



**NATIONAL  
FIRE CODES®**

Copyright by National Fire Protection Association (NFPA). NFPA 13 is licensed, by agreement for individual use. No other reproduction or transmission in any form permitted without written permission of NFPA. For inquiries or to report unauthorized use, contact [licensing@nfpa.org](mailto:licensing@nfpa.org).

## **G.1 Referenced Publications.**

The documents or portions thereof listed in this annex are referenced within the informational sections of this standard and are not part of the requirements of this document unless also listed in Chapter 2 for other reasons.

### **G.1.1 NFPA Publications.**

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

NFPA 1, *Fire Code*, 2024 edition.

NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2025 edition.

NFPA 13E, *Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*, 2020 edition.

NFPA 13R, *Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies*, 2025 edition.

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2024 edition.

NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, 2025 edition.

NFPA 22, *Standard for Water Tanks for Private Fire Protection*, 2023 edition.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2023 edition.

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

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

NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, 2022 edition.

NFPA 101®, *Life Safety Code®*, 2024 edition.

NFPA 170, *Standard for Fire Safety and Emergency Symbols*, 2024 edition.

NFPA 204, *Standard for Smoke and Heat Venting*, 2024 edition.

NFPA 220, *Standard on Types of Building Construction*, 2024 edition.

NFPA 232, *Standard for the Protection of Records*, 2022 edition.

NFPA 259, *Standard Test Method for Potential Heat of Building Materials*, 2023 edition.

NFPA 291, *Recommended Practice for Fire Flow Testing and Marking of Hydrants*, 2025 edition.

NFPA 409, *Standard on Aircraft Hangars*, 2022 edition.

NFPA 750, *Standard on Water Mist Fire Protection Systems*, 2023 edition.

NFPA 780, *Standard for the Installation of Lightning Protection Systems*, 2023 edition.

### **G.1.2 Other Publications.**

#### **G.1.2.1 ACI Publications.**

American Concrete Institute, 38800 Country Club Drive, Farmington Hills, MI 48331-3439.

ACI 318, *Building Code Requirements for Structural Concrete and Commentary*, 2019, reapproved 2022.

ACI 355.2, *Post-Installed Mechanical Anchors in Concrete — Qualification Requirements and Commentary*, 2022.

#### **G.1.2.2 ACPA Publications.**

American Concrete Pipe Association, 5605 N. MacArthur Blvd., Suite 340, Irving, TX 75038.

*Concrete Pipe Handbook.*

#### **G.1.2.3 AISC Publications.**

American Institute of Steel Construction, 130 East Randolph, Suite 2000, Chicago, IL 60601.

ANSI/AISC 360, *Specification for Structural Steel Buildings*, 2022.

*Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings.*

#### **G.1.2.4 ASCE Publications.**

American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400.

ASCE/SEI 7, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, 2022.

ASCE 19, *Structural Applications of Steel Cables for Buildings*, 2016.

#### **G.1.2.5 ASME Publications.**

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

*Boiler and Pressure Vessel Code*, Section IX, "Welding, Brazing, and Fusing Qualifications," 2023.

ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, 2022.

ASME B16.1, *Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250*, 2020.

ASME B1.20.1, *Pipe Threads, General Purpose, Inch*, 2013 (R2018).

ASME B31, *Standards of Pressure Piping*, 2022.

#### **G.1.2.6 ASTM Publications.**

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

ASTM A126, *Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings*, 2004, reapproved 2019.

ASTM A135/A135M, *Standard Specification for Electric-Resistance-Welded Steel Pipe*, 2021.

ASTM A197/A197M, *Standard Specification for Cupola Malleable Iron*, 2000, reapproved 2019.

ASTM A307, *Standard Specification for Carbon Steel Bolts, Studs, Threaded Rod 60,000 psi Tensile Strength*, 2021.

ASTM A603, *Standard Specification for Metallic-Coated Steel Structural Wire Rope*, 2019.

ASTM A1023/A1023M, *Standard Specification for Stranded Carbon Steel Wire Ropes for General Purposes*, 2021.

ASTM B31, *Standards of Pressure Piping*, collection with various dates.

ASTM C136/C136M, *Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates*, 2020.

ASTM C635/C635M, *Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings*, 2022.

ASTM C636/C636M, *Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels*, 2019.

ASTM D2487, *Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)*, 2017.

ASTM E8/E8M, *Structural Test Methods for Tension Testing of Metallic Materials*, 2022.

ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, 2023a.

ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, 2022.

ASTM E580/E580M, *Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions*, 2022.

ASTM F437, *Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, 2021.

ASTM F438, *Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40*, 2023.

ASTM F439, *Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80*, 2019.

ASTM F442/F442M, *Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)*, 2023.

ASTM F2164, *Standard Practice for Field Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure*, 2021.

#### **G.1.2.7 AWS Publications.**

American Welding Society, 8669 NW 36 Street #130, Miami, FL 33166-6672.

AWS B2.1/B2.1M, *Specification for Welding Procedure and Performance Qualification*, 2021.

#### **G.1.2.8 AWWA Publications.**

American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235.

AWWA C105/A21.5, *Polyethylene Encasement for Ductile-Iron Pipe Systems*, 2018.

AWWA C111/A21.11, *Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings*, 2017.

AWWA C115/A21.15, *Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges*, 2020.

AWWA C150/A21.50, *Thickness Design of Ductile-Iron Pipe*, 2021.

AWWA C206, *Field Welding of Steel Water Pipe*, 2017.

AWWA C600, *Installation of Ductile-Iron Water Mains and Their Appurtenances*, 2017.

AWWA C602, *Cement-Mortar Lining of Water Pipelines in Place, 4 in. (100 mm) and Larger*, 2023.

AWWA C606, *Grooved and Shouldered Joints*, 2015.

AWWA C900, *Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. Through 60 in. (100 mm Through 1,500 mm)*, 2022.

AWWA M9, *Concrete Pressure Pipe*, 2008, Errata, 2014.

AWWA M11, *Steel Pipe — A Guide for Design and Installation*, 4th Edition, 2004, Errata, 2013, Errata 2014, Addenda Sept. 2019.

AWWA M14, *Backflow Prevention and Cross-Connection Control — Recommended Practices*, 2015.

AWWA M23, *PVC Pipe — Design and Installation*, 2020.

AWWA M41, *Ductile-Iron Pipe and Fittings*, 2009.

AWWA M55, *PE Pipe — Design and Installation*, 2020.

#### **G.1.2.9 DIPRA Publications.**

Ductile Iron Pipe Research Association, P.O. Box 190306, Birmingham, AL 35219.

*Thrust Restraint Design for Ductile Iron Pipe*, 2016.

#### **G.1.2.10 FM Publications.**

FM Global, 270 Central Avenue, Johnston, RI 02919-4949.

*Flammability Characterization of Lithium-ion Batteries in Bulk Storage*, 2013.

FM Approvals 1011/1012/1013, *Deluge and Preaction Sprinkler Systems*, 2020.

FM Approvals 1020, *Automatic Water Control Valves*, 2020.

FM Approvals 1021, *Dry Pipe Valves*, 2020.

FM Approvals 1031, *Quick Opening Devices (Accelerators, Exhausters) for Dry Pipe Valves*, 2019.

FM Approvals 1041, *Alarm Check Valves*, 2006.

FM Approvals 1042, *Vane-Type Waterflow Alarm Indicators*, 2016.

FM Approvals 1045, *Waterflow Detector Check Valves*, 2005.

FM Approvals 1112, *Indicating Valves (Butterfly or Ball Type)*, 2020.

FM Approvals 1120/1130, *Fire Service Water Control Valves (OS & Y and NRS Type Gate Valves)*, 1997.

FM Approvals 1140, *Quick Opening Valves 1/4 Inch Through 2 Inch Nominal Size*, 1998.

FM Approvals 1210, *Swing Check Valves*, 2004.

FM Approvals 1362, *Pressure Reducing Valves*, 2020.

FM Approvals 1610, *Ductile Iron Pipe and Fittings, Flexible Fittings and Couplings*, 2016.

FM Approvals 1612, *Polyvinyl Chloride (PVC) Pipe and Fittings for Underground Fire Protection Service*, 2016.

FM Approvals 1613, *Polyethylene (PE) Pipe and Fittings for Underground Fire Protection Service*, 2017.

FM Approvals 1620, *Pipe Joints and Anchor Fittings for Underground Fire Service Mains*, 1975.

FM Approvals 1630, *Steel Pipe for Automatic Fire Sprinkler Systems*, 2021.

FM Approvals 1631, *Adjustable and Fixed Sprinkler Fittings 1/2 Inch through 1 Inch Nominal Size*, 2006.

FM Approvals 1632, *Telescoping Sprinkler Assemblies for Use in Fire Protection Systems for Anechoic Chambers*, 2003.

FM Approvals 1635, *Plastic Pipe and Fittings for Automatic Sprinkler Systems*, 2021.

FM Approvals 1636, *Fire Resistant Barriers for Use with CPVC Pipe and Fittings in Light Hazard Occupancies*, 2003.

FM Approvals 1637, *Flexible Sprinkler Hose with Threaded End Fittings*, 2010.

FM Approvals 1920, *Pipe Couplings and Fittings for Aboveground Fire Protection Systems*, 2007.

FM Approvals 1950, *Seismic Sway Braces for Pipe, Tubing and Conduit*, 2013.

FM Approvals 1951/1952/1953, *Pipe Hanger Components for Automatic Sprinkler Systems*, 2016.

FM Approvals 2000, *Automatic Sprinklers for Fire Protection*, 2018.

FM Approvals 2008, *Quick Response Storage Sprinklers for Fire Protection*, 2018.

FM Approvals 2030, *Residential Automatic Sprinklers for Fire Protection*, 2009.

FM Class Number 4651, *Plastic Suspended Ceiling Panels*, 1978.

FM Loss Prevention Data Sheet 8-9, *Storage of Class 1, 2, 3, 4 and Plastic Commodities*, 2022.

#### **G.1.2.11 FMRC Publications.**

FM Global Research, FM Global, 270 Central Avenue, Johnston, RI 02919-4949.

FMRC J. I. 0X1R0.RR, "Large-Scale Fire Tests of Rack Storage Group A Plastics in Retail Operation Scenarios Protected by Extra Large Orifice (ELO) Sprinklers."

#### **G.1.2.12 FPRF Publications.**

Fire Protection Research Foundation, 1 Batterymarch Park, Quincy, MA 02169-7471.

*Antifreeze Solutions Supplied through Spray Sprinklers — Final Report*, November 2012.

*Antifreeze Systems in Home Fire Sprinkler Systems — Literature Review and Research Plan*, June 2010.

*Antifreeze Systems in Home Fire Sprinkler Systems — Phase II Final Report*, December 2010.

*High Volume/Low Speed Fan and Sprinkler Operation — Ph. 2 Final Report*, 2011.

*Large-Scale Test Evaluation of Early Suppression Fast-Response (ESFR) Automatic Sprinklers*, 1986.

*Lithium Ion Batteries Hazard and Use Assessment*, 2011.

*Lithium Ion Batteries Hazard and Use Assessment Phase IIB, Flammability Characterization of Li-ion Batteries for Storage Protection*, 2013.

*Lithium Ion Batteries Hazard and Use Assessment — Phase III*, 2016.

*Protection of Rack Stored Exposed Expanded Group A Plastics with ESFR Sprinklers and Vertical Barriers*, 2014.

*Protection of Storage Under Sloped Ceilings Phase III: Large-Scale Testing Summary and Guidance*.

#### **G.1.2.13 ICC Publications.**

International Code Council, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001.

AC193, *Acceptance Criteria for Mechanical Anchors in Concrete Elements*, 2018, editorially revised December 2020.

AC308, *Post-installed Adhesive Anchors in Concrete Elements*, 2023.

*International Building Code*, 2021.

*Uniform Building Code*, 1997.

#### **G.1.2.14 IMO Publications.**

International Maritime Organization, 4 Albert Embankment, London, SE1 7SR, United Kingdom.

*International Convention for the Safety of Life at Sea*, 1974 (SOLAS 74), as amended, regulations II-2/3 and II-2/26.

#### **G.1.2.15 ISO Publications.**

International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet, 8, CP 401, 1214 Vernier, Geneva Switzerland.

ISO 6182-1, *Fire protection — Automatic sprinkler systems — Part 1: Requirements and test methods for sprinklers*, 2021.

#### **G.1.2.16 NFSA Publications.**

National Fire Sprinkler Association, 514 Progress Drive, Suite A, Linthicum Heights, MD 21090.

Valentine and Isman, *Kitchen Cabinets and Residential Sprinklers*, November 2005.

#### **G.1.2.17 SNAME Publications.**

Society of Naval Architects and Marine Engineers, 99 Canal Center Plaza, Suite 500, Alexandria, VA 22314.

Technical Research Bulletin 2-21, "Aluminum Fire Protection Guidelines."

#### **G.1.2.18 UL Publications.**

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

*Commodity Hazard Comparison of Expanded Plastic in Portable Bins and Racking*, Project 99NK29106, NC4004, September 8, 2000.

"Fact Finding Report on Automatic Sprinkler Protection for Fur Storage Vaults," November 25, 1947.

*Technical Report of Fire Testing of Automotive Parts in Portable Storage Racking*, Project 99NK29106, NC4004, January 5, 2001.

UL 193, *Alarm Valves for Fire Protection Service*, 2016, revised 2021.

UL 194, *Gasketed Joints for Ductile-Iron Pipe and Fittings for Fire Protection Service*, 2005, revised 2016.

CAN/UL/ULC 199, *Automatic Sprinklers for Fire Protection Service*, 2022.

UL 203, *Pipe Hanger Equipment for Fire Protection Service*, 2020.

UL 203A, *Sway Brace Devices for Sprinkler System Piping*, 2015, revised 2019.

CAN/UL 213, *Rubber Gasketed Fittings for Fire-Protection Service*, 2022.

UL 260, *Dry Pipe and Deluge Valves for Fire-Protection Service*, 2004, revised 2018.

UL 262, *Gate Valves for Fire-Protection Service*, 2004, revised 2023.

UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised 2022.

UL 312, *Check Valves for Fire-Protection Service*, 2022.

UL 346, *Waterflow Indicators for Fire Protective Signaling Systems*, 2005, revised 2019.

UL 515A, *Outline of Investigation for Electrical Resistance Trace Heating and Associated Controls for Use in Sprinkler and Standpipe Systems*, 2019.

UL 852, *Metallic Sprinkler Pipe for Fire Protection Service*, 2008, revised 2023.

UL 1091, *Butterfly Valves for Fire-Protection Service*, 2022.

CAN/UL/ULC 1285, *Pipe and Couplings, Polyvinyl Chloride (PVC), and Oriented Polyvinyl Chloride (PVCO) for Underground Fire Service*, 2022.

UL 1450, *Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment*, 2021.

UL 1468, *Direct Acting Pressure Reducing and Pressure Restricting Valves*, 2016, revised 2018.

UL 1474, *Adjustable Drop Nipples for Sprinkler Systems*, 2004.

UL 1486, *Quick Opening Devices for Dry Pipe Valves for Fire Protection Service*, 2004, revised 2018.

UL 1739, *Pilot-Operated Pressure-Control Valves for Fire Protection Service*, 2017, revised 2019.

CAN/UL 1821, *Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service*, 2019.

UL 2443, *Flexible Sprinkler Hose with Fittings for Fire Protection Service*, 2015, revised 2021.

UL 2901, *Antifreeze Solutions for Use in Fire Sprinkler Systems*, 2019, revised 2022.

UL 2901A, *Outline of Investigation for Corrosion Control Additives for Use in Fire Sprinkler Systems*, 2019.

UL Subject 723S, *Outline of Investigation for Drop-Out Ceilings Installed Beneath Automatic Sprinklers*, 2006.

#### **G.1.2.19 US Government Publications.**

US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

Title 46, Code of Federal Regulations, Part 72.05-5, "Definitions."

#### **G.1.2.20 Other Publications.**

Nam, Soonil; Antonio Braga; Hsiang-Cheng Kung; and Joan M. A. Troup, "Fire Protection for Non-Storage Occupancies with High Ceiling Clearances," *Fire Safety Science — Proceedings of the 7th International Symposium*, International Association for Fire Safety Science, 2002, pp. 493–504. [www.iafss.org/publications/fss/7/493/view/fss\\_7-493.pdf](http://www.iafss.org/publications/fss/7/493/view/fss_7-493.pdf).

Nam, S., "Fire Protection at High Ceiling Clearance Facilities," International Association for Fire Safety Science, 2007. [www.iafss.org/publications/aofst/7/84/view/aofst\\_7-84.pdf](http://www.iafss.org/publications/aofst/7/84/view/aofst_7-84.pdf).

*Thrust Restraint Design Equations and Tables for Ductile Iron and PVC Pipe*, EBAA Iron, Inc.

*Wire Rope Users Manual*.

## **G.2 Informational References.**

The following documents or portions thereof are listed here as informational resources only. They are not a part of the requirements of this document.

### **G.2.1 NFPA Publications.**

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

NFPA 850, *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations*, 2025 edition.

### **G.2.2 AWWA Publications.**

American Water Works Association, 6666 West Quincy Avenue, Denver, CO 80235.

AWWA C116/A21.16, *Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray Iron Fittings*, 2015.

AWWA C203, *Coal-Tar Protective Coatings and Linings for Steel Water Pipe*, 2020.

AWWA C205, *Cement-Mortar Protective Lining and Coating for Steel Water Pipe 4 in. (100 mm) and Larger — Shop Applied*, 2018.

AWWA C208, *Dimensions for Fabricated Steel Water Pipe*, 2017.

AWWA C302, *Reinforced Concrete Pressure Pipe, Non-Cylinder Type*, 2022.

AWWA C303, *Reinforced Concrete Pressure Pipe, Bar-Wrapped, Steel-Cylinder Type*, 2017.

### **G.2.3 DIPRA Publications.**

Ductile Iron Pipe Research Association, P.O. Box 190306, Birmingham, AL 35219.

*Installation Guide for Ductile Iron Pipe*, 2021.

### **G.2.4 FM Publications.**

FM Global, 270 Central Avenue, Johnston, RI 02919-4949.

FM Approvals 2311, *Vacuum and Pressure Gauges for Fire Protection Systems*, 2008.

### **G.2.5 SAE Publications.**

SAE International, Society of Automotive Engineers, 901 15th Street, NW, Suite 520, Washington, DC 20005.

SAE AIR 4127, *Steel: Chemical Composition and Hardenability (Stabilized Type), Revision A, Stabilized*, December 2015.

### **G.2.6 Uni-Bell PVC Pipe Publications.**

Uni-Bell PVC Pipe Association, 201 E. John Carpenter Freeway, Suite 750, Irving, TX 75062.

*Handbook of PVC Pipe*, 5th edition.

### **G.2.7 US Government Publications.**

US Government Publishing Office, 732 North Capitol Street, NW, Washington, DC 20401-0001.

US Federal Standard No. 66C, *Standard for Steel Chemical Composition and Harden Ability*, April 18, 1967, change notice No. 2, April 16, 1970. (Superseded by SAE AIR4127)

## **G.3 References for Extracts in Informational Sections.**

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, 2024 edition.

NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, 2025 edition.

NFPA 101<sup>®</sup>, *Life Safety Code*<sup>®</sup>, 2024 edition.

NFPA 5000<sup>®</sup>, *Building Construction and Safety Code*<sup>®</sup>, 2024 edition.