

NFPA 2113

Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire

2007 Edition



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An International Codes and Standards Organization

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Standard on

Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire

2007 Edition

This edition of NFPA 2113, *Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire*, was prepared by the Technical Committee on Flash Fire Protective Garments. It was issued by the Standards Council on July 28, 2006, with an effective date of August 17, 2006, and supersedes all previous editions.

This edition of NFPA 2113 was approved as an American National Standard on August 17, 2006.

Origin and Development of NFPA 2113

The NFPA Standards Council established the Technical Committee on Flash Fire Protective Garments in 1998. Between February and August of 1999, the Technical Committee developed two draft standards: NFPA 2112, *Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire*, and NFPA 2113, which were then released for public proposals and comments. NFPA 2113 specifies the minimum selection, care, use, and maintenance requirements for flame-resistant garments that are compliant with NFPA 2112 for use by industrial personnel in areas at risk from flash fires.

The first editions of NFPA 2112 and NFPA 2113 were approved by the NFPA membership at the May 2001 NFPA World Fire Safety Congress and were issued by the Standards Council in July 2001.

The 2007 edition includes amendments to the 2001 standard. Definitions were reviewed and modified to be consistent between both NFPA 2112 and NFPA 2113 and the NFPA Glossary of Terms. The Committee also clarified elements of the hazard analysis and considerations for garment selection.

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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 manufacture, selection, care, and use of garments and equipment used for protection of industrial personnel where there is potential for flash fire. Industrial personnel include workers who are potentially or may accidentally be exposed to hydrocarbon or combustible dust flash fires, and not electrical flashes. These documents do not cover fire fighters and other emergency services personnel.



Contents

Chapter 1 Administration	2113- 4	Chapter 5 Use	2113- 7
1.1 Scope	2113- 4	5.1 General	2113- 7
1.2 Purpose	2113- 4	5.2 Specific Requirements for Wearing Flame-Resistant Garments	2113- 7
1.3 Application	2113- 4		
1.4 Equivalency	2113- 4	Chapter 6 Care	2113- 7
1.5 Units	2113- 4	6.1 Cleaning	2113- 7
Chapter 2 Referenced Publications	2113- 4	6.2 Decontamination	2113- 7
2.1 General	2113- 4	6.3 Storage	2113- 8
2.2 NFPA Publications	2113- 4	Chapter 7 Maintenance	2113- 8
2.3 Other Publications	2113- 4	7.1 Inspection	2113- 8
2.4 References for Extracts in Mandatory Sections	2113- 4	7.2 Repairs	2113- 8
Chapter 3 Definitions	2113- 4	7.3 Retirement	2113- 8
3.1 General	2113- 4	7.4 Disposal	2113- 8
3.2 NFPA Official Definitions	2113- 5	Annex A Explanatory Material	2113- 8
3.3 General Definitions	2113- 5	Annex B Properties for Evaluating Flame-Resistant Garments	2113-13
Chapter 4 Selection	2113- 6	Annex C Informational References	2113-17
4.1 General	2113- 6	Index	2113-18
4.2 Workplace Hazard Assessment	2113- 6		
4.3 Selection of Flame-Resistant Garments	2113- 6		
4.4 Purchase Specifications	2113- 7		

NFPA 2113**Standard on****Selection, Care, Use, and Maintenance of
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Changes other than editorial are indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. These rules are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraphs have been deleted, the deletion is indicated by a bullet (•) between the paragraphs that remain.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex C. Editorial changes to extracted material consist of revising references to an appropriate division in this document or the inclusion of the document number with the division number when the reference is to the original document. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

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

Chapter 1 Administration**1.1 Scope.**

1.1.1* This standard shall specify the minimum selection, care, use, and maintenance requirements for flame-resistant garments for use in areas at risk from flash fires by industrial personnel that are compliant with NFPA 2112, *Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire*.

1.1.2* This standard shall not apply to protective clothing for wildland fire fighting, technical rescue, structural fire fighting, proximity fire fighting, or any other fire-fighting operations, or hazardous materials emergencies.

1.1.3 This standard shall not apply to protection from electrical flashes, radiological agents, biological agents, or hazardous materials.

1.2 Purpose. The purpose of this standard shall be to reduce the health and safety risks associated with the incorrect selection and

use of flame-resistant garments and those risks associated with incorrectly maintained, contaminated, or damaged flame-resistant garments.

1.3 Application.

1.3.1* This standard shall not purport to address all the safety aspects associated with its use.

1.4 Equivalency. Nothing herein shall be intended to restrict any individual or organization from exceeding these minimum requirements.

1.5 Units. In this standard, values for measurement are followed by an equivalent in parentheses, but only the first stated value shall be regarded as the requirement. Equivalent values in parentheses shall not be considered as the requirement, as these values might be approximate.

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 2112, *Standard on Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire*, 2007 edition.

2.3 Other Publications.

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

ASTM F 1449, *Standard Guide for Care and Maintenance of Flame-Resistant and Thermal Protective Clothing*, 1992.

2.3.2 Other Publications.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 1851, *Standard on Selection, Care, and Maintenance of Structural Fire Fighting Protective Ensembles*, 2001 edition.

NFPA 1971, *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2007 edition.

NFPA 1975, *Standard on Station/Work Uniforms for Fire and Emergency Services*, 2004 edition.

NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*, 2006 edition.

NFPA 1999, *Standard on Protective Clothing for Emergency Medical Operations*, 2003 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* 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.

3.2.2 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.

3.2.3 Shall. Indicates a mandatory requirement.

3.2.4 Should. Indicates a recommendation or that which is advised but not required.

3.2.5 Standard. A document, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1 Agents.

3.3.1.1 Biological Agents. Biological materials that are capable of causing an acute disease or long-term damage to the human body. [1999, 2003]

3.3.1.2 Radiological Agents. Radiation associated with x-rays, alpha, beta, and gamma emissions from radioactive isotopes, or other material in excess of normal background radiation levels. [1999, 2003]

3.3.2 Body.

3.3.2.1 Lower Body. The area of the body below the waist including the legs but excluding the ankles and feet.

3.3.2.2 Upper Body. The area of the body above the waist and extending to the shoulders, including the arms and wrists but excluding the hands.

3.3.3 Care. Procedures for cleaning, decontamination, and storage of protective clothing and equipment. [1851, 2001]

3.3.4 Certification/Certified. A system whereby a certification organization determines that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of this standard, authorizes the manufacturer to use a label on listed products that comply with the requirements of this standard, and establishes a follow-up program conducted by the certification organization as a check on the methods the manufacturer uses to determine continued compliance with the requirements of this standard. [1971, 2007]

3.3.5 Certification Organization. An independent, third-party organization that determines product compliance with the requirements of this standard with a labeling/listing/follow-up program. [1971, 2007]

3.3.6 Cleaning. The removal of dirt and debris.

3.3.7 Compliance/Compliant. Meeting or exceeding all applicable requirements of this standard. [1971, 2007]

3.3.8 Component. Any material, part, or subassembly used in the construction of the garment necessary for meeting the requirements of this standard.

3.3.9 Contamination/Contaminated. The process of transferring a hazardous material from its source to people, animals, the environment, or equipment, which may act as a carrier.

3.3.10 Cross-Contamination. The transfer of contamination from one item to another or to the environment.

3.3.11 Decontamination. The physical and/or chemical process of reducing and preventing the spread of contamination from persons and equipment used in a contaminated environment.

3.3.12 Emblem(s). Shields, heraldry, or printing that designates a governmental entity or a specific organization; rank, title, position, or other professional status that is painted, screened, embroidered, sewn, glued, bonded, or otherwise attached in a permanent manner.

3.3.13 Fabric. The one or more layers of textile material(s) used in the primary construction of protective garment(s).

3.3.14 Fit. The quality, state or manner in which the length and closeness of clothing, when worn, relates to the human body. [1851, 2001]

3.3.15* Flame Resistance. The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or nonflaming source of ignition, with or without subsequent removal of the ignition source.

3.3.16* Flash Fire. A fire that spreads rapidly through a diffuse fuel, such as dust, gas, or the vapors of an ignitable liquid, without the production of damaging pressure.

3.3.17 Functionality/Functional. The ability of the flame-resistant garment or a component of the flame-resistant garment to continue to be utilized for its intended purpose.

3.3.18 Garments. Clothing including, but not limited to, coveralls, trousers, shirts, outerwear, and rainwear.

3.3.19 Hardware. Nonfabric components of the flame-resistant garment including, but not limited to, those made of metal or plastic.

3.3.20 Hazard Assessment. The process by which an organization identifies hazards in the workplace and then determines appropriate controls, including the use of personal protective equipment, to eliminate or reduce worker exposure to those hazards.

3.3.21 Hazardous Materials. Any solid, liquid, gas, or mixture thereof that can potentially cause harm to the human body through respiration, ingestion, skin absorption, or contact.

3.3.22 Hazardous Materials Emergencies. Incidents involving the release or potential release of hazardous materials into the environment that can cause loss of life, personnel injury, or damage to property and the environment. [1971, 2007]

3.3.23 Industrial Personnel. Workers who might be exposed to flash fire.

3.3.24 Interlining. Any textile that is intended for incorporation into any article of wearing apparel as a layer between outer and inner layers. [1975, 2004]

3.3.25 Lining. Any material that is attached and used to cover or partially cover the inside surface of a flame-resistant garment.