PIP GLOBAL SAFETY

GORE-TEX® PRODUCTS

PYRAD®
PRODUCT TECHNOLOGY

MULTI-HAZ GORE-TEX®
PYRAD® FABRIC

USER MANUAL AND TECHNICAL DATA

LIQUID CHEMICAL SPLASH PROTECTION

ARC RATED

FLAME RESISTANT

HEAT TRANSFER MOLTEN SUBSTANCES

WATERPROOF

BREATHABLE

HI-VISIBILITY

PIP GLOBAL SAFETY

Multi-Haz GORE-TEX® PYRAD® Fabric
USER MANUAL & TECHNICAL DATA

Table of Contents

Benefits

- ✓ For use when liquid chemical splash protection is required, but vapor protection is not.
- ✓ For use as flame-resistant protection for flammable liquid chemicals.
- ✓ For use as durable, waterproof, windproof, breathable rainwear.
- ✓ Combines PIP expertise as a manufacturer with world-renowned waterproof and breathable technology manufactured by W.L. Gore and Associates, Inc.
- ✓ Rugged, durable, reusable and easily cleaned.
- ✓ Breathable garments allow moisture vapour to escape, while blocking out water and selected other liquid chemicals.
- ✓ Ideal for use in applications requiring extended wear time.
- ✓ More comfortable in summer by allowing moisture vapour to transfer away from the body, reducing heat stress.
- ✓ Warmer in winter because breathable garments help prevent underclothing from becoming wet with sweat and causing chilling. (Heat transfers through wet clothing 23 times faster than through dry clothing).

Pre-Use Information

User Notice

This manual provides important information regarding the use, care, and maintenance of your Multi-Hazard PIP garment. **THIS USER'S MANUAL IS PERMANENTLY AFFIXED TO THE CHEMICAL SPLASH PROTECTIVE GARMENT, AND CAN BE PRINTED IN HARD COPY (BY SCANNING THE QR CODE) UPON DELIVERY TO THE USER.** Keep this user's manual available to those responsible for the use and maintenance of this garment.

WARNING:

NO ONE SHOULD USE THIS GARMENT UNTIL

► THE USER HAS READ AND UNDERSTOOD THIS USER'S MANUAL, THE WARNINGS CONTAINED THEREIN, AND UNDERSTANDS THE LIMITATIONS OF THE GARMENT.

► THE GARMENT HAS BEEN INSPECTED INSIDE AND OUT FOR ANY HOLES, TEARS OR CUTS IN THE FABRIC AND IS CARED FOR ACCORDING TO THE INSTRUCTIONS CONTAINED IN THIS USER'S MANUAL.

► THE CHEMICALS AND CONDITIONS THAT THE GARMENT IS EXPECTED TO PROTECT AGAINST HAVE BEEN EVALUATED AND DETERMINED TO BE APPROPRIATE FOR THE GARMENT BY THE APPROPRIATE SAFETY OFFICER, THE AREA SUPERVISOR, THE USER AND ANY OTHER APPLICABLE PERSONNEL.

USE THIS PIP GARMENT IN ACCORDANCE WITH **NFPA 1500, *STANDARD ON FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAMS*** AND **TITLE 29 CODE OF U.S. FEDERAL REGULATIONS PART 1910.132.** THE AUTHORITY HAVING JURISDICTION (AHJ) COMPLIES WITH THE REQUIREMENTS OF NFPA 1891 FOR THE SELECTION, CARE, AND MAINTENANCE OF PROTECTIVE ENSEMBLES AND ELEMENTS. ADDITIONALLY, ALL APPLICABLE SAFETY PROCEDURES SUCH AS OSHA REQUIREMENTS, REGIONAL AND LOCAL SAFETY REQUIREMENTS, SAFE WORKING PRACTICES, AND GOOD JUDGMENT, MUST BE ADHERED TO WHEN USING THIS PIP GARMENT.

FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.

Compliance / Warranty

This PIP garment meets the basic requirements of ***NFPA 1992 Standard for Protective Ensembles for Hazardous Materials and CBRN Operations, Most Current Edition.***

Additionally, this garment is deemed heat and flame resistant and conforms to the ***ASTM F2302-22 Standard Performance Specification for Labelling Protective Clothing as Heat and Flame Resistant.*** This garment has not been tested to determine its conformance to the optional flash fire component of the NFPA 1990 standard. This garment has been independently tested for compliance to ***ASTM F1506 Standard Performance Specification for Flame Resistant and Electric Arc Rated Protective Clothing worn by Workers Exposed to Flame and Electric Arcs, and ASTM F2733 Standard Specification for Flame-Resistant Rainwear for Protection Against Flame Hazards.***

For users within the United States, also refer to ***29 CFR 1910.132 Personal Equipment General Requirements for Compliance.***

For users outside of North America, refer to National or Other Applicable Personal Equipment Regulations.

The Multi-Haz GORE-TEX® PYRAD® Fabric used in this garment is warranted to meet Gore's performance specifications at the time of shipment.

Please refer to the PIP warranty information laid out in the PIP Printed Price List for further information.

No products can provide absolute protection, even when new, and their protective performance will decline with wear, tear, abrasion, and other damage associated with use.

Conditions of use are outside of our control. PIP makes no guarantee of how the product will perform in actual use.

Applications

The primary function of a splash suit is to prevent incidental skin contact with liquid chemicals. Because Multi Hazard GORE-TEX® PYRAD® Fabric is vapor-permeable, it is not suitable for protection against hazardous vapors, carcinogens, or other health-threatening substances.

In addition to chemical splash protection, these garments can be worn for Flame Resistant, Arc Rated protection, and as durably waterproof, windproof, breathable rainwear and weather protection. Textile breathability and resulting superior comfort make these garments ideal for applications requiring extended use of chemical splash protective clothing.

Specific Chemical Applications

These garments may be used to protect against the chemical battery defined in **NFPA 1990**. Dimethylformamide (>95% w/w), Nitrobenzene (>95% w/w), Sodium hydroxide (50% w/w), Sulphuric acid (93.1% w/w), Butyl acetate (>95% w/w), Sodium hypochlorite (10% w/w), Isopropyl alcohol (>91% w/w), Methyl isobutyl ketone (>95% w/w), Fuel H "surrogate gasoline" (42.5% toluene, 42.5% isooctane and 15% denatured ethanol v/v) and Tetrachloroethylene (>95% w/w).

In addition, these garments may be suitable for use with the chemicals and thermal hazards documented within this ***Chemical Splash Protection User Manual and Technical Data,*** as well as the ***MULTI-HAZ GORE-TEX® PYRAD® Fabrics Chemical Penetration Data*** **(Most Current Edition)**. Please contact PIP to determine if these garments are suitable for use with specific chemicals beyond those named above or cited in the aforementioned technical data and application guide.

Penetration testing is performed in accordance with the procedures in ***ASTM F903 Standard Test Method for Resistance of Protective Clothing Materials to Penetration by Liquids, Procedure C*** and is reported as passing or failing the test. These garments are intended for protection against penetration of selected chemicals, **not protection against permeation of vapours.** Never use liquid splash protective clothing in vapour exposure situations, even if the garment material offers acceptable resistance to chemical permeation, because these garments lack overall vapour-tight integrity. These garments are particularly suited for protection against strong corrosives, acids and bases, and low vapour pressure liquids such as heat transfer fluids.

Warnings

PIP garments made from Multi-Haz GORE-TEX® PYRAD® Fabric provides protection only from certain designated chemicals under normal operation, maintenance or escape. **The PIP garment does not provide protection for all chemicals** or conditions such as those involving continuous exposure. Consult your employer and / or PIP for specific chemicals and uses. This garment must be used in industrial settings by personnel trained in chemical exposures. This garment should only be worn in conditions that have been specifically identified as appropriate by personnel trained in the relevant hazard. It is the user's responsibility to determine the suitability and fitness for use. Consult a trained professional in industrial safety and hygiene when determining fitness for use.

WARNING:

DO NOT USE THESE GARMENTS FOR PROTECTION AGAINST ANY UNTESTED, UNKNOWN OR "FAILED" LIQUID CHEMICAL CHALLENGES.

DO NOT USE THESE GARMENTS WITHOUT REVIEWING THE PENETRATION DATA SUPPLIED DIRECTLY BY W.L. GORE AND ASSOCIATES, INC.

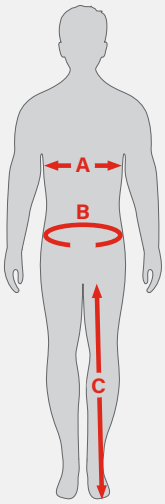
DO NOT USE THESE GARMENTS IN CONDITIONS OF DELUGE OR CONTINUOUS EXPOSURE.

DO NOT USE THESE GARMENTS FOR PROTECTION AGAINST HAZARDOUS CHEMICAL VAPOURS OR VAPOURS PRODUCED BY LIQUIDS.

FAILURE TO READ, UNDERSTAND AND FOLLOW ALL OF THE WARNINGS AND INSTRUCTIONS CONTAINED IN THIS USER'S MANUAL COULD RESULT IN SERIOUS INJURY OR DEATH.

Preparation for Use

Chart for Sizing (Body Dimensions)



It is important for the wearer to select the appropriate size of PIP garment. These garments are oversized to fit over work clothing. A quick sizing reference is listed below. Finished garment dimensions are shown in the Dimensional Chart contained in the Technical Data Section (Pages 14-15).

How to Measure:

CHEST (A): Standing naturally, measure around the fullest part of the chest and shoulder, under the arms with your arms at resting position.

WAIST (B): Measure over undergarments at the natural waistline (usually approx. 0.4in below the navel).

INSEAM (C): Measure from crotch to floor, with shoes.

	S	M	L	XL	2XL	3XL	4XL	5XL
A	33-36	37-40	41-44	45-48	49-52	53-56	61-64	64-66
B	27-30	31-34	35-38	39-42	43-46	47-50	51-54	55-58
C	Short - 29-29.5 Regular - 30-30.5 Tall - 31-31.5							

Measurements are in inches. *This chart should be used as a measuring guide only. Garments will vary according to style and fit of the garment. Bib overall shoulder straps should be adjusted for proper fit as should size adjusting tabs at ankle and wrist.*

Don / Doff Procedures

For effective protection, each PIP garment must be properly worn and fully closed prior to entering the work area. Jackets should be used in conjunction with bib overalls. When selecting the jacket and overall combination, the jacket must overlap the top of the bib overall by at least 15cm to ensure the maximum protection. Each jacket or coverall has a similar closing system consisting of a zipper protected by two external storm flaps. When donning the garment, securely tuck the first outer flap over the zipper and against the second flap so that the fabric butts up against the second flap and folds upwards and away from the body. To complete the closure, secure the second outer flap over the first outer flap from the top to the bottom of the placket including under the chin.

CAUTION:

These garments are certified for Chemical Splash Protection only in the fully closed position.

All zippers should work smoothly and all fasteners should hold tightly prior to use. If the zipper or fasteners do not work properly, the garment should not be used and should be appropriately repaired and inspected prior to reissue.

When removing these garments after use, care should be taken by the wearer to avoid contamination by chemicals that the garment may have been in contact with during use. Dirty or soiled garments should be laundered and inspected prior to reuse. The user is responsible for determining if a suit may have been contaminated during use, and for following established procedures for handling and treating contaminated garments.

Multi-Haz garments worn in areas with fire or thermal hazards should be worn over undergarments made of flame-resistant or non-melting fabrics. Undergarments should be completely covered and protected by the PIP Multi-Haz Protective garments.

Garments may be marked on the liner with a permanent marker to identify the garment to the user. Do not write on any of labels visible on the liner of the garment.

Interface Issues

Gloves and boots should interface securely with the sleeves and pant legs. Tape should not be used as a means of creating interfaces between ensemble elements.

Storage / Self Life

This PIP garment should be stored clean and dry in a controlled temperature range between 5°C to 40°C out of direct sunlight. The garment can be carefully folded, hung on a hanger, or hung on the hanger loop. **Do not hang the suit on a hook without using the hanger loop.** Storage life for ensembles and ensemble elements made with Multi Hazard GORE-TEX® PYRAD® Fabric and GORE-SEAM® tape is 10 years.

Inspection and Maintenance

Frequency and details

Visually inspect fully the PIP garment prior to each use. Exposure to various chemicals can degrade the fabric in the garments. If the user finds any defects such as holes, rips or tears, the garment should be properly repaired before being put back into service. Inspections conducted should be noted in the appropriate section of the garment logbook.

Maintenance Procedure

Repairs to these Multi-Hazard garments must be made using the appropriate Multi-Hazard GORE-TEX® PYRAD® Fabric, Industrial Grade GORE-SEAM® tape, and GORE® TENARA® sewing thread. Using incompatible materials to conduct the repair will compromise the protective performance of these garments. Garments must be repaired so that complete waterproofness and liquid chemical protective performance is restored.

Remove the garment from service if it cannot be properly repaired to its original condition.

Repairs and maintenance activities should be recorded in the appropriate section of the garment logbook.

CAUTION:

Garments must be decontaminated and washed prior to being repaired.

Decontamination, Laundering and Care

The user must determine appropriate decontamination procedures for the specific chemical(s) to which the garment has been exposed. No reliable non-destructive methods exist to determine the level of contamination of exposed garments. Therefore, the user may not know if the decontamination procedure has successfully removed the chemicals. It is the responsibility of the user to determine whether the garment has been successfully decontaminated. If in doubt, the garment should be retired from service. Decontamination activities should be recorded in the appropriate section of the garment logbook.

This garment should be laundered after decontamination has been performed. This garment should be machine laundered in cold water with common low suds detergent (such as Tide®). Do not use fabric softener or chlorine bleach. Wash separate from other fabrics.

Fasten all closures and empty all pockets before laundering. If your garment becomes stained, the use of pre-wash treatment is recommended by following the instructions on the product label. Launder on delicate or synthetic setting with cool water on the highest water level. Tumble dry, low to medium heat, or drip dry (tumble drying can help restore the water droplet effect on the shell of the garment). Do not line dry in direct sunlight. Do not dry clean. Do not wear items that are not thoroughly cleaned and dried. If the garment needs to be cleaned because of exposure to a biological contaminant such as bodily fluids, please follow regular laundering procedures.

CAUTION:

These wash instructions do not constitute a decontamination procedure.

Retirement / Disposal

These PIP garments will age with use. The usable service life of the garment will depend upon the chemicals used, the concentrations of these chemicals, the type of work environment, the frequency of use, the maintenance program and a number of other factors. It is the responsibility of the employer of the user to determine when the garment should be taken out of service. The garment logbook should be updated when the garment is retired from service. The garment itself should be decontaminated and then disposed of with the regular waste stream.

Logbooks

Logbooks detailing usage and inspection, maintenance, exposure, repair and decontamination activity should be maintained for each garment.This information can be recorded manually in the logbook included at the end of this User's Manual or electronically using inventory control software or other similar systems. A complete garment history is recorded with the following information:

1. When the garment was shipped / issued.
2. The user the garment was issued to.
3. When the garment was returned.
4. When quality assurance tests, repairs, inspections, decontaminations and other maintenance activities were performed.
5. Who performed the maintenance and inspection activity?
6. The number of times the garment was processed.

Quality standards are preserved through consistent inspection, testing and maintenance, and provides information to keep garments in use throughout their useful service life.

Each PIP garment has a unique barcode identifier label which should be recorded on the back of the attached logbook upon receipt.

Technical Data

Manufacturer:

Lac-Mac Limited
Bldg 2 - 847 Highbury Ave N
London, Ontario
N5Y 5B8
1.888.452.2622

Materials, Components and Technology

Materials and Components

Fabric: 3-layer flame resistant Multi Hazard GORE-TEX® PYRAD® Fabric, 100% polyester face fabric, bicomponent ePTFE membrane, 96% aramid 4% carbon backer fabric

Thread: GORE® TENARA® Sewing Thread

Findings: Acetal zipper, die cast zinc pull and slider, polyester zipper tape, 100% Polyester hook and loop

Critical Seams: Sealed with industrial grade GORE-SEAM® tape.

Technology

Membrane: The GORE-TEX® membrane is an enhanced bi-component membrane comprised of an expanded PTFE (polytetrafluoroethylene, for example Teflon®) matrix having a continuous hydrophilic (i.e., water-loving) and oleophobic (i.e., oil-hating) coating that is impregnated into the matrix.

Seams: Critical seams are sealed with GORE-SEAM® tape for durable waterproofness, even after extensive laundering and wet flexing.

Water Repellency: The outer shell fabric is treated with a water-repellent finish so that water and other liquids bead up on the surface. This repellency minimizes staining from certain liquids and increases the service life of the garment.

High-Visibility: The fabric meets requirements of CSA Z96 and ANSI/ISEA 107 as high-visibility background material (where high-visibility is applicable).

Reflective Markings: 3M Scotchlite™ Reflective Tape, Industrial Wash and Flame Resistant Transfer Film. Meets the requirements for CSA Z96 and ANSI / ISEA 107 (used in conjunction with high-visibility fabrics when applicable).

NFPA 1990 (NFPA 1992-Specific) Descriptions and Physical Properties

	Product
Name:	**PIP** garments made from Multi-Haz GORE-TEX® PYRAD® Fabric
Model No.'s:	706ZA 240 series Bib Overall 707ZA 240 series Jacket
Compliance:	This Liquid Splash Protective garment meets the basic requirements of NFPA 1990 (NFPA 1992-Specific) Standard for Protective Ensembles for Hazardous Materials and CBRN Operations, Most Recent Edition. Additionally, this garment is deemed heat and flame resistant and conforms to the ASTM F2302-22 Standard Performance Specification for Labelling Protective Clothing as Heat and Flame Resistant.
EPA Design Level:	Level B/C
Integrity:	Protects against penetration of liquids due to chemical splash. **This garment does not** provide protection from chemical vapours.
Available Sizes:	Small – 3X-Large Other custom sizes available upon request.

Garment Material		
Chemical Protective Material:	3-layer flame resistant Multi Hazard GORE-TEX® PYRAD® Fabric, 100% polyester face fabric, bicomponent ePTFE membrane, 96% aramid 4% carbon backer fabric	
Thickness:	25 mil	
Weight:	8.5 oz/yd^2	
Property:	**Requirement**	**Measurement**
Breathability **Total Heat Loss (Method C of ASTM F1868):** **Evaporative Resistance (Method B of ASTM F1868):**	Total heat loss ≥ 200 W/m^2 (if breathability is claimed) Evaporative resistance ≤ 30 Pa m^2/W (if breathability is claimed)	438 W/m^2 17.59 Pa m^2/W
Burst Strength (ASTM D751):	≥ 135 N	1245 N
Puncture / Tear Resistance (ASTM D2582):	≥ 25 N	68 N (warp) 69 N (fill)
Cold Temp Bending @ - 25C (ASTM D747):	≤ 0.057 Nm	0.001 Nm
Chemical Penetration Resistance after Flexing and Abrasion (ASTM F903):	No penetration for at least one hour of exposure for each of the chemicals listed in the NFPA 1992, and each additional chemical that has been certified	Pass/Fail

NFPA 1990 (NFPA 1992-Specific) Descriptions and Physical Properties (Cont).

Garment (Cont)	
Butyl acetate (>95% w/w) CAS No. 123-86-4	Pass
Dimethylformamide (>95% w/w) CAS No. 68-12-2	Pass
Sodium hypochlorite (10%)	Pass
Nitrobenzene (>95% w/w) CAS No. 98-95-3	Pass
Sodium hydroxide (50% w/w) CAS No. 1310-73-2	Pass
Sulphuric acid (93.1% w/w) CAS No. 7664-93-9	Pass
Tetrachloroethylene (>95% w/w) CAS No. 127-18-4	Pass
Isopropyl alcohol (>91% w/w) CAS No. 67-63-0	Pass
Methyl isobutyl ketone (>95% w/w) CAS No. 108-10-1	Pass
Fuel H "surrogate gasoline" (42.5% toluene, 42.5% isooctane and 15% denatured ethanol v/v)	Pass
MULTI-HAZ GORE-TEX® PYRAD® Fabrics Chemical Penetration Data (Most Current Edition)	

Property:	Requirement	Measurement
Liquidtight Integrity (ASTM F1359/F1359M with Modifications):	No liquid penetration after 20 minutes	Pass
Overall Function and Integrity (ASTM F1154):	No liquid penetration after 20 mins Garment closures remain engaged Protective flap stays remain closed	Pass

Garment Seams		
Type:	Single needle topstitch; seam type #301 and stitch type Lsbk-2 per ASTM D6193	
Property:	**Requirement**	**Measurement**
Chemical Penetration Resistance	No penetration for at least one hour for the subset of chemicals listed in NFPA 1992, and each additional chemical that has been certified	Pass
Resistance Test (ASTM F903):		
Seam Strength (ASTM D751):		172 N/25mm
Sulphuric acid (93.1% w/w)		Pass
Fuel H "surrogate gasoline" (42.5% toluene, 42.5% isooctane and 15% denatured ethanol v/v)		Pass
Methyl isobutyl ketone (>95%)		Pass
MULTI-HAZ GORE-TEX® PYRAD® Fabrics Chemical Penetration Data (Most Current Edition)		

NFPA 1990 (NFPA 1992-Specific) Descriptions and Physical Properties (Cont).

Primary Closure		
Type:	Acetal zipper, die cast zinc pull and slider, polyester zipper tape polyester zipper tape	
Length:	Varies, 8"- 30"	
Orientation:	Vertical, centre front of garment	
Cover:	Two external flaps, secured with hook and loop	
Property:	**Requirement**	**Measurement**
Closure Strength ASTM D751:	≥ 34 N/25mm	70 N/25mm (Primary Supplier) 51 N/25mm (Secondary Supplier)

Additional Closure	
Type:	100% polyester hook and loop
Orientation:	Vertical, centre front of garment attached to external zipper flaps and at cuffs of arm and leg

Primary Material Flame Resistance*

Test Parameter	Warp Direction	Fill Direction
Afterflame: (in seconds)	1.0	1.0
Char Length: (in mm)	62.0	59.0
Burn Behaviour: (observation)	No melting or dripping	No melting or dripping

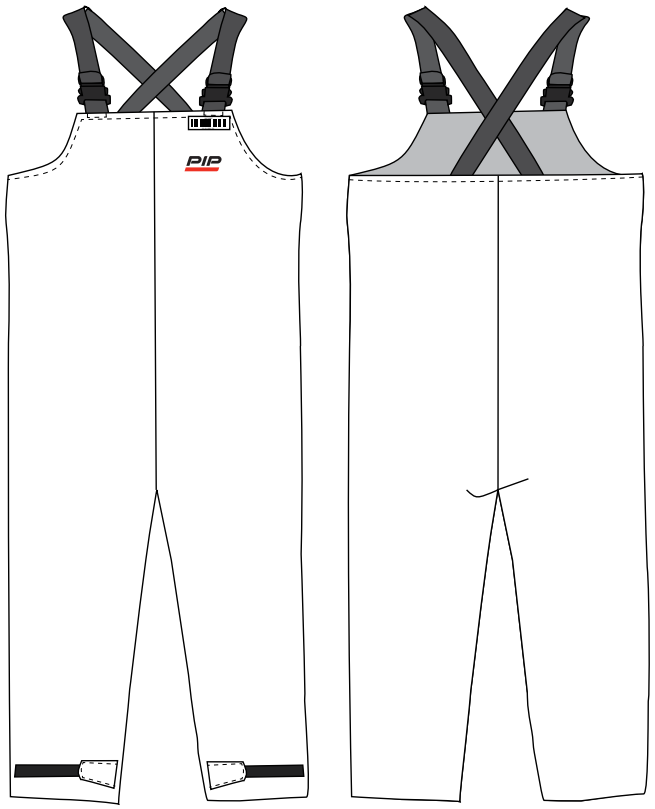
**This test information is according to ASTM D6413 specific to materials only; this data is not part of the of the garment flash fire testing option in NFPA 1992.*

Refer to garment for additional standards product has been tested to for compliance.

Dimensional Specs

Model: **706ZA 240**	Description: **Bib Overall**

9100-530GMH



Size						
(in inches)	**S**	**M**	**L**	**XL**	**2XL**	**3XL**
Waist circ.	42	46	50	54	58	62
Inseam length	28.25	28.375	28.5	28.625	28.75	28.875
Outseam length	44	44.5	45	45.5	46	46.5
Leg opening	8.5	9.5	10.5	11.5	12.5	13.5

Dimensional Specs

Model: **707ZA 240**	Description: **Jacket**

9100-524GMH
9100-524GMHDS

	Size					
(in inches)	**S**	**M**	**L**	**XL**	**2XL**	**3XL**
Centre back length	29	29	29	29	29	29
Chest circ.	47	51	55	59	63	67
Sweep circ.	47	51	55	59	63	67
Sleeve length	32.5	33	33.5	34	34.5	35
Sleeve opening	12	12.5	13	13.5	14	14.5

Logbooks

INSPECTION LOG

Garment Style and ID# _____

Date Garment Entered Service _____

Date	Inspection Findings	Inspector

USE / WEAR LOG

Garment Style and ID# _____

Date	User's Name	Length of Use

EXPOSURE LOG

Garment Style and ID# _____

Date	Recorded by	Chemical / Concentration / Exposure Time

REPAIR LOG

Garment Style and ID# _____

Date	Repaired by	Repair Details

DECONTAMINATION LOG

Garment Style and ID# _____

Date	Treated by	Decontamination Type

Notes

Notes

GARMENT I.D. NUMBER

PIP GLOBAL SAFETY

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GORE-TEX® PRODUCTS

PYRAD®
PRODUCT TECHNOLOGY