

**SPECIFICATION FOR ONESuit® Flash
NFPA 1991, 2005 ED. CERTIFIED
VAPOR and CHEMICAL FLASH FIRE PROTECTIVE ENSEMBLE**

1. SCOPE

1.1 Scope. This specification covers requirements for ONESuit® Flash, a totally encapsulating vapor chemical protective suit that will provide protection against highly toxic chemicals and chemical flash fires.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in Section 3 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information as examples. While every effort has been made to ensure that completeness of this list, document users are cautioned that they must meet all specified requirement documents cited in Section 3 of this specification, whether or not they are listed.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D747	Standard Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam
D751	Standard Test Methods for Coated Fabrics
D2136	Standard Test Method for Coated Fabrics - Low Temperature Bend Test
D2582	Standard Test Method for Puncture - Propagation Tear Resistance of Plastic Film and Thin Sheeting
D4157	Standard Test Method for Abrasion Resistance of Textile Fabrics (Oscillatory Cylinder Method)
F739	Standard Test Method for Resistance of Protective Clothing Materials to Permeation by Liquids or Gases under Conditions of Continuous Contact
F392	Standard Test Method for Flex Durability of Flexible Barrier Materials

F1001 Standard Guide for Chemicals to Evaluate Protective Clothing Materials

F1052 Standard Test Method for Pressure Testing of Vapor Protective Ensembles

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 1991 Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies, 2005 Edition.

(Application for copies should be addressed to the National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101)

3. REQUIREMENTS

3.1 Qualification. When specified and applicable, ONESuit® Flash suit shall be subjected to qualification inspection.

3.2 First article. When specified and applicable, a sample shall be subjected to first article inspection.

3.3 Certification. The suit shall be certified as an ensemble to NFPA 1991, 2005 ed. – Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies. Certification shall include the liquefied gas protection and chemical flash fire protection for escape in the event of a chemical flash fire.

3.4 Design requirements.

3.4.1 Description. The ONESuit® Flash vapor protective suit shall be a one piece (no separate overcover), totally encapsulating suit with integral booties, integral back pod, airtight slide fastener closure, glove cuff assembly and visor.

3.4.2 Suit material. Suit body material shall be Challenge® NXTF. This material shall be a laminate structure using cast fluoropolymer film technology. Separable garments shall not be used to meet performance requirements.

3.4.2.1 Color. Color shall be bright red.

3.4.2.2 Weight. Weight shall be 16.5 oz/sq yd.

3.4.2.3 Thickness. Thickness shall be 31.5 mil.

3.4.2.4 Chemical resistance. Chemical permeation resistance of the suit material to NFPA 1991 specified chemicals shall have no detectable breakthrough at 8 hours when tested in accordance with ASTM F739 after flex and abrasion.

3.4.2.5 Flame resistance. Flame resistance shall exceed requirements of NFPA 1991. There shall be 0 seconds of after flame.

3.4.2.6 Burst Strength. Burst strength in accordance with ASTM D751 shall be greater than 90 lbf.

3.4.2.7 Tear Resistance. Tear resistance in accordance with ASTM D2582 shall be greater than 21 lbf.

3.4.3 Seams. Suit seams shall be constructed using heat welding technology. No stitching is permitted for use in garment seam construction.

3.4.3.1 Seam Tape. The inside and outside of all suit seams shall be covered with bright red colored weldable fluoropolymer film tape.

3.4.4 Visor. The material used for the chemical protective visor shall be 10 mil FEP film. This shall be integrally welded into the protective suit. A visor shield made of 20 mil (1 clear and 1 tinted shield provided with suit) vinyl with and outer layer of PFA film shall be attached the outside of the FEP visor using snap fasteners.

3.4.4.1 Field of vision. The suit shall have an integral visor not less than 17 inches high by 15 inches wide.

3.4.5 Gloves. The ONEGlove® Hazmat NFPA 1991 certified protective glove shall be used.

3.4.5.1 Glove attachment. The glove attachment interface shall consist of a 4" dia. PVC ring with hose clamp. The glove attachment shall not compromise the overall protection of the suit.

3.4.6 Suit Closure. The suit closure shall consist of a slide fastener with 48" open length located in the front left of the suit.

3.4.6.1 Slide fastener. The slide fastener shall consist of a black PVC YKK vapor tight design.

3.4.6.2 Slide fastener attachment. The slide fastener shall be attached to the suit using heat activated adhesive. No stitching through the slide fastener shall be permitted.

3.4.6.3 Closure flaps. The closure shall be covered by flaps made of Challenge® NXT RED. These shall be designed to close using black colored polyester hook and loop fastener.

3.4.7 Weight. The suit with all of its components shall weigh less than 14 pounds (largest available size).

3.4.8 Suit reinforcements. The suit shall be reinforced in the knees using Challenge® NXTF-R, a Kevlar® reinforced laminate.

3.4.9 Sizing. The suit shall be available in 6 sizes (Small – 3XL).

3.4.10 Waist belt. The suit shall be equipped with a waist belt. The belt shall be constructed of 2" wide black nylon webbing, and fastened by adjustable plastic squeeze release buckles.

3.4.11 Exhaust valves. The suit shall have 2 exhaust valves manufactured to a unique design by Saint-Gobain Performance Plastics. Valves operate by way of a spring activated diaphragm. Diaphragm is made of silicone providing extended shelf life beyond 10 years. These shall be located in the back of the hood area of the suit.

3.5 Interface and interoperability requirements.

3.5.1 Breathing apparatus. The suit back pod shall accommodate/cover NFPA 1981 breathing apparatus as well as a rebreather system.

3.5.2.1 Passthrough device. If required, the suit shall be compatible with a passthrough for supplied air operations with the following SCBA systems: Interspiro, MSA, Draeger, Scott, ISI, and Survivair.

3.5.3 Boots. The ONESuit® Flash protective suit shall be compatible and certified for use with the Tingley HazProof® chemical protective boot.

3.6 Support requirements.

3.6.1 Suit storage bag. The ONESuit® Flash shall be shipped in a storage bag produced of red colored heavy weight fabric. The bag shall contain carrying straps made of black webbing.

3.6.2 Test equipment. The suit shall separately offer a leak test adapter kit designed to interface with commonly available leak test equipment.