Wildland Firefighting Standard on Clothing and Protective Equipment

The National Fire Protection Association (NFPA) was asked to come up with a standard on clothing and protective equipment worn during firefighting while on wildland firefighting operations. The NFPA formed a committee in 1989 to look into establishing a standard for this equipment. The goal of this standard was to provide thermal protection for the wildland firefighter against external heat sources with flame-resistant clothing and equipment, while not inducing an extraordinary internal heat stress load. NFPA reached this goal after research showed the majority of injuries to wildland firefighters were due to heat stress.

This standard encompasses the clothing and protective apparel worn during normal exposure limits.

The standard states the minimum design, performance, testing and certification requirements for protective clothing, helmets, gloves, footwear, face/neck shroud, cold weather outerwear, chainsaw protectors, load carrying equipment and goggles that are designed to protect firefighters during a wildland firefighting operation. Also written into the 2005 edition are the optional visibility standards for the clothing.

Every product that is used for wildland firefighting must be labeled as such and contain all pertinent information regarding that product. The following label must be attached to the article of personal protective equipment:

"THIS WILDLAND FIRE-FIGHTING PROTECTIVE (GARMENT, HELMET, GLOVE, FOOTWEAR, FACE/NECK SHROUD, CHAINSAW PROTECTOR, or LOAD CARRYING EQUIPMENT) MEETS THE REQUIREMENTS OF NFPA 1977, STANDARD ON PROTECTIVE CLOTHING AND EQUIPMENT FOR WILDLAND FIRE FIGHTING, 2005 EDITION

DO NOT REMOVE THIS LABEL"

Goggles must bear this statement:

"THIS WILDLAND FIRE-FIGHTING PROTECTIVE GOGGLE MEETS THE REQUIREMENTS OF NFPA 1977, STANDARD ON PROTECTIVE CLOTHING AND EQUIPMENT FOR WILDLAND FIRE FIGHTING, 2005 EDITION"

In addition the manufacturer must provide the following information to be written on the label:

a) Manufacturer's name, identification, or designation
b) Manufacturer's address
c) Country of Manufacture
d) Manufacturer's (garment, helmet, glove, footwear, or face/neck shroud) identification number, lot number, or serial number
e) Month and year of manufacture (not coded)
f) Model or style name, number, or design
g) Size or size range
h) Garment materials and percent content/Nominal weight of the helmet (this is only for garments and helmets)
i) Cleaning precautions

The goggle and the protective face/shroud information are different. The manufacturer must provide the following for the face/shroud:

a) Manufacturer's name, identification, or designation
b) Manufacturer's address
c) Manufacture's identification number, lot number, or serial number
d) Date of manufacture (not coded)
e) Identification of the compliant helmet or helmets with which the face/shroud was certified

The manufacturer of the goggles must provide the following information:

a) Manufacturer's name, identification, or designation
b) Manufacturer's address
c) Date of manufacture (not coded)
d) Cleaning instructions and precautions

The manufacture must also provide the user the following information:

a) Pre-use information
b) Preparation for use
c) Inspection frequency and details
d) Don/doff
e) Proper use consistent with NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* and Title 29, *Code of Federal Regulations,* Part 1910.132, "Personal Protective Equipment" (this is not needed for chainsaw protectors)
f) Maintenance and cleaning (this is not needed for chainsaw protectors)
g) Retirement and disposal criteria and considerations

For all of the above personal protective items, the appropriate sizing charts and conversion tables, where applicable, must be provided to the purchaser from the manufacturer upon request.

A number of design requirements, specific to each item, are also stated in the standard. The type of thread, openings and the associated closures, statements relating to the collar and cuffs of a garment, all fasteners and zippers, and what part of the garment is allowed to come into contact with the user are just some examples of the detail covered in the standard. All of the personal protective equipment that is covered under this standard must pass a battery of tests. In order to be certified the testing and certification of these items is completed by an independent testing agency. Any item, or part of that item, that does not meet the requirements will not be certified under this standard.

All of the personal protective equipment is subjected to preconditioning. This is set up so all of the equipment is at the same temperature, humidity level, and etc. so that the standard can be applied equally to all manufacturers.

The garments and face/neck shroud is then put through the following tests

a) Radiant protective performance test
b) Flame resistance test
c) Heat and thermal shrinkage resistance test
d) Total heat loss test (not for face/shroud)
e) Tear resistance test
f) Burst strength test
g) Cleaning shrinkage resistance test
h) Seam breakage strength test
i) Thread heat resistance test
j) Label durability and legibility test one
k) Retroreflectivity and fluorescence test, if applicable (not for face/shroud)

And the helmet goes through the following tests

a) Thread heat resistance test
b) Top impact resistance test
c) Helmet physical penetration resistance test
d) Helmet antiglare flammability test
e) Heat and thermal shrinkage resistance test
f) Suspension system retention test
g) Retroreflectivity and fluorescence test
h) Retention system test
i) Goggle and headlamp clip attachment test
j) Label durability and legibility test two

The gloves must pass the following tests

a) Heat and thermal shrinkage resistance test
b) Protective glove flame resistance test
c) Conductive heat resistance test
d) Thermal protective performance test
e) Dexterity test
f) Grip test
g) Label durability and legibility test one
h) Thread heat resistance test

Glove and footwear are put through these tests

a) Cut resistance test
b) Puncture resistance test

Footwear is put through the following tests

a) Heat and thermal shrinkage resistance test
b) Corrosion resistance test
c) Footwear conductive heat resistance test
d) Eyelet and stud post attachment test
e) Protective footwear abrasion test
f) Flame resistance test for footwear
g) Label durability and legibility test one
h) Thread heat resistance test

Protective goggles must meet the following tests:

a) Heat and thermal shrinkage resistance test
b) Thread heat resistance test

Chainsaw protector must meet the following performance requirements:

a) Chainsaw cut resistance test
b) Heat and thermal shrinkage resistance test
c) Thread heat resistance test

Load carrying protective equipment must meet the following performance requirements:

a) Heat and thermal shrinkage resistance test
b) Thread heat resistance test
c) Retroreflectivity and fluorescence test

As one can see, these pieces of personal protective equipment are put through numerous tests to ensure maximum safety of our wildland firefighters.

This is a summary of NFPA 1977, edition 2005, for complete information please consult the National Fire Protection Association.

www.nfpa.org