

NFPA®

34

Standard for
Dipping, Coating, and
Printing Processes
Using Flammable or
Combustible Liquids

2021



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2021 Edition

This edition of NFPA 34, *Standard for Dipping, Coating, and Printing Processes Using Flammable or Combustible Liquids*, was prepared by the Technical Committee on Finishing 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 34 was approved as an American National Standard on October 25, 2020.

Origin and Development of NFPA 34

NFPA standards on safeguarding process tanks containing flammable and combustible liquids date from 1913, when standards prepared by the Committee on Explosives and Combustibles were adopted. Subsequently, jurisdiction was transferred to a new Committee on Manufacturing Hazards which, in turn, was superseded by the current Technical Committee on Finishing Processes.

The original 1913 edition was completely revised in 1921 and again in 1922, at which time material on hardening and tempering tanks and flow coat work was added to the original standard.

Further revisions to keep the text up to date on various new aspects of the subject were adopted in 1922, 1926, 1936, 1940, 1946, 1952, 1957, 1959, 1963, 1966, 1971, 1974, 1979, 1982, 1987, 1989, 1995, 2000, 2003, 2006, and 2010.

The following major changes were adopted for the 2003 edition:

- (1) The scope of the standard was extended to cover water-based coatings.
- (2) Modifications to the document as a whole to comply with the *Manual of Style for NFPA Technical Committee Documents*.
- (3) Chapter 4 was extensively revised to recognize the zone concept of area classification. Included in those revisions were the addition of appropriate definitions and revisions of the figures illustrating the area classifications in and around dipping and coating processes.
- (4) Subsection 5.5.1 was revised to allow recirculation of exhaust air under certain conditions and to specify those conditions.
- (5) Chapter 7 was revised to correlate with Chapter 9 of NFPA 33.
- (6) Section 9.6 was revised to require grounding and deenergizing of the electrostatic circuit.

The following major changes were adopted for the 2007 edition:

- (1) A number of definitions were changed to incorporate “preferred” definitions to ensure consistent meaning and use of defined terms throughout the National Fire Codes. Where “preferred” definitions cannot be used for certain terms, those terms have been delimited by the phrase “For the purposes of this standard, ...”.
- (2) New definitions were added for the terms *electrostatic detearing*, *peripheral vapor containment*, *secondary enclosure*, *solvent cleaning*, and *ventilation*.
- (3) Requirements for hazardous location electrical utilization equipment and wiring were further revised to correlate with NFPA 70®, including appropriate Fine Print Notes from NFPA 70.
- (4) New diagrams were added to illustrate electrical area classification around open dipping and coating processes.
- (5) Quantity limitations for storing flammable and combustible liquids were changed to correlate with NFPA 30.
- (6) Chapter 9 was completely rewritten to accomplish the following:

- (a) Correlate with NFPA 33
 - (b) Add necessary requirements for interlocks for proper operation of fire protection systems
 - (c) Require fire protection systems to be designed so that operation does not result in a spill of the flammable or combustible liquid
 - (d) Require fire protection systems to discharge into the entire protected area
- (7) A section on solvent distillation units (i.e., solvent recyclers) was added.
- (8) Additional changes were made to correlate this standard with NFPA 33.

The following major changes were adopted in the 2011 edition:

- (1) The scope of the standard was amended to specifically address printing processes, and appropriate changes were made throughout the standard where certain provisions applied specifically to the printing process or excluded printing processes.
- (2) The scope of the standard was amended to specifically include vapor degreasing processes and to specifically exclude processes that use only Class IIIB liquids.
- (3) New definitions for printing and for certain types of printing processes were added to Chapter 3.
- (4) A new paragraph, 5.2.1.1, was added to allow coating rolls to be covered with polymeric or other combustible materials.
- (5) Section 5.3, which required the top of the coating tank to be a certain distance above the floor, was amended to apply only to tanks holding flammable or combustible liquid.
- (6) Exceptions were added to 5.9.1 and 5.9.2 to exclude sheet and web transport systems from the requirement to stop conveying systems under certain conditions.
- (7) Paragraph 5.10.1.3 was amended to prevent coating of workpieces whose surface temperature exceeds the boiling point of the coating media.
- (8) Subsection 6.2.2, which prohibited the use of certain ignition-capable equipment, was amended to apply only to areas where flammable or combustible liquid were in use.
- (9) A new Figure 6.4(e) was added to illustrate the hazardous (classified) area around a printing press for purposes of electrical area classification.
- (10) Subsection 6.4.2 was amended to describe the hazardous (classified) area associated with ink tanks and reservoirs in printing processes.
- (11) Section 6.5 on electrical area classification of enclosed processes was amended to apply only to dipping and coating processes. Printing processes are inherently open in nature.
- (12) A new subsection, 6.8.2, was added, requiring means to dissipate static electric charges from nonconductive substrates.
- (13) An exception was added to 9.5.1 (4) to exclude sheet and web transport systems from the requirement to stop conveying systems under certain conditions, if stopping would cause a more hazardous situation.
- (14) A new Section 9.11 was added to address fire protection measures specific to printing processes.
- (15) Chapter 10 was amended to improve the requirements that address housekeeping, handling of liquid-impregnated rags, and waste.
- (16) Section 10.5 was completely rewritten to address use of Class I flammable liquids and Class II combustible liquids for cleaning operations.
- (17) A new Section 10.6 was added to address cleaning of combustible dusts and residues.
- (18) A new Section 10.10 was added to address solvent recovery systems.
- (19) A new annex item, A.9.3.1(3), was added to describe where carbon dioxide fire protection systems have been found useful in printing processes.

Following are some of the key changes made to the 2015 edition:

- (1) Terms and definitions were modified to be consistent with other NFPA documents and to mirror those used in NFPA 33.
- (2) Requirements were established for processes located in basements to ensure adequate egress and access for emergency response personnel.
- (3) Artwork in Chapter 6 was revised for consist formatting and to better depict electrical classification requirements in the document.
- (4) The requirements for recirculation were revised to include the recirculation particulate filters, which are now defined in the standard.
- (5) The requirements for routing of exhaust ducts were clarified and modified to be consistent with NFPA 33.
- (6) The requirements for support of exhaust ducts were clarified and annex material was added.
- (7) The storage allowances for flammable and combustible liquids in Chapter 8 were modified to be consistent with NFPA 33 and NFPA 30 requirements.
- (8) Water mist fire protection systems meeting the requirements of NFPA 750 were added as an acceptable method of fire protection.

The following changes were made for the 2018 edition:

- (1) Chapter 1 added clarification to document application.
- (2) Chapter 3 was modified to be consistent with other NFPA documents. In addition, definition changes made to liquids and materials were consistent with other NFPA documents placing noncombustible material, limited combustible material, and classification of liquids and determination of flash points in a general requirements section. Changes to definitions are consistent with NFPA 1, NFPA 30, and *NFPA 5000*.
- (3) Chapter 4 was revised to clarify definitions and location of dipping, coating, and printing processes. Additional supporting Annex A material was provided.
- (4) Chapter 5 was revised to remove the exception and clarify construction for secondary enclosures.
- (5) Chapter 6 was revised. In addition, the figures in Chapter 6 and Annex A were revised to improve consistency and to clarify electrical classification requirements in the document.

The following revisions have been made to the 2021 edition:

- (1) The standard has been revised to align with the 2021 edition of NFPA 30 and the 2020 edition of *NFPA 70*. “Class I” has been removed from references to “Class I, Zone 0,” “Class I, Zone 1,” and “Class I, Zone 2” to match requirements in *NFPA 70*, and the term *ignitable* has been added to references of *flammable or combustible liquids* in alignment with NFPA 30.
- (2) Definitions for *flash point* and *ignitable liquid* have been extracted from NFPA 30. These terms are found in new language added to Chapter 8.
- (3) The requirements for limited-combustible materials in Chapter 4 have been expanded to include an additional option to meet these requirements based on heat release rates.