

# HazProof® The World's Most Advanced Hazmat Boot



The best fitting, most comfortable Hazmat Boot available!

**HazProof® Certified To NFPA 1990 For Chemical And Hazmat Cleanup, Emergency Response, And Domestic Preparedness**

Made of special polymers, this comfortable boot meets the protective footwear chemical permeation requirements of NFPA 1990, Standard for Protective Ensembles for Hazardous Materials and CBRN Operations. 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.
- Replaceable stretch fastener closure system allows for easy on and off while wearing gloves.
- Meets ASTM F2413 M I/75 C/75 EH, for Steel Toe Impact and Compression, and Electric Hazard Protection.\*\*
- Steel midsole meets ASTM F2413 PR.
- Steel shank provides firm arch support.
- Closed cell EVA midsole for all day cushion comfort.
- Sure grip cleated outsole has excellent abrasion and slip resistance.
- Bright orange color for high visibility.

**Ideal Applications:** Chemical and Hazmat Cleanup, Ammonia Refrigeration Leaks.

**Chemical Resistance:** Hazardous Wastes, Acids, Caustics, and other chemicals.

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

\*Size 13 oversized foot bed design will accommodate foot sizes up to 16.  
HazProof® is a registered trademark of Tingley Rubber Corp.



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

HazProof Boot meets or exceeds the following:

- NFPA 1990 – 2022
- Permeation Resistance – ASTM F739 and ASTM F1001 – 21 Chemicals
- Permeation Resistance – MIL-STD-282
- Flame Resistant – ASTM F1358
- Puncture Propagation Upper – ASTM F1342
- Exceeds Protection Minimum Upper (Height)
- Electric Hazard – ASTM F2413 EH
- Puncture Resistance Sole & Heel – ASTM F2413 PR
- Abrasion Resistance Sole & Heel – ISO 4649
- Toe Impact Resistance – ASTM F2413 M I/75
- Toe Compression Resistance – ASTM F2413 M C/75
- Slip Resistance – ASTM F2913
- Cut Resistance Upper – ASTM F1790
- Ladder Shank Bending Resistance – NFPA 1991

\*\*Boot shall withstand 18,000 volts at 60 HZ for 1 minute with no current flow or leakage current in excess of 1.0 milliamperes under dry conditions tested as per lab conditions in Test Method F2412.

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.

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ISO 9001 Certified

[www.tingleyrubber.com](http://www.tingleyrubber.com)

1•800•631•5498



## NFPA 1990, 2022 Edition Chemical Permeation Boot Requirement

Chemical Permeation Test Data (ASTM F739)

Tingley HazProof® Boots	Cumulative Permeation (µg/cm <sup>2</sup> ) over Test Period Interval				
Test Period Interval	0-15 min	15-30 min	30-45 min	45-60 min	1-hour total
Chemical/Requirement	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 6.0
Acetone	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Acetonitrile	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Acrolein	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Acrylonitrile	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Anhydrous ammonia (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
1,3, Butadiene (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Carbon disulfide	0.24	0.15	0.28	0.13	< 0.40
Chlorine (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Dichloromethane	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Diethyl amine	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Dimethyl formamide	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Dimethyl sulfate	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Ethyl acetate	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Ethylene oxide (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Hexane	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Hydrogen chloride (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Methanol	0.13	0.12	0.13	0.12	0.50
Methyl chloride (gas)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Nitrobenzene	< 0.20	< 0.20	< 0.20	< 0.20	< 0.80
Sodium hydroxide (50%w/w)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Sulfuric Acid (96%w/w)	< 0.10	0.14	< 0.10	< 0.10	0.44
Tetrachloroethylene	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Tetrahydrofuran	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
Toluene	< 0.10	< 0.10	< 0.10	< 0.10	< 0.40
<b>Chemical Warfare Agents</b>					
<b>Blister Agent Requirements</b>	≤ 1.33	≤ 1.33	≤ 1.33	≤ 1.33	≤ 4.00
Distilled Mustard (HD)	<0.2	<0.2	<0.2	<0.2	<0.2
<b>Nerve Agent Requirements</b>	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.40
Soman (GD)	<0.05	<0.05	<0.05	<0.05	<0.05
<b>Optional Liquefied Gases*</b>	≤ 6.0	--	--	--	≤ 6.0
Ammonia (liquefied)	<0.10	--	--	--	<0.10
Chlorine (liquefied)	0.23	--	--	--	0.23
Ethylene oxide (liquefied)	<0.10	--	--	--	<0.10

\*Liquefied chemical gases are only evaluated over 15-minute exposure period

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	"	"
Soman: GD	> 24 hours	"	"
Tabun: GA	> 24 hours	"	"

### Designed to Fit

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

