cellulose nitrate-based film.

**1.1.2** This standard shall not apply to the storage and handling of film having a base other than cellulose nitrate.

**1.2 Purpose.** Based on minimum requirements for safety to life and property from fire, this standard shall provide for the storage and handling of cellulose nitrate film.

## 1.3 Application.

**1.3.1** This standard gives general provisions regarding the storage and handling of cellulose nitrate film and special provisions for such occupancies as motion picture projection booths, nitrate film vaults, and laboratories handling nitrate film. These special provisions shall apply in addition to any and all general provisions that are applicable.

**1.3.2\*** The grouping of the special provisions under the heading of special occupancies is merely for convenience in the application of this standard. Any particular process or operation in any type of occupancy shall be governed by the provisions that are given for that process or operation, whether under the heading of that occupancy or any other heading, unless otherwise specifically provided herein.

**1.4 Retroactivity.** Because nitrate film deteriorates with age, the provisions of this standard shall be retroactive. Where improvements have been made over previous editions of this standard, the incorporation of these changes in existing facilities shall be required particularly where cellulose nitrate film storage will continue.

## 1.5 Equivalency.

**1.5.1** 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 in this standard, provided that technical documentation is submitted to the authority having jurisdiction to demonstrate equivalency and that the system, method, or device is approved for the intended purpose.

**1.5.2** The specific requirements of this standard for existing buildings shall be permitted to be modified by the authority having jurisdiction to allow alternative arrangements that will secure, as nearly as practical, equivalent safety to life and protection of film collections from fire. However, in no case shall the modification afford less safety to life than compliance with the corresponding provisions contained in this standard for existing buildings. (See also 1.5.1.)

**1.6 Approval of Plans.** Before any building is constructed for use as a cellulose nitrate film occupancy, any nitrate film vault is built, any enclosure for motion picture projection is installed, or any screening room is installed, complete plans for the proposed construction or installation shall be submitted for approval to the authority having jurisdiction. These plans shall show in detail all proposed construction and structural changes, means of protection to be provided, the heating system and its protection, electrical equipment, and the character and location of exposures. The plans also shall indicate the maximum amount and types of film to be handled or stored in each area.

## 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*, 2022 edition.

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

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

NFPA 45 *Standard on Fire Protection for Laboratories Using Chemicals*, 2024 edition.

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

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