

PetroWear™ Flash Fire Outerwear

Summary of relevant information contained in the NFPA 2112 *Standard on Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire* 2001 Edition (New Edition is expected to issue in late 2006)

Scope: This standard shall specify the minimum design, performance, certification requirements, and test methods for flame-resistant garments for use in areas at risk from flash fires.

Purpose: This standard shall provide the minimum requirements for the design, construction, evaluation, and certification of flame-resistant garments for use by industrial personnel, with the intent of providing a degree of protection to the wearer and reducing the severity of burn injuries resulting from accidental exposure to hydrocarbon flash fires.

Key Definitions:

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

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

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.

Thermal Protective Performance (TPP): A term used to indicate the relative protection level of a garment.

Performance Requirements:

Flame Resistant Clothing Requirements for NFPA 2112 (2001 Edition) *Standard on Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire*

PROTECTION FEATURE	STANDARD TEST METHODS	SPECIFIC REQUIREMENTS
Flame Resistance of Fabric and Reflective Striping	ASTM D 6413 Test Method for Flame Resistance of Textiles (Vertical Test)	4 inch Max. Avg. Char Length 2 s Max. Avg. Afterflame No melt & drip before & after 100 Launderings/Dry Cleanings
Blocking of Convective and Radiant Heat Energy Method 1	NFPA 2112 Spaced Thermal Protective Performance Test (TPP Spaced)	6 cal/cm ² Minimum Avg. Before and After Three Launderings or Dry Cleanings
Blocking of Convective and Radiant Heat Energy Method 2	NFPA 2112 Contact Thermal Protective Performance Test (TPP Contact)	3 cal/cm ² Minimum Avg. Before and After Three Launderings or Dry Cleanings
Body Area Burn Injury Protection	ASTM F 1930 Instrumented Manikin Test Standardized Coverall with Cotton T-Shirt and Briefs	50% Max. Avg. Body Area Burn Injury for a 2.0 cal/cm ² s Heat Flux, 3.0 seconds after One Laundering/Dry Cleaning
Thermal Shrinkage Resistance of Fabric	NFPA 2112 Forced Air Circulating Oven Test and AATCC 135 for Dimensional Measurements	10% Maximum Shrinkage 5 min. 500 °F Oven Exposure Tested Before and After Three Launderings or Dry Cleanings
Heat Resistance of Fabrics, other Textile Materials and Reflective Striping (Excludes Labels)	NFPA 2112 Forced Air Circulating Oven Test	No Melting and Dripping, Separation, or Ignition for Oven Exposure of 5 minutes at 500°F Before and After Three Launderings or Dry Cleanings
Hardware Buttons, Fasteners, Zippers, Closures, Etc.	NFPA 2112 Forced Air Circulating Oven Test	No Melting and Dripping, Separation, or Ignition for Oven Exposure of 5 minutes at 500°F and Shall Remain Functional
Sewing Thread (Excludes Embroidery)	Federal Test Method Standard 191A, Test Method 1534	Inherently Flame Resistant No melting at 500°F

Labeling Requirements:

- **Manufacturer Label:** States model name, number, or design, manufacturer's name, address, country of manufacture, serial number, size, fiber content "Do Not Remove" statement
- **Compliance Statement:** Flame-resistant garment meets the requirements of NFPA 2112
- **Label Print Durability:** Legible at 12 inches after 100 launderings or dry cleanings
- **Certification:** Third party compliance verification
- **Additional Information:** The label shall include the international symbol for "Read Instructions Before Use" and the manufacturer shall provide information on warnings, instructions for use, and sizing charts
- **Care Label:** Cleaning and care instructions (included in sister standard NFPA 2113)