

NFPA®

32

Standard for
Drycleaning Facilities

2021



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NFPA® 32

Standard for

Drycleaning Facilities

2021 Edition

This edition of NFPA 32, *Standard for Drycleaning Facilities*, was prepared by the Technical Committee on Textile and Garment Care Processes. It was issued by the Standards Council on October 5, 2020, with an effective date of October 25, 2020, and supersedes all previous editions.

This edition of NFPA 32 was approved as an American National Standard on October 25, 2020.

Origin and Development of NFPA 32

This standard was originally prepared by the Committee on Flammable Liquids in cooperation with the National Association of Dryers and Cleaners in 1924 and the first edition was adopted in 1925. Amendments were adopted in 1927; completely revised editions were issued in 1936, 1944, and 1956; amendments were adopted in 1964; a completely revised edition was issued in 1970; amendments were adopted in 1972; and completely revised editions were issued in 1974 and 1979. There was a minor amendment in the 1985 edition, which was reconfirmed in 1990, and minor changes were adopted for the 1996 edition.

For the 2000 edition, general requirements for all plants, regardless of solvent in use, were moved to the front of the standard. There was better correlation of the requirements for each plant type with the relative hazards potentially present. Various protection requirements were made less stringent in cases where a plant had reduced quantities of solvent in combination with various redundant safety systems for the equipment. Requirements were added to address machine conversion to allow a machine to use another solvent, as was a common occurrence in the industry.

For the 2004 edition, additional guidance and definitions were added to better define and explain machine conversions made to allow for use of a different class of solvent.

For the 2007 edition, new options were added to allow for increasing the maximum concentration to 60 percent or below of the LEL with adequate automatic instrumentation and safety interlocks in accordance with NFPA 69. Also, new requirements were added for drycleaning using nonflammable liquefied gases in pressure vessels, including, but not limited to, carbon dioxide solvent technologies. A chapter was added for new requirements for laundry equipment in drycleaning plants.

For the 2011 edition, the technical committee added new definitions for *laundry*, *laundry dryer*, and *wet cleaning* and revised the definition of *Class IV solvents*. The requirements for employee training and the inspection frequency for fire protection systems were revised to be in accordance with NFPA 25 and requirements for boiler room separation by barrier walls in accordance with NFPA 5000 were added. The requirements for temperature control for laundry dryers to accommodate a cool-down period in order to eliminate the potential for spontaneous combustion within the dryers were also revised.

The 2016 edition of NFPA 32 was reorganized and included significant changes that established requirements based on two variables: the class of solvent and the type of equipment used. The technical committee recognized that NFPA 32 had many requirements initially established for flammable solvents and older technologies that had been retained in the document over the years. It was not always clear which requirements applied only to lower classes of solvents and older technologies. The 2016 edition reflected changes that occurred in both solvents and equipment used by the drycleaning industry that impacted safety. The requirements were less stringent for facilities that used higher classes of solvent and equipment and had built-in fire protection features than for those facilities that used lower classes of solvents and older equipment. NFPA 32 defined four “versions” of equipment, Versions I through IV, and established requirements that were based on both the version of equipment and solvent class used rather than on the solvent class alone.

The standard was reorganized to place requirements applicable to all drycleaning facilities in Chapters 4 through 6. Additional requirements, located in Chapters 7 through 9, were dependent on the lowest class of solvent used in a particular facility. Requirements in those latter chapters were dependent on the versions of equipment used within the facility. A flow chart was added as a new Annex B to direct users and AHJs to the applicable requirements. Equipment construction requirements were removed since drycleaning equipment was required to be listed, and the requirements for Class IIIA and Class IIIB were combined.

The 2016 edition also addressed emerging fire safety concerns related to the conversion of equipment and solvents. With the increasing regulation of perchloroethylene, drycleaning facilities might have decided to change to new solvents or new equipment. The 2016 edition prohibited the use of lower class solvents in existing equipment designed for higher solvent classes and required AHJ notification for any changes in solvent class. This edition also established requirements for changes within the same solvent class to ensure that the new solvent was compatible with the equipment. The solvent manufacturer was required to certify the flash point and flammable limits of the solvent under anticipated conditions of drycleaning operations and had to provide the facility with written instructions on proper use and safe handling of the solvent.

The 2021 edition has continued with the reorganization of the standard by reorganizing chapter 6. The reorganized chapter 6 now flows in a user-friendly way; requirements for the equipment and change of equipment are grouped together, and requirements for solvent and change of solvent are grouped together. Chapter 4 now has requirements for flammable and combustible liquid classification as well as their analogous solvent classification counterparts.

Dedication

The technical committee dedicates the 2021 edition of NFPA 32 to the memory of James “Jimmy” DeSanto, a former committee member who grew up working in and eventually running his father’s drycleaning plant in Illinois. Jimmy devoted his life to the industry and to helping drycleaners across the United States. Jimmy had a passion for the industry, never met a stranger, and always brought smiles and laughter to any situation.

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Committee Scope: This Committee shall have primary responsibility for documents concerned with the fire and explosion hazards of drycleaning using combustible and noncombustible solvents and the fire hazards of laundries and other textile care processes.

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NFPA 32

Standard for

Drycleaning Facilities

2021 Edition

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A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. 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 and extracted publications can be found in Chapter 2 and Annex D.

Chapter 1 Administration

1.1 Scope. This standard shall apply to establishments herein-after defined as drycleaning facilities.

1.2 Purpose.

1.2.1 This standard prescribes safeguards intended to prevent fires and explosions, and other related hazards involving drycleaning, and associated wetcleaning, and laundry processes and to minimize the personal injury and property damage consequences of such incidents.

1.2.2 This standard includes requirements for the proper handling of chemicals and materials, but does not include requirements for disposal.

1.2.3 Requirements not specifically mentioned or referred to herein are not part of this standard.

1.3 Retroactivity. The provisions of this standard reflect a consensus of what is necessary to provide an acceptable degree of protection from the hazards addressed in this standard at the time the standard was issued.

1.3.1 Unless otherwise specified in 1.3.1.1, 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.

1.3.1.1 Any change, addition, or modification to the equipment or installation in a facility where the class of solvent, type of facility, or equipment version changes from a previous approval shall be subject to the applicable provisions of this standard.

1.3.2 In those cases where the authority having jurisdiction determines that the existing situation presents an unacceptable degree of risk, the authority having jurisdiction shall be permitted to apply retroactively any portions of this standard deemed appropriate.

1.3.3 The retroactive requirements of this standard shall be permitted to be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and only where it is clearly evident that a reasonable degree of safety is provided.

1.4 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.

1.4.1 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.4.2 The equivalent system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

1.5 Enforcement.

1.5.1* Plans and specifications shall be submitted to the authority having jurisdiction for examination and approval for the occupancy, in accordance with local or state requirements, before any drycleaning facility is established or constructed, before an existing facility is remodeled, or before the class of solvent or equipment version is changed.

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*, 2018 edition.

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

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

NFPA 17, *Standard for Dry Chemical Extinguishing Systems*, 2021 edition.

NFPA 30, *Flammable and Combustible Liquids Code*, 2021 edition.

NFPA 55, *Compressed Gases and Cryogenic Fluids Code*, 2020 edition.

NFPA 69, *Standard on Explosion Prevention Systems*, 2019 edition.

NFPA 70®, *National Electrical Code®*, 2020 edition.

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

NFPA 91, *Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids*, 2020 edition.

NFPA 101®, *Life Safety Code*®, 2021 edition.

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

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

NFPA 5000®, *Building Construction and Safety Code*®, 2021 edition.

2.3 Other Publications.

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

ANSI/ASME B31.1, *Power Piping*, 2018.

Boiler and Pressure Vessel Code, 2019.

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

ASTM D56, *Standard Test Method for Flash Point by Tag Closed Cup Tester*, 2016a.

ASTM D93, *Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester*, 2019.

ASTM D323, *Standard Test Method for Vapor Pressure of Petroleum Products (Reid Method)*, 2015a.

ASTM D3278, *Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus*, 1996, reapproved 2011.

ASTM D3828, *Standard Test Methods for Flash Point by Small Scale Closed Cup Tester*, 2016a.

2.3.3 Other Publications.

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

▲ 2.4 References for Extracts in Mandatory Sections.

NFPA 30, *Flammable and Combustible Liquids Code*, 2021 edition.

NFPA 36, *Standard for Solvent Extraction Plants*, 2021 edition.

NFPA 58, *Liquefied Petroleum Gas Code*, 2020 edition.

NFPA 70®, *National Electrical Code*®, 2020 edition.

NFPA 79, *Electrical Standard for Industrial Machinery*, 2021 edition.

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

NFPA 99, *Health Care Facilities Code*, 2021 edition.

NFPA 5000®, *Building Construction and Safety Code*®, 2021 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.

3.2.7 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase “standards development process” or “standards development activities,” the term “standards” includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Additives. Any detergents, fragrances, stabilizers, boosters, or conditioners added to the solvent and used within a drycleaning or wetcleaning process or equipment to aid in textile cleaning and conditioning.

3.3.2* Blending. Any combination of solvents, other than additives, that when blended change the original physical properties to produce a new material to be employed in drycleaning equipment.

3.3.3 Bonded (Bonding). Connected to establish electrical continuity and conductivity. [70:100]

3.3.4 Combustible Liquid. An ignitable liquid that is classified as a Class II or Class III liquid. (See 4.1.2.3 and 4.1.3.3.) [30, 2021]

3.3.5* Control Equipment. Operating elements, such as relays, contactors, circuit breakers, switches, solenoids, brakes, and similar types of components, intended to govern or

perform a given function in the operation, including measuring, sensing, monitoring, protecting, and regulating of machinery. [79, 2021]

3.3.6 Cylinder (Drum). The perforated chamber, also known as a drum, basket, or wheel, in drycleaning equipment in which materials are placed to be washed, cleaned, extracted, spun, agitated, and/or dried.

3.3.7 Drum. See 3.3.6, Cylinder.

3.3.8 Drycleaning. The process of removing dirt, grease, paints, and other stains from such items as apparel, textiles, fabrics, and rugs by use of nonaqueous liquids.

3.3.9 Drycleaning Department. An area in the occupancy without walls, where drycleaning operations are conducted, including all additional areas containing solvent or solvent-handling equipment.

3.3.10 Drycleaning Room. An area of the facility with walls in which drycleaning operations are conducted, including all additional areas containing solvent or solvent-handling equipment.

3.3.11 Drycleaning Washer. See 3.3.35, Washer.

3.3.12 Dryer.

3.3.12.1 Drycleaning Dryer. A piece of equipment used to dry apparel, textiles, fabrics, and rugs that were cleaned with drycleaning solvents.

3.3.12.2 Laundry Dryer. Any equipment in which water-cleaned textiles are tumbled, agitated, and dried or deodorized while heated air circulates through the load to remove the water.

3.3.12.3 Reclaiming Dryer. A piece of equipment used to dry and reclaim solvents from textiles thereby limiting fugitive emissions.

3.3.12.4 Wetcleaning Dryer. Any equipment with a humidistat in which water-cleaned textiles are tumbled, agitated, and dried or deodorized while heated air circulates through the load to remove the water.

3.3.13 Equipment (Drycleaning Equipment). Any equipment in which textiles are immersed or non-immersed, agitated in solvent, or in which drycleaning solvent is reclaimed from textiles and/or dried.

3.3.13.1 Version I Equipment. An open system, employing combustible or noncombustible liquid, that is continuously open to the atmosphere.

3.3.13.2* Version II Equipment. An open-circuit system, employing combustible or noncombustible liquid, that releases fugitive emissions, suppresses and controls combustion, and has safety controls.

3.3.13.3* Version III Equipment. A closed-loop system, employing combustible or noncombustible liquid, that does not release emissions, prevents combustion, and has safety controls.

3.3.13.4 Version IV Equipment. A closed-loop system for noncombustible liquids that has safety controls for noncombustible liquids and does not release emissions.

3.3.14 Extract. The stage of an operating program in which solvent or water is removed from textiles in a drycleaning or wetcleaning machine by centrifugal force. Also referred to as extraction, spinning, or wringing.

3.3.15 Facility (Drycleaning Facility). An occupancy in which drycleaning and associated mercantile operations are conducted, which can include an office, a retail counter, storage rooms, garment racks and conveyors, boiler rooms, shipping and receiving areas, and a drive-up service area. The facility type is defined based on the lowest numerical class of solvent used in the equipment.

3.3.15.1* Type I Facility. Facilities employing Class I solvents.

3.3.15.2* Type II Facility. Facilities employing Class II solvents.

3.3.15.3* Type III Facility. Facilities employing Class IIIA and IIIB solvents.

3.3.15.4* Type IV Facility. Facilities employing Class IV solvents.

3.3.16 Flammable Limits. The range of concentration of a flammable gas in air within which a flame can be propagated, with the lowest flammable concentration known as the lower flammable limit (LFL) and the highest flammable concentration known as the upper flammable limit (UFL). [86, 2019]

3.3.17 Flammable Liquid. An ignitable liquid that is classified as a Class I liquid. (See 4.1.3.1.) [30, 2021]

3.3.18* Flash Point (FP). The minimum temperature of a liquid at which sufficient vapor is given off to form an ignitable mixture with the air, near the surface of the liquid or within the vessel used, as determined by the appropriate test procedure and apparatus specified in Section 4.4 of NFPA 30. [30, 2021]

3.3.19 Gallon, U.S. Standard. 1 U.S. gal = 0.833 Imperial gal = 231 in.³ = 3.785 L. [58, 2020]

3.3.20 Grounded (Grounding). Connected (connecting) to ground or to a conductive body that extends the ground connection. [70:100]

3.3.21 Hazardous Waste Container. A DOT-approved container used in drycleaning facilities for the purpose of disposing hazardous waste.

N 3.3.22* Ignitable Liquid. Any liquid or liquid mixture that has a measurable fire point. [30, 2021]

N 3.3.22.1 Fire Point. The lowest temperature at which a liquid will ignite and achieve sustained burning when exposed to a test flame in accordance with ASTM D92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester*. [30, 2021]

Δ 3.3.23 Intrinsically Safe. As applied to equipment and wiring, equipment and wiring that are incapable of releasing sufficient electrical energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture. [99, 2021]

3.3.24 Laundry. The process of removing dirt and soil from items such as apparel, textiles, fabrics, and rugs by the use of water and additives.