

NFPA®

1971

**Standard on
Protective Ensembles for
Structural Fire Fighting and
Proximity Fire Fighting**

2018



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NFPA® 1971

Standard on

Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

2018 Edition

This edition of NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, was prepared by the Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment and released by the Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment. It was issued by the Standards Council on August 1, 2017, with an effective date of August 21, 2017, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See “Codes & Standards” at www.nfpa.org for more information.

This edition of NFPA 1971 was approved as an American National Standard on August 21, 2017.

Origin and Development of NFPA 1971

The original work on this project was done by the Sectional Committee on Protective Equipment for Fire Fighters that was a part of the Committee on Fire Department Equipment. In 1973, the Sectional Committee released a tentative standard, NFPA 19A-T, *Tentative Standard on Protective Clothing for Fire Fighters*. The Sectional Committee continued its work, and with the cooperation of the Program for Fire Services Technology of the National Bureau of Standards, developed NFPA 1971, *Standard on Protective Clothing for Structural Fire Fighting*. NFPA 1971 was adopted as a standard at the Fall Meeting in Pittsburgh, PA, on November 18, 1975.

Since that time, the Sectional Committee has been removed from the Committee on Fire Department Equipment and made a full Technical Committee.

The 1981 edition of NFPA 1971 represented a complete editorial reworking of the 1975 edition to make the document more usable by both the fire service and protective clothing manufacturers. The 1981 edition was acted on at the Annual Meeting in Dallas, TX, on May 19, 1981.

The 1986 edition incorporated a complete revision of the document to include more performance requirements and fewer specifications. Separate performance and testing chapters were written. The 1986 edition was acted on at the Annual Meeting in Atlanta, GA, on May 19–22, 1986.

Following the 1986 edition, the committee was renamed from the Technical Committee on Protective Equipment for Fire Fighters to the Technical Committee on Fire Service Protective Clothing and Equipment.

The 1991 edition incorporated third-party certification, labeling, and listing for the protective clothing. A new chapter was added to address interface items, specifically the protective hood and protective wristlets. Appendix material was developed on cleaning of garments and evaluating how materials can affect heat stress. The 1991 edition, the fourth edition, was presented to the NFPA membership at the Annual Meeting in Boston, MA, on May 19–23, 1991, and was issued with an effective date of August 16, 1991.

In October 1994, the NFPA Standards Council reorganized the Technical Committee on Fire Service Protective Clothing and Equipment as the Project on Fire and Emergency Services Protective Clothing and Equipment operating with seven technical committees and a technical correlating committee. NFPA 1971 was now the responsibility of the Technical Committee on Structural and Proximity Fire Fighting Protective Clothing and Equipment.

The 1997 edition of NFPA 1971, the fifth edition, combined four former standards on structural fire fighting protective clothing: NFPA 1971, *Standard on Protective Clothing for Structural Fire Fighting*,

NFPA 1972, *Standard on Helmets for Structural Fire Fighting*; NFPA 1973, *Standard on Gloves for Structural Fire Fighting*; and NFPA 1974, *Standard on Protective Footwear for Structural Fire Fighting*, into a single document entitled NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*.

The 2000 edition was the sixth edition and represented a complete revision to the fifth (1997) edition. Among other changes, the edition introduced new requirements for evaporative heat transfer through garments through a total heat loss test, for evaluating thermal insulation in areas of garments that are most likely to become compressed through a conductive and compressive heat resistance test, for evaluating hand dexterity with gloves through a new hand function test, and for evaluating the durability of barrier materials through additional preconditioning prior to selected physical tests of the barrier materials.

The sixth edition was presented to the Association membership at the 1999 Fall Meeting in New Orleans, LA, on November 17, 1999, and issued by the Standards Council with an effective date of February 11, 2000.

The 2007 edition of NFPA 1971, the seventh edition, represented a complete revision. The requirements of two former standards, the 2000 (sixth) edition of NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, and the 2000 (second) edition of NFPA 1976, *Standard on Protective Ensemble for Proximity Fire Fighting*, were combined into a single document entitled NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*.

Other than combining the two documents, the major changes represented in the 2007 edition were the optional requirements for protection from CBRN terrorism agents (specified chemicals, biological agents, and radiological particulate) that could be released as a result of a terrorism attack. These optional requirements could be selected by fire departments that were concerned about first response of their personnel to such WMD incidents where “normal” fire fighting protective ensembles offer little or no protection from CBRN terrorism agents, and where supplementary protective ensembles that are certified as compliant with NFPA 1994, *Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents*, for protection from CBRN terrorism agents are unlikely to be provided to the vast majority of fire fighting first responders.

The CBRN optional protection can be applied only to an entire ensemble, including the specified CBRN SCBA for that ensemble, and cannot be applied to individual ensemble elements. The design and performance of the entire ensemble including the CBRN SCBA provides the CBRN protection for the wearer and depends on the proper use of the entire ensemble to accomplish this protection. No combination of individual ensemble elements short of the entire assembled ensemble will give CBRN protection.

These optional CBRN requirements that apply to both structural fire fighting protective ensembles and proximity fire fighting protective ensembles were built into the construction of the “basic” fire fighting protective ensemble elements so that nothing had to be added to or subtracted from the basic fire fighting protective clothing in order to achieve the protection from CBRN terrorism agents. The optional CBRN requirements did not decrease any of the protection for the fire fighting environments in which these ensembles are used.

The 2007 edition was presented to the Association membership at the 2006 Association Annual Meeting in Orlando, Florida, on June 7, 2006, and issued by the Standards Council with an effective date of August 17, 2006.

The 2013 edition of NFPA 1971 represented a complete revision of the document, incorporating many technical and editorial changes. In addition to several new definitions and revised labeling requirements, changes were made to the performance requirements in Chapter 7, including those for garment zippers, fastener tape, and helmets. Performance requirements for the radiant reflective protective areas of proximity fire fighting protective glove elements also were added. A number of tests in Chapter 8 were revised, including glove test areas, the flame resistance test procedure, the glove hand function test procedure, and the slip resistance test. The chemical permeation test and the man-in-simulant test (MIST) also were completely revised. New tests were added to Chapter 8, including a torque test, transmitted and stored thermal energy test, fastener tape strength test, and a glove tool test.

For the 2018 edition of the standard, CBRN was removed from NFPA 1971 and put into NFPA 1994, including definitions, design and performance requirements, and test methods related to CBRN. There is a new definition for *protective barrier hood*, the optional interface element of the protective ensemble that provides limited thermal, physical, and barrier protection to the coat/helmet/SCBA facepiece interface area. Both the Particulate Filtration Efficiency Test and Total Heat Loss Test are required for the new optional interface element. Current design requirements for hoods are left in as well (hood size opening, what it must cover, etc.). A new glove sizing system is an evenly graded system that readily lends itself to the use of a Brannock-style measuring device for estimating correct sizing (similar to footwear).

A new test method, Water Vapor Resistance Test (R_{et}), was created at First Draft but removed during Second Draft after lengthy discussion and presentation. The Technical Committee agrees that while this test may provide valuable information, there has only been limited data to support including this test in the standard during this revision cycle. The Technical Committee does want to encourage continued research on this test method and established a task group for work during the intervening years on this issue.

In Memoriam, 11 September 2001

We pay tribute to the 343 members of FDNY who gave their lives to save civilian victims on 11 September 2001, at the World Trade Center. They are true American heroes in death, but they were also American heroes in life. We will keep them in our memory and in our hearts. They are the embodiment of courage, bravery, and dedication. May they rest in peace.

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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 design, performance, testing, and certification of protective clothing and protective equipment manufactured for fire and emergency services organizations and personnel, to protect against exposures encountered during emergency incident operations. This Committee shall also have the primary responsibility for documents on the selection, care, and maintenance of such protective clothing and protective equipment by fire and emergency services organizations and personnel.

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Committee Scope: This committee shall have primary responsibility for documents on protective ensembles, except respiratory protection, that provides head, limb, hand, foot, torso, and interface protection for fire fighters and other emergency services responders during incidents involving structural fire fighting operations or proximity fire fighting operations. Structural fire fighting operations include the activities of rescue, fire suppression, and property conservation during incidents involving fires in buildings, enclosed structures, vehicles, marine vessels, or like properties. Proximity fire fighting operations include the activities of rescue, fire suppression, and property conservation during incidents involving commercial and military aircraft fires, bulk flammable gas fires, bulk flammable and combustible liquids fires, combustible metal fires, exotic fuel fires, and other such fires that produce very high levels of radiant heat as well as convective and conductive heat. Additionally, this committee shall have primary responsibility for documents on the selection, care, and maintenance of structural and proximity fire fighting protective ensembles by fire and emergency services organizations and personnel.