

# User Information for Zytron® 300 and 500 Liquid Splash Protective Garment

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Certified Models NFPA 1992 - 2018 Edition  
Z3H426 92 • Z3H427 92 • Z3H428 92 • Z3H432 92  
Z3H437 92 • Z3H576 92 • Z3H577 92  
Z3H579 92 • Z5H577 92 • Z3H452 92  
Z3H452 92 5B • Z3H456 92 • Z3H456 92 5B



*Know What You're Getting Into.®*

**THIS INFORMATION PACKET MAY NOT  
BE REMOVED EXCEPT BY THE END USER**

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User Information for  
Zytron 300 and 500 Liquid Splash Protective Garments

Certified Models  
NFPA 1992-2012 Edition

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## SAFETY CONSIDERATIONS

Be sure to read, understand and follow the information in this manual and all applicable federal, state and local occupational safety and health statutes. For users outside the United States, please consult national or other applicable personal protective equipment regulations. Proper use, consistent with NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, and 29 CFR 1910.132 is required.

## SAFETY SYMBOLS USED IN THIS MANUAL

While reading this manual, you will come across a number of warnings concerning some of the risks and dangers you may face while using the device. These warnings contain “signal” words that will alert you to the degree of hazard you may encounter. These words, and the hazards they describe, are as follows:



### WARNING

*Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.*



### CAUTION

*Indicates a potentially hazardous situation which, if not avoided, could result in physical injury or damage to the product. It may also be used to alert against unsafe practices.*



## NOTICE

*Indicates additional information on how to use the device.*

## WARNINGS AND LIMITATIONS



## CAUTION

**This garment must be used in combination with additional PPE, which include the following:**

*Separate full-face respiratory protection such as a self-contained breathing apparatus (SCBA), an external breathing air supply (airline system with garment pass-through) with escape bottle or a re-breather system. NFPA compliant garments must use NIOSH CBRN approved SCBA.*

*Separate foot and lower leg protection such as chemical protective boots.*

## Additional Equipment

Additional personal protective equipment that might also be considered includes:

- ▶ Head protection.
- ▶ Hearing protection may be required due to high levels of external noise or high noise levels generated by supplied air systems.
- ▶ Other protective equipment that may be warranted based on the situation.



### CAUTION

#### Wearers Must be Physically Fit

*Garments should only be worn by persons who are in good physical condition. Working in a totally encapsulating garment is strenuous. In an emergency situation or hot environment, the wearer may experience heat stress. Persons who show symptoms of heat stress such as nausea, dizziness, or excessive heat build-up should leave the work area immediately and doff the garment as quickly as possible. Persons in doubt about their physical condition should check with a physician before wearing these garments.*

*If any of the following symptoms develop during use of this garment, immediately leave the hot zone, undergo field decontamination (if exposed), and doff the garment;*

- *Fever*
- *Difficulty breathing*
- *Nausea*
- *Excessive tiredness*
- *Dizziness*
- *Numbness*
- *Any unusual odor or taste*
- *Eye or skin irritation*
- *Narrowing or dimming of vision*
- *Claustrophobia*
- *Loss of balance or orientation*

### **Manage and Prevent Heat Stress**

*This garment interferes with the natural regulation of body temperature. This can lead to a rise in core body temperature and heat stress. The wearer should be aware of the symptoms and treatment of heat stress. The wearer can take several steps to limit and/or prevent heat stress; such as the use of a cooling system, and working in accordance with a conservative work/rest schedule. The maximum time the garment can be worn depends on such variables as the air supply, ambient condition, climate inside the garment, physical and psychological condition of the wearer, work rate and work load. The TLV™ pocket guide from the American Conference of Governmental Industrial Hygienists (ACGIH, Cincinnati) provides corrected heat stress limits for totally encapsulating garments. Similar information is available on the federal OSHA website ([www.OSHA.gov](http://www.OSHA.gov)).*

## ***Chemical Permeation Data***

Before using a garment in a chemical situation, consult the chemical permeation data appropriate to the garment material. This information is to be used as a guide only. The permeation performance of any material depends on a number of factors; chemical concentration, temperature, time and amount of exposure, etc. Due to the large number of variables, it is impossible for all garment materials to be tested against all chemicals, all combinations or mixtures, and all temperatures at which the chemical might be encountered.

Chemical permeation tests are performed under laboratory conditions -- not actual workplace conditions. They address chemical breakthrough characteristics and do not take into consideration physical performance characteristics that effect barrier such as abrasion, flex fatigue, puncture, tear, oxidative degradation, or degraded performance due to previous contamination.

No single protective material will protect against all chemicals for all situations. The best course of action is to test the primary garment materials against the specific chemical hazard, at the temperature and in the concentrations to be encountered. Kappler, Inc. will provide free swatches of primary garment materials for testing and help arrange to have these tests performed.

## ***Static Electricity***

Under certain conditions, such as cold and dry weather, it is possible for garments to build and discharge static electricity. Discharges are not normally dangerous except in situations where generation of an electrical spark could ignite a flammable atmosphere. When working around

flammable chemicals, steps to eliminate potential static discharges should be used. In these situations, recommended precautionary steps include the use of an over-cover, raising humidity level of the work area, and/or using a commercial anti-static application.

### ***Avoid Continuous Exposure***

This garment should not be immersed in chemicals. This garment should not be exposed to continuous hazardous liquid chemical splash or deluge. Do not wade through liquid pools of hazardous chemicals if not necessary. Direct chemical exposure to the garment should be as limited as possible. If exposed to direct splash or deluge of hazardous chemicals, leave the area immediately and decontaminate.

### **Sock Boots**

The sock boots attached to this garment are designed to be worn inside outer chemical boots. These sock boots do not have sufficient durability or slip resistance to be worn as outer boots.

### **Provide Hearing Protection**

If noise levels inside the garment exceed regulatory noise levels, hearing protection must be provided. Use hearing protection recommended by a safety professional and which does not interfere with the operation or use of the garment.

## INSPECTION OF GARMENT



### CAUTION

The garment should undergo a full visual inspection at the following times:

- *Upon receipt to ensure no damage has occurred during shipment.*
- *After a garment is worn and before the garment is made available for reuse.*
- *Annually.*

*However, most performance properties of a liquid-splash clothing item or ensemble cannot be tested by the user in the field.*

## FULL VISUAL INSPECTION

To perform a full visual inspection:

- ▶ Choose a clean, dry area that is free of potential sources of snags, tears and punctures.
- ▶ Mark suspected defects with colored adhesive tape.
- ▶ Check the visor for scratches or flaws.
- ▶ Visually inspect seams for tape lift or delamination.
- ▶ Visually inspect for surface damage or discoloration on material, visor, gloves and zipper closure.

- ▶ Check zipper closure for worn or damaged parts.
- ▶ Check function of zipper and zipper fitting. If zipper is difficult to operate, it can be lubricated lightly on the outer and inner components with paraffin (wax). After lubrication, the zipper should be closed and opened a number of times to assure that all excess lubricant has been removed. Garment should be stored with zipper open.

Garments with visible holes, tears, rips, punctures, serious discoloration or abrasions should not be used.

Note any remarks in the inspection log. If the garment is unsuited for use by visual inspection, the garment may be retired and designated for training use after being permanently labeled “For Training Use Only” or disposed of properly.

## RETURNING THE GARMENT

In some instances the garment may be returned for inspection and possible replacement. If a garment fails a visual inspection or pressure test, contact Kappler Inc., to authorize the return. Contaminated garments will not be accepted for repair. Discoloration or odors are evidence of contamination. Garments being returned must be accompanied by the usage log and The Returned Good Authorization Form from Kappler, stating the suit has not been contaminated. *Note: Charges may be incurred. See warranty information pg. 18.*

## Storage

### Storage Life

Kappler Zytron® 300 garments contain materials for which there is no specific storage life data available. Garments may be used as long as they pass the ASTM F1052 pressure test and pass a full visual inspection. It is recommended that garments be labeled, retired and designated to “Training Use Only” if they do not pass the visual inspection and/or pressure test.

### Storage Conditions

Garments should be stored away from direct sunlight, preferably in a cool, dry location that is not subjected to extreme hot or cold conditions. Garments should be stored in their original boxes, in bags or on hangers. Garments should be stored with the zipper open.

## VISOR ANTI-FOG SOLUTION

Kappler offers an Anti-Fog solution especially for use in chemical garment visors. *Refer to part number A00RS.*

## CLOSURE LUBRICANTS

There are no lubricants recommended for the closure system.

## MARKING RECOMMENDATIONS AND RESTRICTIONS

Ensembles may be marked with the Kappler ChemTape® Kit for identification. *Refer to part number 99415.*

## RECOMMENDED UNDERGARMENTS

The wearer should consider wearing inherently flame resistant, woven clothing, with full sleeves, and trousers under this garment.

## SIZING CONSIDERATIONS

The Zytron® 300 garment sizing chart should be used to determine accurate fit. The correct size garment should be worn. *See Appendix B pg. 23.*

## DONNING THE GARMENT (Z3H427 92, Z3H432 92 AND Z3H437 92)

1. Conduct a brief visual inspection of the garment before beginning donning procedure.
  - a. garment should be free of discoloration, or physical damage
  - b. inner gloves should be fully inserted in outer gloves
  - c. inside and outside of exhaust valves should be free of caps and plugs
2. An assistant should help the wearer don the garment.
3. Before donning remove all jewelry and personal items (pens, key rings, badges, pagers, knife cases, etc.) that might damage the garment.

4. Check function of respirator and place near donning location.
5. Visually check size and condition of outer boots and place near the donning location.
6. Open garment zipper closure completely.
7. Read garment size label to assure proper fit.
8. Remove shoes. The sock boots on this garment are worn inside outer chemical boots. These sock boots do not have adequate durability or slip resistance to be worn over footwear as an outer covering.
9. While sitting, insert feet into garment legs and down into sock boots. Stretch legs out to maximum extension while pulling garment up around hips.
10. Pull boot splash flaps up and don outer boots. Fold splash flaps down over boots as far as possible.
11. Place one hand in the sleeve and pull garment sleeve to shoulder. Make sure hand is securely inside the glove.
12. Place other hand in the opposite sleeve and glove as before.
13. Don respirator face piece and tighten head straps to secure.
14. Pull hood over the head and secure, ensure proper fit and seal.
15. Slowly close the zipper. After checking that the zipper is completely closed, the flaps should be closed and sealed over the zipper.

## DOFFING THE GARMENT (Z3H427 92, Z3H432 92 AND Z3H437 92)

1. If the garment has been contaminated or is suspected of being contaminated, the wearer should continue to use his respirator until the garment has been doffed and removed.
2. An assistant should help the wearer doff the garment after field decontamination. If the garment has been contaminated, the assistant should wear protective clothing and respiratory equipment.
3. While the wearer stands, the assistant should open the storm flap and zipper closure, and then peel the garment down and away from the wearer's shoulders. To prevent inner gloves from inverting, grasp the fingers of both gloves while the other hand is being removed. The assistant should help the wearer remove his arms from the sleeves. External airlines should be disconnected from the garment and from the wearer's respirator, while the wearer switches to his escape bottle.
4. Lower the garment below the hips and sit down. Have the assistant remove the boots, pull the garment off the legs and remove the garment to a remote location.
5. Once the garment has been removed, the wearer can doff the respiratory face piece.

## DONNING THE GARMENT (Z3H428 92 AND Z3H426 92)

1. Conduct a brief visual inspection of the garment before beginning donning procedure.
  - a. garment should be free of discoloration, or physical damage



- b. inner gloves should be fully inserted in outer gloves
  - c. inside and outside of exhaust valves should be free of caps and plugs
2. An assistant should help the wearer don the garment.
3. Before donning remove all jewelry and personal items (pens, key rings, badges, pagers, knife cases, etc.) that might damage the garment.
4. Check function of respirator and place near the donning location.
5. Visually check size and condition of outer boots and place near the donning location.
6. Open garment zipper closure completely.
7. Read garment size label to assure proper fit.
8. Remove shoes.
9. While sitting, insert feet into garment legs and down into sock boots. Stretch legs out to maximum extension while pulling garment up around hips.
10. Put on boot and pull elastic ankle openings over the boots. Place one hand in the sleeve and pull garment sleeve to shoulder.
11. Place other hand in the opposite sleeve. Put on gloves and attach to garment sleeves with ChemTape®.
12. Slowly close the zipper closure. After checking that the closure is completely closed, the storm flaps should be closed and sealed over the zipper closure. Do this by removing the double sided

tape release paper pressing to top storm flap to bottom storm flap. Fold the top of the storm flaps inside the garment at chin.

13. Put on respirator face piece and pull garment hood back over the top of the face piece.

## DOFFING THE GARMENT (Z3H428 92 AND Z3H326 92))

1. If the garment has been contaminated or is suspected of being contaminated, the wearer should continue to use his respirator until the garment has been doffed and removed.
2. An assistant should help the wearer doff the garment after field decontamination. If the garment has been contaminated, the assistant should wear protective clothing and respiratory equipment.
3. While the wearer stands, the assistant should open the storm flap and zipper closure, and then peel the garment down and away from the wearer's shoulders. To prevent inner gloves from inverting, grasp the fingers of both gloves while the other hand is being removed. The assistant should help the wearer remove his arms from the sleeves. External airlines should be disconnected from the garment and from the wearer's respirator, while the wearer switches to his escape bottle.
4. Lower the garment below the hips and sit down. Have the assistant remove the boots, pull the garment off the legs and remove the garment to a remote location.
5. Once the garment has been removed, the wearer can doff the respiratory face piece.

## DONNING THE GARMENT (Z3H576 92, Z3H577 92 AND Z5H577 92)

1. Conduct a brief visual inspection of the garment before beginning donning procedure.
  - a. garment should be free of discoloration, or physical damage
  - b. inner gloves should be fully inserted in outer gloves
  - c. inside and outside of exhaust valves should be free of caps and plugs
2. An assistant should help the wearer don the garment..
3. Before donning remove all jewelry and personal items (pens, key rings, badges, pagers, knife cases, etc.) that might damage the garment.
4. Check function of respirator and place near the donning location.
5. Visually check size and condition of outer boots and place near the donning location.
6. Open garment zipper closure completely.
7. Read garment size label to assure proper fit.
8. Apply anti-fog to inside to visor.
9. Remove shoes. The sock boots on this garment are worn inside outer chemicals boots. These sock boots do not have adequate durability or slip resistance to be worn over footwear as an outer covering.

10. While sitting, insert feet into garment legs and down into sock boots. Stretch legs out to maximum extension while pulling garment up around hips.
11. Pull boot splash flaps up and don outer boots. Fold splash flaps down over boots as far as possible.
12. While standing, with garment at waist level, don SCBA respirator harness and back piece.
13. Don respirator face piece and check its function. To conserve SCBA air supply, disconnect the air supply from the face piece, if possible, as long as the wearer retains access to fresh air. In the case of an airline breathing system, complete all connections and adjustments.
14. Place one hand in the sleeve and pull garment sleeve to shoulder. Make sure hand is securely inside the glove.
15. Place other in the opposite sleeve and glove as before.
16. Pull the garment over respirator backpack towards head, making sure nothing will constrict or hamper air flow for your breathing apparatus or airline.
17. Attach the SCBA regulator air supply to the face piece, activate the air supply and ensure proper function of air supply before closing the zipper. If using an airline breathing system, ensure breathable air is now being supplied to the suit.
18. Have your assistant slowly close the gas-tight zipper closure. After checking that the zipper is completely closed, the storm flaps should be closed and sealed over the zipper closure.

## DOFFING THE GARMENT (Z3H576 92, Z3H577 92 AND Z5H577 92)

1. If the garment has been contaminated or is suspected of being contaminated, the wearer should continue to use his respirator until the garment has been doffed and removed.
2. An assistant should help the wearer doff the garment after field decontamination. If the garment has been contaminated, the assistant should wear protective clothing and respiratory equipment.
3. While the wearer stands, the assistant should open the storm flap and zipper closure, and then peel the garment down and away from the wearer's shoulders. To prevent inner gloves from inverting, grasp the fingers of both gloves while the other hand is being removed. The assistant should help the wearer remove his arms from the sleeves.

External airlines should be disconnected from the garment and from the wearer's respirator, while the wearer switches to his escape bottle.

4. Lower the garment below the hips and sit down. Have the assistant remove the boots, pull the garment off the legs and remove the garment to a remote location.
5. Once the garment has been removed, the wearer can doff the respiratory face piece and harness.

## DONNING THE GARMENT Z3H579 92

1. Conduct a brief visual inspection of the garment before beginning donning procedure.
  - a. garment should be free of discoloration, or physical damage
  - b. inner gloves should be fully inserted in outer gloves
  - c. inside and outside of exhaust valves should be free of caps and plugs
2. An assistant should help the wearer don the garment.
3. Before donning remove all jewelry and personal items (pens, key rings, badges, pagers, knife cases, etc.) that might damage the garment.
4. Check function of respirator and place near the donning location.
5. Visually check size and condition of outer boots and place near the donning location.
6. Open garment zipper closure completely.
7. Read garment size label to assure proper fit.
8. Apply anti-fog to inside to visor.
9. Remove shoes. The sock boots on this garment are worn inside outer chemicals boots. These sock boots do not have adequate durability or slip resistance to be worn over footwear as an outer covering.

10. While sitting, insert feet into garment legs and down into sock boots. Stretch legs out to maximum extension while pulling garment up around hips.
11. Pull boot splash flaps up and don outer boots. Fold splash flaps down over boots as far as possible.
12. While standing, with garment at waist level, don SCBA respirator harness and back piece.
13. Don respirator face piece and check its function. To conserve SCBA air supply, disconnect the air supply from the face piece, if possible, as long as the wearer retains access to fresh air. In the case of an airline breathing system, complete all connections and adjustments.
14. Place one hand in the sleeve and pull garment sleeve to shoulder.
15. Place other in the opposite sleeve and repeat.
16. Put on gloves and attach to garment sleeves with ChemTape®.
17. Pull the garment over respirator backpack towards head, making sure nothing will constrict or hamper air flow for your breathing apparatus or airline.
18. Attach the SCBA regulator air supply to the face piece, activate the air supply and ensure proper function of air supply before closing the zipper. If using an airline breathing system, ensure breathable air is now being supplied to the suit.
19. Have your assistant slowly close the gas-tight zipper closure. After checking that the zipper is completely closed, the storm flaps should be closed and sealed over the zipper closure.

## DOFFING THE GARMENT Z3H579 92

1. If the garment has been contaminated or is suspected of being contaminated, the wearer should continue to use his respirator until the garment has been doffed and removed.
2. An assistant should help the wearer doff the garment after field decontamination. If the garment has been contaminated, the assistant should wear protective clothing and respiratory equipment.
3. While the wearer stands, the assistant should open the storm flap and zipper closure, and then peel the garment down and away from the wearer's shoulders. To prevent inner gloves from inverting, grasp the fingers of both gloves while the other hand is being removed. The assistant should help the wearer remove his arms from the sleeves. External airlines should be disconnected from the garment and from the wearer's respirator, while the wearer switches to his escape bottle.
4. Lower the garment below the hips and sit down. Have the assistant remove the boots, pull the garment off the legs and remove the garment to a remote location.
5. Once the garment has been removed, the wearer can doff the respiratory face piece and harness.

## INTERFACE ISSUES

The user should ensure respirators, boots and gloves, as applicable, are properly interfaced. Do not use tape to ensure a proper interface between ensemble elements.

## DECONTAMINATION AND CLEANING OF CHEMICAL AND BIOLOGICAL CONTAMINATION

### *Decontamination Solutions*

The only decontamination solutions to use with this garment are water and mild, household dishwashing liquid. Do not use any oxidative, corrosive or reactive decontamination solutions with this garment.

### *Field Decontamination*

The purpose of field decontamination is to allow the wearer to doff the garment without being harmed by contaminants on the garment surface. Garments that have been exposed to or that are suspected to have been exposed to chemical or biological contamination should be field decontaminated before doffing. Additional cleaning, decontamination, a full visual inspection and a pressure test are required before a garment may be reused.

1. Leave the hot zone with adequate air supply for decontamination and removal of the garment. The wearer should continue to wear the respirator until the garment has been completely doffed and removed from the area.
2. If the garment has been exposed or is suspected to have been exposed, thoroughly scrub the garment using household dishwashing liquid and soft scrub brushes, followed by a thorough rinsing in water.
3. If possible, the excess rinse water should be removed from the garment by individuals wearing gloves, liquid-splash protective clothing and respiratory protection. At a minimum, the excess rinse water on and near the closure assembly should be removed with a dry cloth to ensure wearer is not exposed to chemical.

## *Decontamination before Reuse*

This garment is designed for multiple use, single exposure. It is priced to make disposal after use economically justified when the effectiveness of decontamination is in question. This garment is not designed for multiple exposures and multiple decontaminations.

It is the responsibility of the safety professional having jurisdiction over usage of the garment to determine whether the garment has been adequately decontaminated and can be safely re-used.

A qualified individual should develop and implement a decontamination procedure for each of the chemicals to which the garment has been exposed. The decontamination procedure should include complete information on the type of contamination, as well as the level of contamination involved.

Contaminated garments should be discarded. Contaminated garments are not suitable for training purposes.

## *Maintenance and Cleaning*

Only water and mild, household dishwashing liquid should be used as decontamination liquids. No reactive or corrosive decontamination solutions should be used with this garment.

Only garments that have been thoroughly cleaned and dried may be considered for use. Water and mild, household dishwashing liquid should be used to clean this garment. This garment may be scrubbed with a soft brush or hand towel, thoroughly rinsed with clean, fresh water and air-dried. Do not use any oxidative, corrosive or reactive decontamination solutions with this garment. Do not dry-clean this garment. Do not use hot air or a tumbling air dryer to dry this garment. Hang the garment in a cool, dry area to ensure proper drying of the garment. A

Kappler HangAir drying system may also be used for drying purposes. Refer to part number A0HUS.

## Retirement Considerations

Retired garments that are not contaminated may be labeled and used



### CAUTION

*It is recommended this garment be retired from service if any of the following criteria are met:*

- *Garment is abraded, cut, torn, or punctured*
- *Garment has received an exposure to a toxic chemical.*

“For Training Use Only”. The labeling should be done with a permanent marker.

## DISPOSAL

This garment may be safely disposed of in a facility capable of handling plastic items containing polyolefin, polyester and vinyl plastics. Severely contaminated garments may need to be treated as and disposed of as hazardous wastes.

## WARRANTY INFORMATION

It is the responsibility of the user to select garments which are appropriate for each intended use and which meet all specified government and industry standards.

Kappler Zytron® 300 and 500 garments are designed for multiple use, single exposure. It is the responsibility of the wearer to inspect garments periodically to ensure that all components, including fabric, valves, visors, gloves, zippers, seams, and interfaces are in good working condition, and provide adequate protection for the operation and chemicals to be encountered. Failure to fully inspect garments may result in serious injury or death to the wearer. Never wear garments that have not been fully inspected and pressure tested prior to use. Any garment which does not pass the visual inspection and/or pressure test should be removed from service immediately.

Kappler warrants for a period of 90 days, after the delivery of a Zytron® 300 or 500 garment, that the garment is free from defects in materials and workmanship when used in accordance with the instructions contained in this care and use manual. No other expressed or implied warranties of fitness for a particular purpose or of merchantability or otherwise is made. Purchaser and all garment users shall promptly notify Kappler of any claim, whether based on contract, negligence, and strict liability or otherwise.

The sole and exclusive remedy of the purchaser and all end users and the limit of liability of Kappler for any and all losses, injuries or damages shall be the refund of the purchase price or the replacement or repair of any product found to be defective within 90 days after the product is delivered. In no event shall Kappler be liable for any special, incidental or consequential damages, whether in contract or in tort, arising out of

any warranties, representations, instructions, or defects from any cause in connection with the Zytron® 300 or 500 garment, or the sale thereof.

Purchaser and all users are responsible for inspection and proper care of this product as described in this care and use manual and are responsible for all loss or damages from use or handling which results from conditions beyond the control of the manufacturer.

Zytron® is a Kappler registered trademark.

## APPENDIX A - TECHNICAL DATA PACKAGE

### *NFPA 1992 Performance Data*

Available on request from Kappler

### *Sizing Information*

Sizes available: XS, SM/MD, LG/XL, 2X/3X, 4X, 5X See attached chart (Appendix B)

## GARMENT MATERIAL AND COMPONENT DESCRIPTIONS

### Garment Material

The primary garment material is Kappler Zytron® 300 chemical barrier fabric. Garment material for Z5H577 is Zytron 500 fabric.

## Visor/Faceshield Material

The visor is a 40 mil pressed/polished PVC. There are no detachable covers or films.

## Glove Material and Assembly (Z3H427 92 and Z3H432 92)

The glove assembly consists of two (2) layers:

- Inner glove: Ansell Barrier - Size 11
- Outer glove: Best Neoprene Size 10 or Guardian Butyl 14mil Size XL These gloves are not field replaceable.

These gloves are unlined and have no surface treatments applied.

## Glove Material and Assembly (Z3H437 92, Z3H576 92, Z3H577 92 and Z5H577 92)

The glove is a single layer glove:

- Best Neoprene Size 10

These gloves have a 100% cotton flock lining, no surface treatments. These gloves are not field replaceable.

## Glove Material and Assembly (Z3H579 92)

No gloves are provided with this garment.

## SOCK BOOT OR BOOTIE MATERIAL

The garment is made with an integrated sock bootie in the primary garment material. The user must wear separate outer chemical safety boots.

## PHYSICAL FOOT PROTECTION

The OnGuard HazMax #87012 or Tingley #82330 boot must be worn over the integrated bootie for compliance to NFPA 1992.

The OnGuard HazMax #87012 is one piece injection molded with anti-slip resistance and steel toe, steel shank and steel midsole. Polyester lining. Men sizes 6-15. Green.

The Tingley Hazproof #82330 is one piece injection molded with anti-slip resistance and steel toe, steel shank and steel midsole. No linings or surface treatments. Men sizes 7-13. Orange.

## ZIPPER/CLOSURE TYPE AND MATERIAL

Z3H427 92, Z3H432 92 and Z3H437 92

The materials of construction for the zipper closure include plastic chain, metal slide and pull, urethane coated polyester cloth tape. The completed closure assembly is located on the front of the garment, oriented from left leg to right side of head, with a 40" length for sizes XS & SMMD and 48" for LG/XL & 2X/3X, 4X & 5X.

## Z3H576 92

The materials of construction for the zipper closure include plastic chain, metal slide and pull, urethane coated polyester cloth tape. The completed closure assembly is located on the back of the garment, oriented vertically, with a 48” length for all sizes.

## Z3H577 92, Z3H579 92, Z5H577 92

The materials of construction for the zipper closure include plastic chain, metal slide and pull, urethane coated polyester cloth tape. The completed closure assembly is located on the front of garment, oriented diagonally, with a 48” length for all sizes.

## Z3H428 92

The materials of construction for the zipper closure include plastic chain, metal slide and pull, urethane coated polyester cloth tape. The completed closure assembly is located on the front center of the garment, oriented vertically from crotch to neck opening, with a 26” length for XS & SM/MD, a 30” length for LG/XL & 2X/3X and a 34” length for 4X & 5X.

The outside of the zipper closure is protected by a double flap system composed of garment material. The zipper closure is fastened by a hook/loop system with the added protection of double side tape (Z3H428 only).

## MATERIAL SEAM TYPES AND COMPOSITION

### Garment Material

The seam is a serge over-lock seam to the outside. The sewing thread is cotton/polyester. The outer tape is composed of a chemical barrier film that is heat-sealed over the seam.

### Garment Material - Glove (Z3H427 92, Z3H432 92, Z3H437 92, Z3H576 92 and Z3H577 92)

The glove assembly is connected to the sleeve by sewing then heat-sealed over the seam.

### Garment Material - Footwear

The footwear is not attached to the garment material. The protective footwear is worn over the integral sock boot.

### Garment Material - Garment Closure

The closure is connected to the garment by sewing then heat-sealed over the seam to the outside of the garment material.

### Garment Material- Visor

The visor is sewn to the outside of the garment material. The edge of the visor is covered with the same barrier tape as the garment seams.

## EXHAUST VALVE TYPE AND MATERIAL

The Exhaust valve type is a Pirelli valve. The valve body is manufactured of impact resistant plastic. The flapper diaphragm is made of Natural rubber. The valves are attached to the garment via a mechanical screw compression seal. The valves are covered with splash resistant flaps made of the primary garment material. There are two valves incorporated into each ensemble. The exhaust valves integrate to the garment with red rubber gaskets.

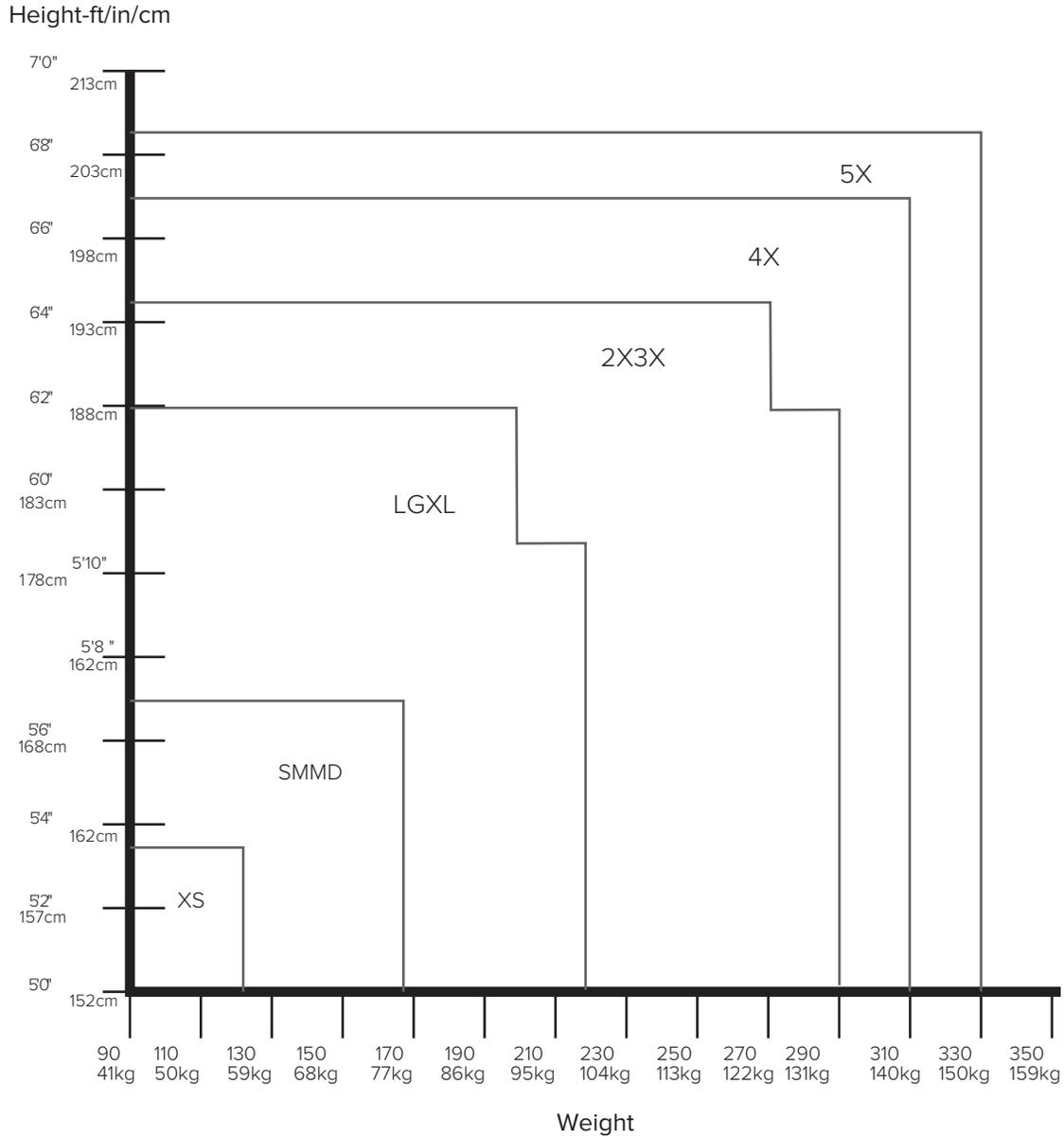
## TYPE AND STYLE OF HEAD PROTECTION ACCOMMODATED WITH THIS GARMENT

The Zytron® 300 or 500 will accommodate Type 1 Class G helmets of ANSI Z89.1.

## ZYTRON® GLOVE SIZING CHART

Glove Size	Hand Circumference (in)	Hand Length (in)	Garment Size Option
Extra Small	6	6-3/4	XS
Small	7	6-3/4	SM/MD
Medium	8	7-3/16	SM/MD
Large	9	7-9/16	LG/XL
X-Large	10	8-1/16	LG/XL
2X-Large	11	8-7/16	2X/3X, 4X, 5X

## APPENDIX B - ZYTRON® SIZING CHART



**Please Note:** This chart is based on individuals wearing S.C.B.A., safety helmet and suggested underclothing (see Recommended Undergarments).

