

FLAME RESISTANT RAINWEAR FOR PROTECTION AGAINST LIQUIDS FROM HAZARDOUS MATERIAL EMERGENCIES

Summary of relevant information contained in the NFPA 1992 *Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies* 2005 Edition

Scope: This standard specifies the minimum design, performance, certification, documentation requirements, and test methods for liquid splash-protective ensembles and liquid splash-protective clothing; and individual elements for chemical vapor protection; and additional optional criteria for chemical flash fire escape protection. This standard does not apply to protection from chemical or biological warfare agents or from chemical or biological terrorism incidents, and this standard does not apply to protective ensembles or clothing for hazardous materials emergencies involving known or suspected carcinogens, hazardous materials with known skin toxicity, or hazardous material vapor atmospheres. These hazards not covered by NFPA 1992 are addressed by NFPA 1991 on vapor-protective ensembles. The standard does not cover respiratory protection that is to be worn with the ensemble. Respirator guidelines are provided by NIOSH.

Purpose: This standard is intended to assist emergency response organizations in specifying appropriate protective clothing and ensembles for personnel responding to hazardous materials emergency incidents such as industrial chemical spills. Initially, NFPA 1992 was intended to correspond to EPA Level B designation, but the NFPA 1992 scope has been expanded. NFPA 1992 provides the end user organization with performance and testing requirements for an ensemble with liquid-tight integrity more comprehensively than the EPA Level B designation.

Key Definitions:

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

Chemical and Biological Terrorism Incidents: Situations involving the release of chemical or biological warfare agents in civilian areas by terrorists. (not covered by this standard)

Emergency Response Personnel: Personnel assigned to organizations that have the responsibility for responding to hazardous materials emergencies.

Chemical Flash Fires: The ignition of a flammable and ignitable vapor or gas that produces an outward expanding flame front as those vapors or gases burn. This burning and expanding flame front, a fireball, will release both thermal and kinetic energy to the environment.

Encapsulating: A type of ensemble that provides vapor or gas-tight or liquid-tight protection, or both, and completely covers the wearer and the wearer's respirator.

Ensemble Elements: The compliant products that provide protection to the upper and lower torso, arms, legs, hands, and feet.

Hazardous Materials: A substance (solid, liquid, or gas) that when released is capable of creating harm to people, the environment, and property.

Hazardous Materials Emergencies: Incidents involving the release of potential release of hazardous materials.

Liquid-Splash-Protective Ensemble: Multiple elements of compliant protective clothing and equipment products that when worn together provide protection from some risks, but not all risks, of hazardous materials emergency incident operations involving liquids.

Performance Requirements:

- Liquid-tight integrity for garments, non-encapsulating and encapsulating ensemble with visors, gloves and footwear
- Chemical permeation resistance after flexing and abrasion for garment, glove and footwear materials against 7 chemicals, and chemical penetration resistance against the a shorter list of chemicals for visor materials, seams and closures
- Burst strength, puncture propagation tear resistance, cold temperature performance for garment and visor materials, cold temperature resistance for glove material
- Seam strength for seams, and closure strength for closures
- Puncture resistance, cut resistance for gloves and footwear, impact and compression resistance, bending resistance, abrasion resistance and slip resistance for footwear
- Functional use for ensemble, visual acuity for hoods, dexterity for gloves
- Optional requirements for chemical flash fire escape protection

Labeling Requirements:

- Manufacturer Label: States manufacturer's name, address, country of manufacture, suit model, style, or serial number, size, garment material, visor material, glove and footwear component for ensemble
- Compliance Statement: Ensemble meets the requirements of NFPA 1992 and "Do Not Remove" statement
- Additional Requirement Notation: For optional limited chemical flash fire protection
- Certification: The certification organization's label or symbol
- Additional Information: Specific indication of a technical data package that must be read before use of the ensemble. Additional information on warnings and instructions for use
- Label Print Legibility: Required font size