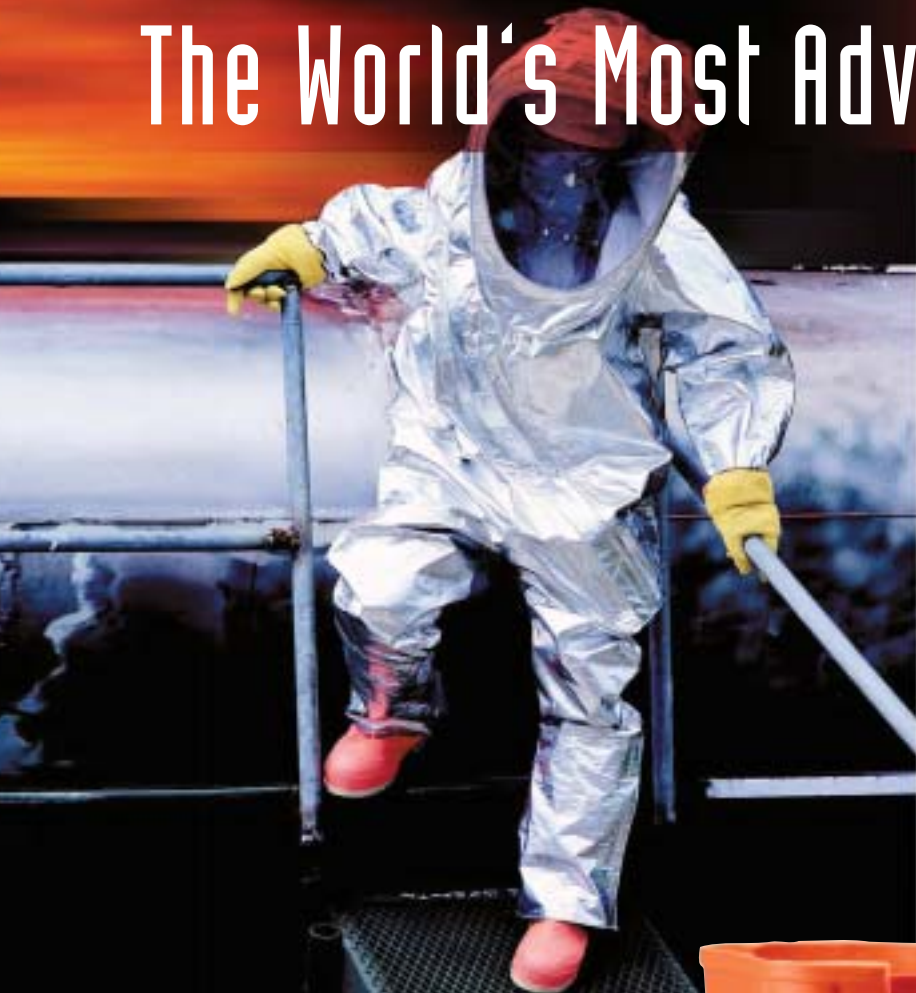


# The World's Most Advanced Hazmat Boot



**HazProof® Certified To NFPA 1991, 2005 Edition For Chemical And Hazmat Cleanup, Emergency Response, And Domestic Preparedness**

Made of special polymer material, this comfortable boot meets the protective footwear chemical permeation requirements of NFPA 1991 Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies 2005 Edition. With the growing reality that chemical warfare agents are now a threat to the civilian population, domestic preparedness programs are developing rapidly. The HazProof boot has also been tested to Military Standard 282 and will provide protection against certain chemical warfare blister and nerve agents!

- Injection molded seamless construction for 100% liquid proof protection.
- Larger foot area is engineered to accommodate the extra bulk of an encapsulated suit, for comfortable fit.
- Smooth exterior surface for easy decontamination.
- Stretch fastener closure system allows for easy on and off while wearing gloves.
- Meets ANSI spec. Z41 PT99 M I/75 C/75 EH, for steel toe impact and compression, and Electrical Hazard Protection.\*\*†
- Steel mid-sole meets and exceeds ANSI Z41 PT 99 PR†.
- Steel shank provides firm arch support.
- Blown closed cell EVA mid-sole for all day cushion comfort.
- Sure grip cleated outsole has excellent abrasion and slip resistance.
- Bright orange color for high visibility.

The most comfortable Hazmat Boot available!

## Test Method Results

Our HazProof Boot has surpassed the following Test Methods:

- Permeation Resistance – ASTM F 739 and ASTM F 1001 – 21 Chemicals
- Permeation Resistance – MIL-STD-282
- Flame Resistant – ASTM F 1358
- Puncture Propagation Upper – ASTM F 1342
- Exceeds Protection Minimum Upper (Height)
- Electrical Hazard – ANSI Z41 PT99 EH \*\*†
- Puncture Resistance Sole & Heel – ANSI Z41 PT99 PR†
- Abrasion Resistance Sole and Heel – ASTM D 1630
- Toe Impact Resistance – ANSI Z41 PT99 M I/75†
- Toe Compression Resistance – ANSI Z41 PT99 M C/75†
- Slip Resistance – ASTM F 489
- Cut Resistance Upper – ASTM F 1790
- Ladder Shank Bending Resistance – NFPA 1991, 2005



**Sure Grip Outsole:**  
Excellent abrasion and slip resistance.

\*\*Boot shall withstand 14,000 volts at 60 HZ and the current leakage shall not exceed 3.0 milliamperes.

Electrical Hazard soles and heels are intended to reduce the hazards due to accidental contact with live electrical circuits, electrically energized conductors, parts or apparatus. Electric Hazard soles and heels are not intended for wear in those work environments where volatile chemicals or explosives may be present, where conductive footwear is required.

**Warning:** Electric Hazard features of the soles and heels, will deteriorate in wet environments and when worn with excessive wear on the soles and heels.

†Obsolete standard - replaced by ASTM F 2413-05



**Ideal Applications:** Chemical and Hazmat Cleanup.

**Chemical Resistance:** Hazardous Waste.

HAZPROOF BOOT SURE GRIP OUTSOLE		
82330	Orange Upper – Cream Outsole – Ht. 11" – Steel Toe	7-13*
RF823	Replacement Stretch Fasteners - 6 pc/bag	

\*Size 13 oversized foot bed design will accommodate foot sizes up to 16.



#4049-2/06

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## NFPA 1991, 2005 Edition Chemical Permeation Boot Requirement

Chemical Permeation tests performed in accordance with ASTM F 739

Tingley HazProof® Boots	Normalized Breakthrough Time (min.)				Maximum Permeation Rate $\mu\text{g}/\text{cm}^2/\text{min}$				Minimum Detectable Rate for Test $\mu\text{g}/\text{cm}^2/\text{min}$
	Cell 1	Cell 2	Cell 3	Avg.	Cell 1	Cell 2	Cell 3	Avg.	
Acetone	134	154	114	134	7.70	0.27	14.46	7.48	0.01
Acetonitrile	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Ammonia	>180	>180	>180	>180	<0.05	<0.05	<0.05	<0.05	0.05
1,3, Butadiene	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Carbon Disulfide	109	105	119	111	1.99	1.52	1.01	1.51	0.01
Carbonyl Chloride (CG)	>60	>60	>60	>60	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorine	>180	>180	>180	>180	<0.03	<0.03	<0.03	<0.03	0.03
Cyanogen Chloride (CK)	>60	>60	>60	>60	<0.00025	0.0523	<0.00025	0.017	<0.00025
Dichloromethane	68	52	66	62	30.09	32.59	27.86	30.18	0.06
Diethylamine	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Dimethylformamide	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Dimethyl Sulfate (DMA)	>180	>180	>180	>180	<0.10	<0.10	<0.10	<0.10	0.10
Ethyl Acetate	>180	>180	>180	>180	<0.09	<0.09	<0.09	<0.09	0.09
Ethylene Oxide	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Hexane	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Hydrogen Chloride	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Hydrogen Cyanide (AC, HCN)	>60	>60	>60	>60	0.018	0.016	0.014	0.016	<0.0054
Methanol	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Methyl Chloride	>180	>180	>180	>180	<0.03	<0.03	<0.03	<0.03	0.03
Nitrobenzene	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Sodium Hydroxide (50%)	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Sulfuric Acid	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Tetrachloroethylene	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Tetrahydrofuran	115	111	113	113	17.72	16.70	20.35	18.26	0.02
Toluene	>180	>180	>180	>180	<0.01	<0.01	<0.01	<0.01	0.01
Chemical warfare agents	Normalized Breakthrough Time (min.)				Cumulative Permeation $\mu\text{g}/\text{cm}^2$				Minimum Detectable Rate for Test $\mu\text{g}/\text{cm}^2/\text{min}$
	Cell 1	Cell 2	Cell 3	Avg.	Cell 1	Cell 2	Cell 3	Avg.	
Sarin (GB)	>60	>60	>60	>60	0.10062	0.09931	0.12408	0.10800	<0.000945
Sulfur Mustard, distilled (HD)	>60	>60	>60	>60	0.00844	0.007430	0.00851	0.00812	<0.0011

Additional Permeation Resistance Test, Boot Upper: Testing with Chemical Agents under Military Standard 282 has demonstrated permeation resistance to standard static diffusion tests (duration: 24 hrs.) as follows:

Blister Agents:	Breakthrough Time Hours:	
Mustard: HD	> 14 hours	(Method 204.1.2; Static Diffusion method)
Nerve Agents:		
Sarin: GB	> 24 hours	(Method 206.1.3; Static Diffusion method)
Nerve: VX	> 24 hours	(Method 204.1.2; " " " modified for use with VX)
Soman: GD	> 24 hours	(Method 206.1.3; " " " modified for use with GD)
Tabun: GA	> 24 hours	(Method 205.1.3; " " " modified for use with GA)

## Designed to Fit

When compared to the competition, HazProof's oversized foot bed provides superior fit and comfort when wearing an encapsulated suit.

Tingley Size 10

Competitor Size 10



Tingley Size 13

Competitor Size 15

