TINGLEY
A TRADITION SINCE 1896

HazProof® Boot

INFORMATION GUIDE
TECHNICAL DATA &
LOG BOOK

NOTICE:
This information is to be removed ONLY by the end user of this product!

Certified Model (NFPA 1991-2016 edition)

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INFORMATION GUIDE

HazProof® - Model #82330

Safety Considerations:
Chemical contamination of this footwear may warrant its disposal. Boots should be regularly inspected for signs of degradation or excessive wear. Some of the signs of degradation of material are a change in color, hardening of the material and cracking. If the boot exhibits punctures, cuts or nicks it should be taken out of service if being used to protect against penetration of hazardous chemicals.

Limitations of use:
No protective footwear can provide protection from all conditions. Do not use alone for any fire fighting applications or for protection from ionizing radiation, cryogenic agents or in an explosive atmosphere.

Marking Recommendations and Restrictions:
A permanent marker may be used if necessary to identify or record usage and exposure.

Performance Testing:
Actual applications and conditions may vary from laboratory testing, and therefore, any test results should be used as a guide. Performance properties cannot be tested or evaluated by users in the field.

Closure Lubricants: Not applicable.

Recommended Undergarments:
Boots are to be worn over an ensemble bootie. Thick socks are recommended to maximize boot comfort.

Storage Life and Storage Conditions:
Storage life can be diminished under conditions such as high temperature and humidity, excessive exposure to ultraviolet light, radiation or cross contamination from other stored items. See recommended storage practices below.

Warranty Information:
Tingley Rubber Corporation warrants its products to be free of defects in material and workmanship at the time of the original sale.

Preparation for Use:
- Sizing/adjustment: Boots are available in sizes 6 through 13. Oversized foot bed design will accommodate foot sizes up to 16. There is no other sizing/adjustment necessary.
- Recommended Storage Practices: Temperature range 40 - 90° F, relative humidity range 20 - 60% rh.

Inspection Frequency and Details:
Perform a thorough boot inspection after each use. Check both interior and exterior of the boot for punctures, cuts, cracks, tears, discoloration or any other sign of degradation to the boot. Check stretch fastener closures for fraying, brittleness, breakage or signs of contamination. The boot should be disposed of if there is any evidence the boot's resistance to chemicals has been compromised or evidence of interior contamination. Unused boot inventory should be inspected annually for signs of degradation.

Don/Doff Information:
- There is no assistance required in donning/doffing. A full gusseted opening allows for easy donning and doffing. An integrated heel kick aids in doffing.
- Stretch fastener closures include finger tabs for easy manipulation when wearing gloves.
- Appropriate tape may be used to secure the boot opening.
- No further sizing and adjustment procedures are required.

Proper Use:
Proper use includes information in this guide, a risk assessment and is consistent with NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program,* and 29 CFR 1910.132.

Maintenance and Cleaning Information:
- Cleaning Instructions: Use a mild soap/detergent and water solution to clean the exterior of the boots after use. Ensure boot is thoroughly cleaned and dried before use. Do not use chemical cleaning agents or solvents.
- Maintenance and Repair: The integrity of the boot and closures can be maintained by following cleaning, inspection frequency and details, and storage guidelines. Replacement stretch fasteners closures are available. Order Replacement Fastener Part #**RF823**.
- Decontamination Recommendations:
Contact chemical manufacturer for the appropriate decontamination recommendation. Replace stretch fastener closures. Boots exposed to biologic agents should be properly discarded.

Retirement Considerations: Dispose of the boots if:
- Inspection of boots show signs of degradation as outlined in the section on Inspection Frequency and Details.
- Boot cannot be decontaminated effectively after chemical exposure or exposure has exceeded the permeation breakthrough time limits.

Storage Life: 10 years from date of manufacture when recommended storage practices are followed. Expiration date based on direct customer feedback and testing of samples collected >10 years from date of manufacture.

TECHNICAL DATA

HazProof®- Model #82330

Tingley Rubber Corporation
Piscataway, NJ
Made in Mexico

Sizes Available: 6 – 13*
*Oversized foot bed design will accommodate foot sizes up to 16.

Boot Height: 11”

Accessory Items: Replacement Stretch Fasteners Part #RF823.

Boot Description: Injection molded PVC; seamless construction; 100% liquid proof; oversized foot bed design to accommodate the bulk of an encapsulated suit; full gusseted opening allows for easier donning and doffing; secured with replaceable stretch fasteners; safety steel toe, steel shank, steel mid-sole and sure grip cleated PVC outsole
Orange upper color with ivory color outsole.

Boot Upper Material: Fire resistant PVC alloy impermeable per NFPA required chemicals, liquefied gas and chemical warfare agents.

Physical Performance Requirements: The HazProof boot has passed the following compliance requirements:

- Exceeds protection minimum upper height of 8 in.
- Flame Resistance (no melting and dripping):
  ASTM F1358 – after flame time less than 2 seconds and less than 4” char length with no melting and dripping after 12 second burn.
- Heat Transfer Performance Rating:
  ASTM F2700 - HTP >12 cal/cm^2
- Puncture Resistance (Upper):
  ASTM F1342(A) - exceeds 8 lbf (36N)
- Puncture Resistance Sole & Heel:
  ASTM F2412 - exceeds 270 lbf (1200N)
- Toe Impact Resistance:
  ASTM F2412 - exceeds 75 ft-lb (101.7J)
- Toe Compression Resistance:
  ASTM F2412 - exceeds 2,500 lbf (11,121N)
- Slip Resistance (Coefficient of Friction):
  ASTM F2913 – COF exceeds 0.40
- Abrasion Resistance (Sole & Heel):
  I**SO 4649(A)** volume loss ≤ 250 mm^3
- Cut Resistance Upper (blade travel distance)
  ASTM F1790 (350g load) - exceeds 0.8” (20mm)
- Ladder Shank Bend Resistance (max. deflection):
  NFPA-1991 - ¼” @ 400 lbf (1779N)

“THIS FOOTWEAR ELEMENT MEETS THE REQUIREMENTS OF NFPA 1991, STANDARD ON VAPOR–PROTECTIVE ENSEMBLES FOR HAZARDOUS MATERIALS EMERGENCIES, 2016 EDITION, AND ANY ADDITIONAL REQUIREMENTS AS NOTED BELOW.

THE TECHNICAL DATA PACKAGE CONTAINS INFORMATION ON CHEMICALS AND SPECIFIC CHEMICAL MIXTURES FOR WHICH THIS FOOTWEAR IS CERTIFIED. CONSULT THE TECHNICAL DATA PACKAGE AND MANUFACTURER’S INSTRUCTIONS BEFORE USE.
DO NOT REMOVE THIS LABEL.”

ADDITIONAL REQUIRMENTS	YES	NO
LIMITED CHEMICAL FLASH FIRE PROTECTION *FOR ESCAPE ONLY* IN THE EVENT OF A CHEMICAL FLASH FIRE	✓	
LIQUEFIED GAS PROTECTION	✓	

1. Actual applications and conditions may vary from our laboratory testing, and therefore, any test results should be used as a guide only. Users are advised to conduct their own evaluations to determine the suitability of the footwear for each specific application. Tingley Rubber Corporation offers no warranties of merchantability or fitness for a particular use. Tingley Rubber Corporation hereby disclaims all warranties, express or implied.

2. **Warning:** Do not use for any firefighting applications or for protection from radiological or cryogenic agents, or in flammable or explosive atmospheres. Chemical or biologic contamination of this footwear may warrant its disposal. No protective footwear can provide protection from all conditions. Use extreme care for all emergency operations, particularly in hazardous atmospheres. Failure to comply with these instructions may result in serious injury or death.

NFPA 1991 - 2016 Edition Chemical Permeation Data

Tingley HazProof® Boots	**Chemical Permeation Test Data (ASTM F739)**				
	Cumulative Permeation (µg/cm²) 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
Chemical Warfare Agents					
Blister Agent Requirements	**≤ 1.33**	**≤ 1.33**	**≤ 1.33**	**≤ 1.33**	**≤ 4.00**
Distilled Mustard (HD)	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nerve Agent Requirements	**≤ 0.40**	**≤ 0.40**	**≤ 0.40**	**≤ 0.40**	**≤ 0.40**
Soman (GD)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Optional Liquefied Gases*	**≤ 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	(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)

NFPA 1991 - 2016 Edition Certification Data (Tingley Boot Element)

Tingley Hazproof® Boots	Performance Requirement	Test Method	Requirement	Result
Footwear upper material	Flame resistance	ASTM F1358 (Section 8.7)	Afterflame time ≤ 2 seconds	0.9 seconds
			No melting and dripping	No melting and dripping
	Cut resistance	ASTM F1790 (Section 8.15)	Blade travel distance ≥ 20 mm at 350 grams	> 42.5 mm
	Puncture resistance	ASTM F1342 (Section 8.16)	Puncture force ≥ 36 N	54.4 N
Footwear toe sections	Impact resistance	ASTM F2412 (Section 8.31)	Clearance after Impact Men's ≥ 12.7 mm)	25.37 mm
	Compression resistance		Clearance after Compression (Men's ≥ 12.7 mm)	21.23 mm
Footwear soles and heels	Abrasion resistance	ISO 4649 (Section 8.19)	Relative volume loss ≤ 250 mm^3	250 mm^3
	Slip resistance	ASTM F2913 (Section 8.21)	Coefficient (COF) ≥ 0.40	0.75
Footwear puncture resistant device	Puncture resistance	ASTM F2412 (Section 8.30)	No puncture	No puncture
Footwear soles or ladder shanks	Bending resistance	Section 8.20	Deflection ≤ 6 mm	3 mm
Optional Flash Fire Requirements:				
Footwear material	Heat transfer performance	ASTM F2700 (Section 8.18)	HTP rating ≥ 12 cal/cm^2	> 30 cal/cm^2
	Flame resistance	ASTM F1358 (Section 8.7)	Afterflame time ≤ 2 seconds Burn distance ≤ 100 mm	0.9 seconds 15 mm

Tingley HazProof® Boots
PRODUCT LOG BOOK

This book is provided for the user to record boot usage, maintenance, and documenting levels of contamination. TINGLEY RUBBER CORPORATION strongly recommends the regular use of this logbook.

INSPECTION:

Dates	Inspector	Findings

USAGE:

Dates	User Name	Length of Use

CHEMICAL EXPOSURE:

Dates	Chemical Name	Concentration

DECONTAMINATION:

Dates	Person / Company responsible for decontamination

REPAIRS & ACCESSORY REPLACEMENT:

Dates	Person making repairs	Description of repairs

OUT OF SERVICE:

Date removed from service: _____

Reason:

_____

_____

_____

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ISO 9001 CERTIFIED

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