

# NFPA and Level A Total Encapsulated Suit Manual

## **CAUTION!**

Most performance properties of the vapor protective ensemble or individual elements cannot be tested by the user in the field.

NFPA 1991, Section 3-2.4 1D

## **NOTICE!**

This user information manual is to be removed only by the end user.

NFPA 1991, 2000 Ed. Section 3-2.3



**Lakeland**  
INDUSTRIES, INC

## Table of Contents

Warnings .....	Page 3
Warranty Information .....	Page 4
Level A and NFPA Requirements .....	Page 7

### ***NFPA Instruction Requirements***

Safety and Health Program .....	Page 7
Cleaning Instructions, Marking Recommendations and Restrictions .....	Page 7
Maintenance and Repairs .....	Page 8
Frequency and Details of Inspection .....	Page 8
How to Use Test Equipment and Air Pressure Testing .....	Page 9
Glove Replacement Guides .....	Page 9
Recommended Training and Proper Use .....	Page 10
Recommended Undergarments, Visor Agents and Lubes .....	Page 11
➤2 Donning Procedure .....	Page 11
Safety Considerations and Limitations of Use .....	Page 11
Doffing Procedure .....	Page 12
Storage, Shelf Life, Decontamination .....	Page 12

### ***Technical Data Package***

Chemical Resistance Guide .....	Page 13
Style Identification for Level A NFPA Complete Ensembles .....	Page 13
Specifications – Aluminized Overcovers .....	Page 13
Specifications – Level A Chemical Suit .....	Page 14
Chemical Suit Size Charts, Sizing and Adjustment Procedures .....	Page 15
Quarterly Inspection and Air Pressure Test Chart .....	Page 16
Level A Inspection Checklist .....	Page 17
Notes .....	Page 18

## Finding Your Way Around

Each section in a given chapter begins with an overview of the topic or task discussed. In addition, icons are shown where a topic is important and needs particular attention.



Information that follows this icon provides a warning. Serious injury or death could result if procedures are not followed.



Information that follows this icon includes helpful tips, procedures or references to help you avoid problems or save time.

# Level A Chemical Suit and NFPA Complete Ensembles

NFPA 1991, 2000 Edition, Section 3-2.1



## **WARNING:**

THERE ARE USES AND CHEMICALS FOR WHICH LAKELAND SUITS ARE NOT APPROPRIATE. THE SUIT WILL PERFORM AS DESIGNED ONLY IF IT IS USED AND SERVICED ACCORDING TO THE INSTRUCTIONS. IT IS THE RESPONSIBILITY OF THE USER TO SELECT A SUIT WHICH IS APPROPRIATE FOR THE INTENDED USE AND WHICH MEETS ALL NATIONAL, STATE AND LOCAL HEALTH AND SAFETY REGULATIONS.

LAKELAND DOES NOT WARRANT THAT THIS SUIT MEETS THE REQUIREMENTS OF ANY SAFETY CODE OF ANY STATE, MUNICIPALITY OR OTHER JURISDICTION.

LAKELAND WARRANTS FOR A PERIOD OF 90 DAYS AFTER THE DELIVERY OF A LAKELAND SUIT THAT THE SUIT IS FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP WHEN USED IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THIS MANUAL.

➤3

THE PURCHASER AND ALL SUIT USERS NEED TO PROMPTLY NOTIFY LAKELAND OF ANY CLAIM, WHETHER BASED ON CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE.

THIS MANUAL GIVES A GENERAL DESCRIPTION OF LAKELAND'S LEVEL A CHEMICAL SUIT AND NFPA COMPLETE ENSEMBLES. WHILE SOME USES AND PERFORMANCE CAPABILITIES ARE DESCRIBED, UNDER NO CIRCUMSTANCES SHOULD THE PRODUCT BE USED EXCEPT BY QUALIFIED, TRAINED PERSONNEL, AND NOT UNTIL THE INSTRUCTIONS, LABELS, OR OTHER LITERATURE ACCOMPANYING THE PRODUCT HAVE BEEN CAREFULLY READ AND UNDERSTOOD AND THE PRECAUTIONS SET FORTH THEREIN FOLLOWED. ONLY PERSONNEL WHO HAVE COMPLETED A FULL HAZMAT TRAINING PROGRAM IN ACCORDANCE WITH OSHA REGULATIONS SHOULD BE USING LAKELAND CHEMICAL PROTECTIVE SUITS. LAKELAND CANNOT BE RESPONSIBLE FOR PERSONAL INJURIES WHERE A USER HAS NOT COMPLETED THE ABOVE TRAINING PROGRAM OR HAS NOT READ AND FOLLOWED ALL INSTRUCTIONS HEREIN EXACTLY. ONLY THEY CONTAIN THE COMPLETE AND DETAILED INFORMATION CONCERNING THIS PRODUCT. ANY PERSON WHO READS THIS MANUAL AND IS STILL UNCERTAIN ABOUT HOW TO SAFELY OPERATE OR SERVICE THIS SUIT SHOULD CONTACT LAKELAND INDUSTRIES FOR MORE INFORMATION. ALL LAKELAND LEVEL A CHEMICAL SUITS AND NFPA ENSEMBLES ARE MANUFACTURED AND SOLD IN THE U.S.A. BY LAKELAND'S CHEMICAL CLOTHING DIVISION, A WHOLLY OWNED DIVISION OF LAKELAND INDUSTRIES, INC.

# Warranty Card

NFPA 1991, 2000 Edition, Section 3-2.4.11

Style Number: \_\_\_\_\_  
Serial Number: \_\_\_\_\_  
Purchased From: \_\_\_\_\_  
Purchase Date: \_\_\_\_\_  
End User Name: \_\_\_\_\_  
Product Ship To: \_\_\_\_\_  
Street \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_  
Zip: \_\_\_\_\_ Phone: \_\_\_\_\_  
Lot Number(s): \_\_\_\_\_  
Pressure Test Results: \_\_\_\_\_

➤4

**Please rate the following:**

	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
Quality of construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value versus price paid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comfort and fit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promptness of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accuracy of order	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Service given by distributor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Will you purchase through the same distributor again?			<input type="checkbox"/> Yes	<input type="checkbox"/> No
When you purchase protective clothing again, will you ask for the Lakeland brand?			<input type="checkbox"/> Yes	<input type="checkbox"/> No
Comments: _____				

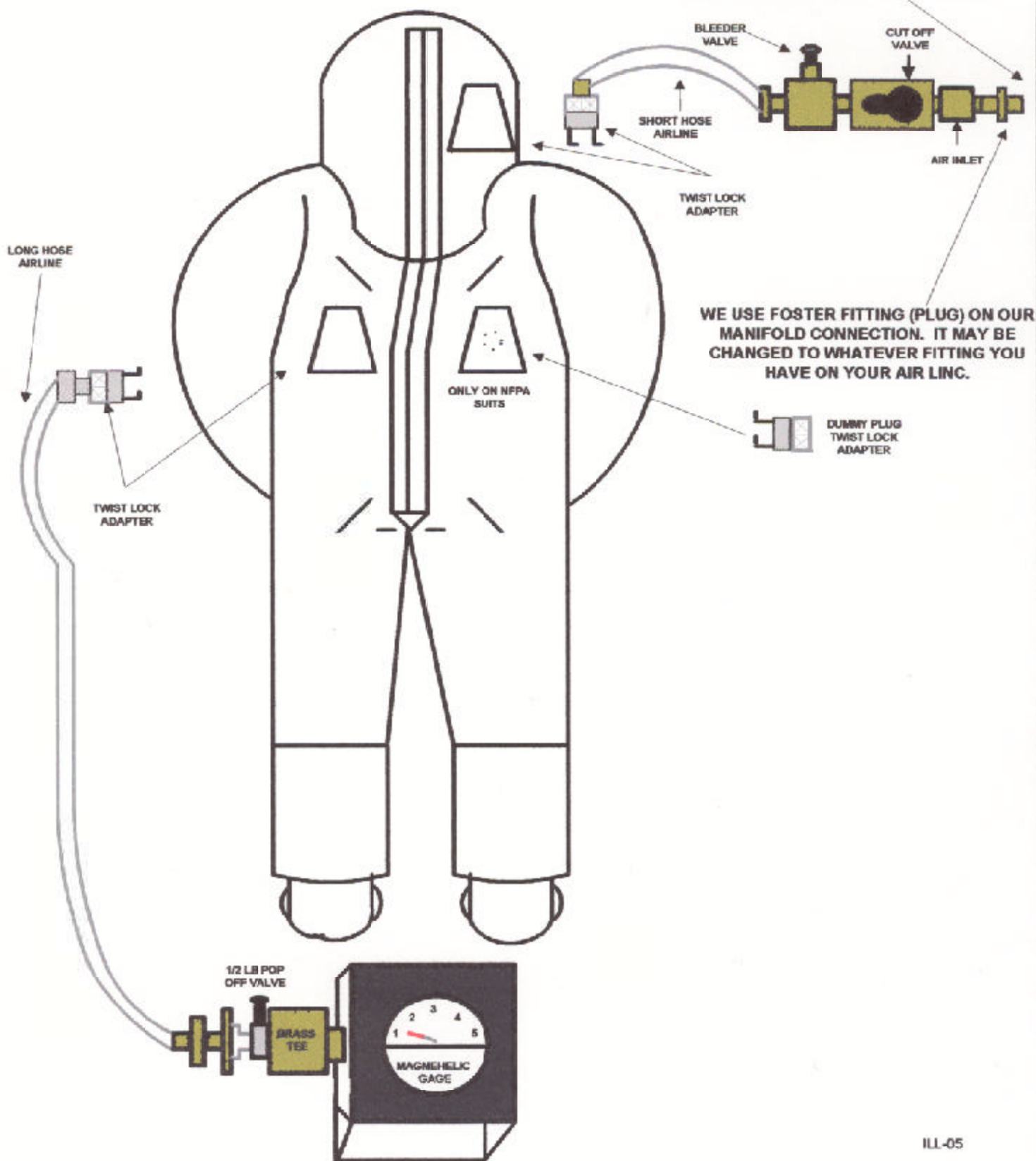
## Warranty

The following is made in lieu of all warranties expressed or implied including without limitation implied warranties of merchantability or fitness for a particular purpose: seller's only obligation shall be replace such products proved to be defective because of workmanship. This warranty does not extend to raw materials and components supplied to Lakeland or any of its subsidiaries or division. Seller shall not be liable for injury, loss or damage, direct or consequential, arising out of the use of or inability to use the product. Before using, user shall determine the suitability of the product for its intended use and user assumes all risk and liability whatsoever in connection therewith. Safety and permeation data for Lakeland protective clothing is available upon request. As in almost all instances, we do not know and cannot contact end users of our products, it is therefore, incumbent upon safety distributors to distribute to the end users both Lakeland's and the fabric manufacturer safety and permeation data and other safety and use information as updated. Such data does not attempt to address all of the safety issues associated with improper selection of a garment for the foreseeable application, use without adequate training, disregard of any warnings and instructions supplied by us or the fabric manufacturer and failure to maintain and inspect the garments. Lakeland and its divisions protective garments are intended to be used only in conjunction with an organized safety protection program, the requirements of all regulations promulgated by the Environmental Protection Agency (EPA), and the requirements of OSHA Safety and Health Standard 29 CFR 1910 and other OSHA regulations such as section 1910 et.seq., available from the National Fire Protection Association (NFPA), the American Society for Testing and Materials (ASTM), and the US Coast Guard or the Department of Defense. The foregoing may not be changed except by an agreement signed by an officer of the seller. In all events, we make no warranty of any kind whatsoever, express or implied, an all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed by us and excluded from any contract.

**LAKELAND INDUSTRIES, INC.**  
**CHEMICAL PROTECTIVE CLOTHING DIVISION:**  
**INSTRUCTION AND ILLUSTRATION OF TESTING PROCESS**

**BACK VIEW**

**CAUTION USE ONLY REGULATED  
AIR SUPPLY 125 PSI OR LESS**



## Level A and NFPA Requirements

**NFPA 1991, 2000 Edition, Section 3-2.1**

Level A represents the greatest danger of respiratory, eye or skin damage from hazardous vapors, gases, particulates, sudden splash, immersion or contact with hazardous materials. It calls for total encapsulation in a vapor-proof chemical suit with self contained breathing apparatus (SCBA) and appropriate accessories.

### **Level A Conditions:**

1. Unknown Hazards
2. Immediately Dangerous to Life Health (IDLH) Atmospheres
3. Atmosphere contains less than 19.5% oxygen
4. Percutaneous Chemicals
5. Vapors/Liquids Injurious to Skin

### **Personnel Protection Equipment Required:**

1. Self Contained Breathing Apparatus (SCBA), or positive pressure supplied air respirator with SCBA (NIOSH approved)
2. Fully encapsulating chemical resistant suit
3. Coveralls\*
4. Long underwear\*
5. Gloves-(outer), chemical resistant  
Gloves-(inner), chemical resistant
6. Boots-chemical resistant, steel toe and shank
7. Hard hat\* (under suit)
8. Disposable protective suit, gloves, and boots\*
9. Two-way radio communication\* (intrinsically safe)
10. An air leakage test to ensure suit is vapor proof.

\*Optional

In addition to meeting all OSHA Level A requirements, NFPA imposes even higher levels of protection on NFPA Complete Ensembles. The same conditions exist as Level A with additions to the personal protective equipment list.

1. Permeation test done on not only suit material, but on gloves and seams.
2. Flammability test.
3. Special labeling requirements.

---

 See "Specifications – Level A Chemical Suit" section in this manual.

---

## Safety and Health Program

An effective and comprehensive safety and health program is essential in reducing work-related injuries and illnesses and in maintaining a safe and healthful work environment. The standard, therefore, requires each employer to develop and implement a written safety and health program that identifies, evaluates, and controls safety and health hazards and provides emergency response procedures for each hazardous waste site or treatment, storage, and disposal facility. The program must be periodically updated and made available to all affected employees, contractors and subcontractors. The employer also must inform contractors and subcontractors and employees of any identifiable health hazards or potential fire or explosion hazards before they enter the worksite. This written program must include specific and detailed information on the following topics:


1. An organizational workplan.
2. Site evaluation and control.
3. A site-specific program.
4. Information and training program.
5. Personal protective equipment program.
6. Monitoring.
7. Medical surveillance program.
8. Decontamination procedures.
9. Emergency response program.

►7

## Cleaning and Marking the Suit

**NFPA 1991, 2000 Edition, Section 3-2.1C, 6A**

---

 **Cleaning procedures are not an acceptable procedure for decontamination. The user should develop and implement a decontamination procedure for each of the chemicals to which the suit has been exposed.**

---

After decontamination, wash down the suit with a solution of low sudsing powered detergent and water. A product like *Tide*® would be acceptable. Use warm to moderately hot water to cleanse suit inside and out. Wash off solution according to federal, state, and local pollution regulations. This may mean using a catch basin, such as a wading pool. Hang dry at room temperature.

---

 **Warning! Do not use garments that are not thoroughly cleaned and dried.**

---

## Marking Recommendations and Restrictions

Marking can be made on either your aluminized overcover or Level A suit by using a black laundry marker. Reflective lettering may be ordered for either your Level A suit or overcover through Lakeland Industries, Inc. This lettering will be permanently attached without compromising the integrity of the suit.

## Maintenance and Repairs

**NFPA 1991, 2000 Edition, Section 3-2.4.1E, 6C**

The Level A suit should be tested after every use and at least annually, whether it is used or not. If the Level A suit fails the test, see "Testing" for more information. In addition to testing, the Level A suit must be inspected after every use and at least annually. A Level A Inspection Checklist has been provided at the back of this manual to assist in the inspection.

Check the zipper for overall condition, worn or damaged teeth, and ease of operation. Lubricate zipper lightly with paraffin, which is readily available in most grocery stores. Paraffin should be applied lightly to the inner and outer elements. After cycling the zipper several times, the excess flakes should be removed. Do not use a sticky lubricant which could gather and hold particles of dirt, grease, or contaminant.

### Repairs

The gloves on the Level A Level A suit can be replaced by the end user while in the field. See "Glove Replacements" for instructions. Any other modifications or repairs must be done only by Lakeland personnel.

---

**Warning: All NFPA modifications or repairs must be done by Lakeland personnel.**


---

---

**Do not send a contaminated suit to Lakeland! Suits must be decontaminated and cleaned before return or they will be sent back without inspection of suit.**

---

---

 When returning a suit to Lakeland, follow the procedures listed below.

---

1. Attach the following to the side of the return shipping container:

*If the suit has not been used*, a letter which states that the suit is in a new and unused condition.

*If the suit has been used*, a copy of the decontami-

nation document, listing the procedures used, and a statement indicating that the suit contains no detectable residual contamination.

2. A Return Goods Audit number must be on each container returned. This number will be given out to you by Lakeland's Customer Service Department.
3. The Level A Suit should be shipped folded in a case or box.
4. The suit should not be pressurized during shipment.

## Frequency and Details of Inspection

**NFPA 1991, 2000 Edition, Section 3-2.4.3, 7**

### Inspection Record

Before using the suit, look at the inspection record and check:

1. The date that the suit was last decontaminated.
2. The level of decontamination obtained.
3. The date when the suit was cleaned and sanitized.
4. The date that the suit was tested for leakage resistance with the Lakeland Test Kit (part number 0010).
5. The suit must be checked with Lakeland's Test Kit at least annually.
6. The date that the person making the inspection signed-off, indicating that the suit is ready for reuse. See "Annual Inspection and Air Pressure Test Chart".

### Suit Physical Inspection

1. Look at the suit closely, checking for missing or damaged parts.
2. Look for holes and tears in the fabric.
3. Look for wear or abrasion that could let a chemical penetrate the suit. Inspect all seams thoroughly.
4. Check the gloves and boots for tears or abrasions. Pull on the boots and gloves to make sure that they are firmly attached.
5. Check the lens for cracks or deep scratches.
6. Check that the zipper has been lubricated; see section entitled "Maintenance and Repairs".

Inspect the breathing apparatus according to the manufacturer's instructions. Check the pressure gauge to be sure that the cylinder is fully charged.

---

**Warning: If you find any signs of wear, damaged, or missing parts, do not use the suit!**

---



## Retirement and Disposal Criteria

Use department procedures for disposal of suit. Lakeland Level A suits can be incinerated.

## Test Equipment and Procedures

**NFPA 1991, 2000 Edition, Section 3-2.4**

Tests should be conducted on your Lakeland Level A Suit after every use and annually, whether the suit is used or not. These test instructions are standard based on ASTM F1052 "Practice for Pressure Testing of Totally Encapsulated Chemical Protective Suits". Note that air expands or contracts depending on temperature. Always let a chemical suit reach room temperature before testing. The supply air that is used should be the same temperature as the environment in which the suit is to be tested. Do not test the suit near an air conditioner or a heater. Also, before opening the suit storage container, make sure the suit is either new and unused or, if the suit has been used that it has been decontaminated. After decontamination has been confirmed, proceed as follows:

1. Lay suit to be tested face down on a table free of obstacles; straighten to remove any folds/wrinkles.
2. Remove snap-on cover and diaphragm (flappers) from all exhaust valves.
3. Insert twist lock **with male** adapter into exhaust valve located on the head of the suit; turn clockwise.
4. Insert twist lock **with female** adapter into **exhaust valve** located on the back of right body; turn **clockwise**.
5. Insert twist lock plug adapter into the third exhaust valve located on the back left body (If your garment is a NFPA complete ensemble) to serve as a plug to prevent air from escaping.
6. Close all openings. Make sure the zipper is completely closed! Check any pass-throughs.
7. Place test kit gauge on level surface. Check dial calibration – *needle should be at zero*; adjust if necessary. (Refer to manufacturers bulletin enclosed).
8. Remove tubing loop from storage brackets in lid, by depressing flat tab on end of brackets to release top of bracket. Separate tubing sections by depressing release tab on quick connect couplings.
9. Connect short tubing with male nipple to female quick connect on brass **tee** (*with ID and serial number*) and connect other end to adapter in the head of suit.
10. Connect long tubing with female body to male nipple quick connect on brass tee at gauge and connect other end of tubing to twist lock fitting located on the back right side of suit.
11. Turn the air flow control valve crosswise, to the off position. Connect outside compressed air source to the

male quick connect fitting on brass manifold tee of test kit. (The most popular male fitting is supplied; if your air supply is not compatible with this fitting, remove and replace with a comparable fitting that is compatible.

12. Inflate suit by opening air control valve slowly!  
Pressurize the suit to 5 inches of water column indicated on gauge, hold for one (1) minute. This should fill out wrinkles in the suit.

---

**!** **Note: Check gauge dial frequently by dosing air supply control valve to make certain suit pressure does not exceed 5 inches of water column pressure. Over inflation can damage suit material and seams beyond repair!**

---

13. Remove countdown alarm timer from storage bracket in lid by depressing clip on back of timer, remove battery compartment lid on back of timer, invert battery and replace (refer to manufacturers bulletin enclosed).

►9

---

**☞** To extend service life of timer battery, remove battery, invert and replace during storage.

---

14. Set countdown timer to exactly four (4) minutes.  
Reduce water column pressure to exactly four (4) inches of water column pressure by depressing the relief valve button located on the brass tee at air inlet manifold.
15. Begin test.

---

**!** **Do not move or touch the suit during timed test, as this will affect the water column pressure resulting in inaccurate reading.**

---

Record suit pressure at the end of the four (4) minutes. Suit pressure of 3.2 inches or more indicates that the suit has passed as leak free. The suit is ready for service after test kit hoses and adapters have been removed and exhaust valves have been reassembled. Suit has failed test if pressure is less than 3.2 inches after the four (4) minute period.

## Glove Replacement Guides

### **Instructions for Ring and Clamp Assembly Removal**

1. Turn sleeve inside out.
2. Remove tape and rubber band over clamp at top of glove.
3. Using a hex socket or ratchet, loosen screw on glove clamp, remove clamp. Do not use a screwdriver to loosen clamp, as screwdriver may slip and damage suit.
4. Remove rubber band.

5. Pull glove assembly out of sleeve.

### **Installation**

1. Sleeve should be inside out.
2. Insert PVC ring in glove so that 2 inches of the glove is above top of ring.
3. Place glove in sleeve, fingers toward you and middle finger in line with shoulder seam. Pull until tight.
4. Place elastic band centered on line with PVC ring.
5. Center glove clamp on rubber band, using a hex socket driver or ratchet to tighten screw. Tighten clamp. Do not use a screwdriver to tighten screw, as screwdriver may slip and damage suit.
- 10 6. Turn the 2" glove overlap over clamp. Place wide rubber band over clamp.
7. Securely wrap area over PVC ring and clamp with flexible tape.
8. Turn suit sleeve right side out.

### **Instructions for Quick Disconnect Assembly (Installation).**

1. Sleeve should be inside out.
2. Insert Silvershield® glove through male glove ring, turn at least 3 inches of the glove edge back over the edge of the glove ring.
3. Insert the male glove ring through the suit opening down to the sleeve opening.
4. Place the clamp 3/8" from the edge of the glove ring, and tighten firmly in place using a hex driver.



---

The locking pin must be centered with the middle finger of the glove and the sleeve seam to insure proper alignment.

---

5. Place a 7/8" rubber band over the clamp to prevent it from puncturing the suit, cover the rubber band with at least 3 rounds of black electrical tape.
6. Pull sleeve back through suit and straighten.
7. Insert female glove ring (grooved side first) into outer glove so that the glove extends 3" past the groove in the ring. Place 5/8" rubber band over cuff clamp into the groove in the ring and tighten using a hex driver. Do not use a screwdriver, as screwdriver may slip and damage suit.
8. Cover the clamp with at least three rounds of black electrical tape to prevent clamp from damaging the suit.
9. Place a 5/8" wide rubber band between glove and clamp to prevent damage to glove. Place clamp in center of

groove on top of rubber band.



---

Female notch in glove ring must be aligned with the thumb of the outer glove, this will allow the two glove system to align correctly and discourage loosening of the assembly due to movement in the wrist area.

---

### **Removal**

1. Remove outer glove assembly by unlocking the Quick Disconnect System.
2. Remove tape over clamp at the top of glove.
3. Using a hex driver, loosen screw on glove clamp; and remove clamp. Do not use a screwdriver to loosen clamp, as screwdriver may slip and damage suit. Remove outer gloves.

## **Recommended Training & Proper Use**

**NFPA 1991, 2000 Edition, Section 3-2.4, 5**

Employers are required to develop and implement a program to inform workers (including contractors and subcontractors) performing hazardous waste operations of the level and degree of exposure they are likely to encounter.

Employers are also required to develop and implement procedures for introducing effective new technologies that provide improved worker protection in hazardous waste operations. Examples include foams, absorbents, neutralizers, etc.

Training makes workers aware of the potential hazards they may encounter and provides the necessary knowledge and skills to perform their work with minimal risk to their safety and health. The employer must develop a training program for all employees exposed to safety and health hazards when working with hazardous chemicals or working in hazardous waste operations. Both supervisors and workers must be trained to recognize and prevent hazards; to select, care for; and use respirators properly as well as other types of personal protective equipment; to understand engineering controls and their use; to proper decontamination procedures; to understand the emergency response plan, medical surveillance requirements, confined space entry procedures, spill containment program, and any appropriate work practices. Workers must also know the names of personnel and their alternates responsible for site safety and health.

Employees at all sites must not perform any work in or around hazardous waste operations or sites unless they have been trained to the level required by their job function and responsibility and have been certified by their instructor as having the necessary training. All emergency responders must receive refresher training sufficient to maintain or demonstrate competency annually. Employee training requirements are further defined by the nature of

the work (e.g., temporary emergency response personnel, firefighters, safety officers, Hazmat personnel, incident commanders, etc.) These requirements may include recognizing and knowing the hazardous materials and their risks, knowing how to select and use appropriate personal protective equipment, and knowing the appropriate control, containment, or confinement procedures and how to implement them. The specific training and competency requirements for each personal category are explained fully in the final rule (54 FR 42:9294, March 6, 1989).

---

**! It is your responsibility, as a user of this Level A Total Encapsulated Suit, to be aware of and comply with all phases of your employer's safety and health program, including training. Failure to do so could lead to an accident which may result in severe personal injury or death.**

---

"Proper Use" is consistent with NFPA 1500, "Standard on Fire Department Occupational Safety and Health Program, 29 CFR 1910.132." You can obtain a copy of this NFPA standard on the world wide web at "www.nfpa.org".

## Recommended Undergarments and Visor Agents

**NFPA 1991, 2000 Edition, Section 3-2.4.1F, 1G**

Wear cotton underwear and socks to help absorb perspiration. Coveralls made from flame resistant synthetic materials, such as Nomex®, offered by Lakeland Industries, are recommended, especially if exposure to flash-fire is a concern. Coveralls should have sleeves that can be closed tightly and legs that can be tucked into the socks. If the Level A suit is to be worn in a cold environment, wear thermal underwear to help stay warm. Under extreme conditions, the lens may fog up. Carry a clean cloth with you to wipe the lens from the inside. Anti-fog agents can be purchased from most local stores. Lakeland Industries does not sell or apply any agents to the suit lens.

---


 For zipper lubes see "Maintenance and Repairs" for more information.

---

## Donning Procedure

**NFPA 1991, 2000 Edition, Section 3-2.4.4A**

---

 Good safety practices require an assistant to help you don and doff the suit. This is easier and quicker, and you will avoid stumbling or tripping which may result in personal injury or damage to the suit.

---

Follow these steps in putting on the suit:

1. Make sure the suit has been visually inspected, air pressure tested and is free from defects. Also make sure the correct suit has been selected for the intended use.
2. Underclothing should be worn under the chemical suit. As a minimum, a long sleeve shirt and long pants or "long underwear" are recommended.
3. Remove all personal affects which might result in damage to the suit (e.g. pens, badges, jewelry, etc.).
4. Remove shoes. Most boots don't allow street shoes. Lakeland's NFPA approved boots do not.
5. Tuck pant cuff into socks to make donning of suit legs and sock boot easier.
6. If using a SCBA (Self Contained Breathing Apparatus), check the level of air, complete all connections, make all adjustments in accordance with the manufacturer's procedures. Do not put the face piece on, yet, unless required by the design of the SCBA. ▶ 11
7. While seated. place both legs into the suit. Stand up and attach the internal waist belt. Belt is intended to help adjust the fit of the suit.
8. Turn on the air supply, put on facepiece, and make sure air supply system is working properly.
9. Place arms and head inside the suit, close the zipper, then velcro shut the fly over the top of the zipper.
10. The person assisting should check to make certain the zipper covers are completely closed, all airline connections are tight, and suit appears to be working properly.

## Safety Considerations

**NFPA 1991, 2000 Edition, Section 3-2.4.1A, 1B**

---

**! Like any piece of complex equipment, the Level A suit will perform as designed only if used and serviced according to Lakeland's instructions. All individuals who have or will have the responsibility for using the Level A suit must read these precautions carefully and understand them. Failure to do so may result in severe personal injury or death.**

---

1. Avoid direct flame contact. Do not use the Level A suit near a fire or open flame. The Level A material will melt.
2. Do not wear a suit without breathable air. An air supply is **mandatory** to prevent suffocation. An air-line alone is prohibited by OSHA regulations in IDLH atmospheres.
3. Do not use oxygen cylinder or oxygen generating breathing apparatus while wearing a Level A suit. A severe fire hazard could result.
4. Never work alone in hazardous areas. Always work

with another person and have at least one person on standby with equal protective equipment.

5. Do not pull on air supply hose as a retrieval device. To do so may cause the air-supply hose to tear out of the suit and expose the wearer.
6. Avoid continuous exposure. Do not expose the suit to a constant liquid splash or deluge, or wade through liquid pools on purpose.
7. Prevent heat stress. Workers who wear total-encapsulating suits must be in good physical condition. Consult a medical doctor before donning Level A suit to be sure you are capable of wearing it under expected use conditions. The wearer can take several steps which may prevent heat stress, such as wearing an ice-vest, feeding the suit with body-cooling air, and taking frequent rest periods during the work session.
8. Leave the "Hot Zone" **immediately** if you experience these symptoms; fever, nausea, dizziness, eye irritation, difficulty in breathing, becoming fatigued or any unusual order or taste.

>12

## Doffing Procedure

NFPA 1991, 2000 Edition, Section 3-2.4.4A



The person assisting in the doffing procedure should be wearing the appropriate attire selected by Qualified Safety Personnel.

1. The person assisting should open the zipper flaps by separating the velcro attached to the fly and open the zipper by pulling the zipper tab at the opening of the zipper.
2. The user should pull their arms back into the body of the suit, remove their hard hat, and hand hat to the assistant (this will prevent the assistant from touching the inner suit with their gloves that may be wet or contaminated).
3. Carefully remove the head and arms from the suit.
4. Loosen the air supply mask (allow the mask to hang around the neck until the air supply has been cut off. Remove the air system per the instructions provided with that particular system.
5. Loosen the suit belt and allow suit to fall. Assume a sitting position for stability. The assistant should remove the outer boots and hold the bottom of each leg to allow the user to remove legs from the suit more easily.

## Storage, Shelf Life & Decontamination

NFPA 1991, 2000 Edition, Section 3-2.4.1H, 2B, 6D, 3-2.6

### Recommended Storage Practices

1. Store the Level A or NFPA Complete Ensemble in a clean, dry location, away from direct sunlight.
2. Suit should be stored laying flat, if possible.
3. Store the suit with zipper open.
4. At least annually perform inspection with checklist at the back of this manual, and perform the suit pressure test using the instructions under "How To Use Test Equipment And Air Pressure Testing."
5. NFPA complete ensembles are to be stored the same as a Level A suit.
6. Suits can be stored in their original carry-bags, or on a hanger.

### Shelf Life

Chemical suits contain components made from various polymer or rubber materials for which there is no specific life data currently available. Based on the physical condition of the suit, it is recommended that downgrading the suit to "Training Use Only" be considered after five years. If this is done; each suit will need to be visually marked on the outer side "For Training Use Only", so that all personnel will notice it has been down graded.

### Decontamination - Chemical

Standard 1910.120 states that "a decontamination procedure shall be developed, communicated to employees and implemented before any employees or equipment may enter areas on site where potential for exposure to hazardous substances exists".

The Environmental Protection Agency considers decontamination to be a complex operation that requires a detailed plan of procedures. Actual decontamination procedures must be developed by those with full information on the type and level of the contaminant. Consult the Materials Safety Data Sheet for the hazardous substance you are working with.

After decontamination, suits may be hand washed using warm water and a mild detergent (see "Cleaning Instructions" in this manual). Appropriate equipment should be worn during these activities to prevent contact with any residual contamination. After washing, suits should be rinsed well with warm water and hung away from intense heat or sunlight to dry. Before reuse, a qualified health professional must determine that an adequate level of decontamination has been achieved.

Level A suits are economically priced limited-use garments, and **not** designed for multiple wash and decontamination. Chemical suits which become contaminated with toxic chemicals or show signs of physical wear, (see "Maintenance And Repairs"), should be retired or disposed of in a safe manner.

## Decontamination – Biological

At the scene, place contaminated garments inside a leak-proof container and marked as “Biological Contaminated.” These garments must be destroyed by a Certified Waste Disposal Company. **DO NOT** attempt to decontaminate any garments that have come in contact with any Biological Threat.

## Chemical Resistance Guide

*NFPA 1991, 2000 Edition, Section 3-3*

A protective garment must resist hazardous chemical attack from three different routes of entry: Permeation, Penetration and Degradation.

**Permeation** describes a process by which chemicals migrate through a material. It involves chemical solubility in a material and the ability for chemicals to “diffuse” through the material as a liquid, gas, or vapor. Measuring permeation is important because chemicals may penetrate protective materials without visible effects. Many of today’s chemicals are toxic in vapor form, through skin absorption or inhalation. The Level A material resists permeation of these chemical vapors, depending on the type of challenge chemical. Method F739 provides flexibility for choosing different test hardware and conditions while specifying procedures.

**Penetration** occurs when a chemical enters the suit through a physical imperfection, such as a damaged seam or zipper, a tear, a pinhole, a loose glove, boot, or lens.

Suits must be leak-tested in the field to ensure their penetration resistance. Simple bubble-indicating leak tests, without measuring pressure-drop over time, are not practical.

The Lakeland Test Kit (part number 00010) measures penetration resistance by indicating pressure-drop over time. It permits the user to inflate the suit with an SCBA, measure the pressure put into the suit, and the rate at which the pressure may drop.

**Degradation** takes place when a chemical degrades one or more of the suit’s physical properties, such as material thickness, color, tear resistance, abrasion resistance, and so forth. Such a physical change may not necessarily affect the material’s permeation resistance. However just the opposite is also possible. A challenge chemical could permeate the garment material almost immediately without changing its physical appearance at all. Tests were performed under laboratory conditions-not actual workplace conditions. They address breakthrough characteristics and do not account for other performance characteristics. They are not, in and of themselves, recommendations.

Lakeland chemical suits are designed to be worn over regular work clothing, and are not designed to protect from all hazards in the work place. Additional equipment such as protective eyewear, protective boots, additional gloves, hard hats, cooling systems, communications systems, etc.

may be required and should be selected by a safety professional.

Lakeland Industries, Inc. cannot guarantee that any Level A suits is applicable to your particular situation, or assume responsibility for use thereof, because of such unknown variables as nature of work, type of exposure, concentration of exposure, etc.

## Style Identification

*NFPA 1991, 2000 Edition, Sections 3-3.1.3, 3-3.2.1*

TK645- A Front Entry Level A Level A Chemical Suit (with A Front Entry Aluminized Glass Overcover and NFPA approved Hazmat Boots.

TK655- A Rear Entry Level A Level A Chemical Suit (with A Rear Entry Aluminized Glass Overcover and NFPA approved Hazmat Boots. ▶13

Lakeland Industries offers the following NFPA approved pass-thrus:

- Option P1 .....Scott-Hansen Pass-thru
- Option P2 .....Scott-Schraeder Pass-thru
- Option P3 .....Standard Pass-thru
- Option P355 ...Standard Pass-thru with stainless steel fittings
- Option P4 .....Survivair® with Hansen® fittings
- Option P5 .....Survivair® with Schrader® fittings
- Option P6 .....Drager® with Hansen® fittings
- Option P7 .....Drager® with Foster® fittings
- Option P8 .....Drager® with Snap-Tite® fittings
- Option P9 .....MSA® dual purpose
- Option P6 .....MSA® Wall-Thru unit
- Option G7.....Quick Disconnect Glove System

Lakeland Industries offers the following boots: Bata® Hazmat Boot, SEI Certified

## Specifications – Aluminized Overcovers

*NFPA 1991, 2000 Edition, Sections 3-3.2.2, 3-3.2.4, 3-3.5.5*

### Specifications and Component Descriptions for NFPA 1991, 2000 Edition Aluminized Overcovers

1. Garment Materials-are Aluminized Glass.
2. Suit design is to be worn only in conjunction with a approved Level A Chemical suit that accommodates a self contained breathing apparatus inside the suit.
3. All seams are stitched with Nomex® thread on the inside.
4. Closure is a 4” wide flap made out of the suit material; held in place with 1” black full-length velcro. Front

Entry: starts at left side of hood front and across body.  
Rear Entry: center back.

5. Visor/Lens is 10 mil FEP Teflon® stitched in with Nomex® thread on the inside of the suit.
6. The head area is designed to accommodate a SCBA face piece and allow user to wear a hard cap or fireman's helmet.
7. The optional pass-thrus; if purchased ; will be located in the right area to allow for hook-up of outside air for breathing and cooling. See "Style Identification" for more information.
8. Three valve covers designed to fit over the top of the Level A Chemical Suit **exhaust** valve system, 1-located on the right side of the back of the hood, 1-located on the right side of the expanded back, 1-located on the left side of the expanded back.
9. Color of the suit is silver.
10. The spacious sleeve is designed to fit in conjunction with the requirements of the Level A Chemical Suit.
11. For sizing see "Chemical Suit Size Charts".

►14

#### **Methods of Attachment**

Garment material	safety stitch
Visor material	single needle stitch
Glove material	N/A
Footwear material	N/A
Garment closure	single needle stitch
Attached overcover	N/A

### **Specifications – Level A**

**NFPA 1991, 2000 Edition, Sections 3-3.2.2, 3-3.2.3, 3-3.2.4**

#### **Specifications and component descriptions for NFPA 1991, 2000 Edition Chemical Suit**

1. Suit fabric to be laminated film- Level A.
2. Suit Design- Expanded back to accommodate wearing of self contained breathing apparatus inside suit.
3. All seams stitched with 50/2 Permaspun® thread and sealed with specialized seam tape inside and out.
4. Zipper closure is a 48" PVC OEB design zipper with a vapor-proof closure by a 4" wide flap of suit material, and held in place by 1/2" full length velcro. Front Entry: left side of hood and across back. Rear entry: center back.
5. Visor/Lens materials- is a 40 mil PVC lens and a 10 mil FEP Teflon® lens sandwiched together using a specialized seam tape and process. This Visor/Lens is designed to ensure maximum visibility.
6. Head area-is designed large enough to accommodate a SCBA face piece and to be able to allow user to wear a

hard cap or firemen's helmet.

7. The optional pass-thrus, if purchased, will be located in the right area to allow for hook-up to outside air for breathing and cooling.
8. Three **exhaust** valves designed to release at 1/2 lb. of pressure are located as follows:  
1- on the right side of the back of the hood, 1- on the right side of the expanded back and 1- on the left side of the expanded back.
9. Gloves are to be three separate components from inside out:
  - North Silvershield®
  - 10 mil Viton® Glove
  - Kevlar®
10. The suit has attached sock boots with a splash guard to fit over industrial NFPA approved boots. Both sock boots and splash guards are constructed of Level A materials.
11. Color of the **inner** suit is lime green.
12. Spacious sleeve design allows wearer to have access to SCBA controls by pulling arm from sleeve while still in suit. The suit is designed to allow room for 2-way radio communication systems.
13. For sizes see "Chemical Suit Size Charts."
14. Suit to pass a minimum 180 minutes in NFPA 1991 Battery of Challenge Chemicals, see "NFPA Testing Results".
15. Suit must pass the ASTM F1052 pressure test.
16. Labeling in the suit contains the following: Warning Statement, Model Number, Serial Number, Date Manufactured, Pressure Test Results, an accompanying over boot style and marked if certified to optional chapters of the Standard.

#### **Methods of Attachment**

Garment material	.....single needle, double sealed with seam tape
Visor material	.....single needle, triple sealed with seam tape
Glove material	.....ring and clamp assembly or quick-disconnect assembly
Footwear material	.....sock boot, single needle stitch, double sealed
Garment closure	.....single needle stitch, triple sealed
Attached overcover	.....attached at valve cover with Velcro®

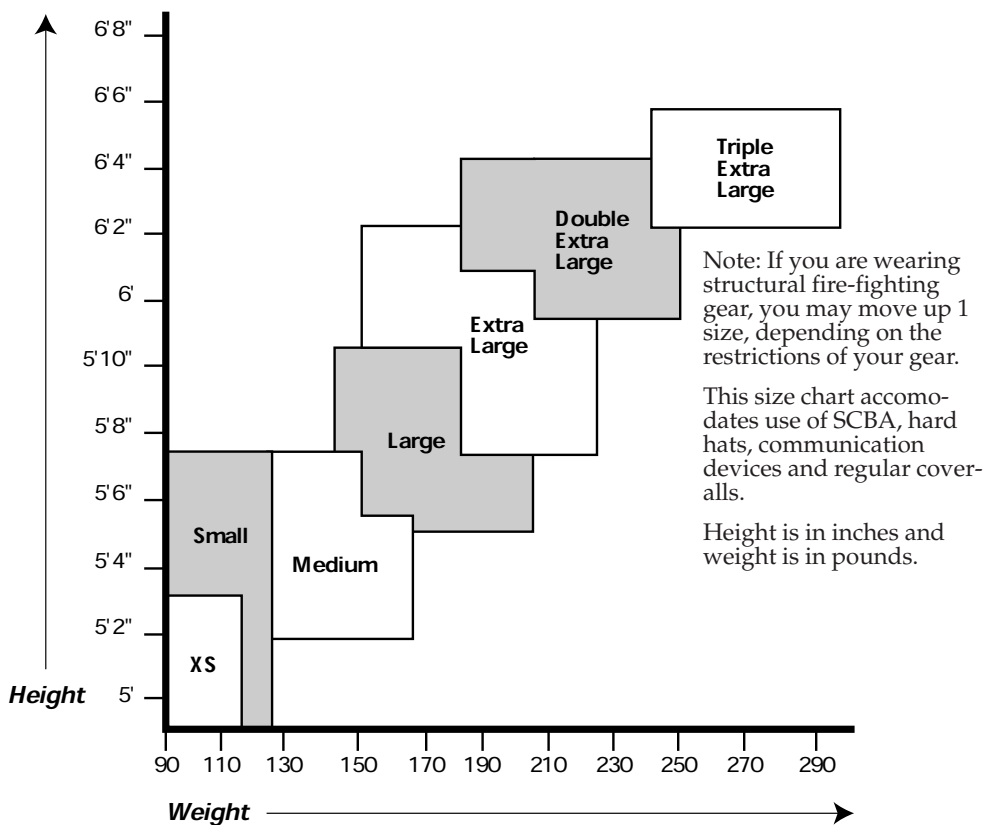
# Chemical Suit Size Charts

NFPA 1991, 2000 Edition, Sections 3-2.4, 2A, 4B, 3-3.1.4

## Recommended Boot and Glove Size Chart - Chemical Suit Size versus Glove and Outer Boot Size

Suit Size	Boot Size	Glove Size
Extra Small – Medium	8-9	10-Large
Large	10-11	10-Large
Extra Large	12-13	11-Extra large
2 Extra Large	14-15	11-Extra Large

## Lakeland Industries, Inc. Total Encapsulated Suit Height and Weight Chart



Note: See "Donning" for adjustment procedures.

# Annual Inspections Log

*NFPA 1991, 2000 Edition, Sections 3-2.4, 6B, 3-2.5*

## Quarterly Inspections and Air Pressure Test Chart

Inspection Date	Inspected By	Remarks	Inspection/ Air Test Results

>16

Removed from service date: \_\_\_\_\_

Person: \_\_\_\_\_

Reason: \_\_\_\_\_



## Level A Inspection Checklist

Purchased From: \_\_\_\_\_ Date Purchased By: \_\_\_\_\_

Serial Number: \_\_\_\_\_ Inspected By: \_\_\_\_\_

Style and Size: \_\_\_\_\_ Inspection date: \_\_\_\_\_

- |                         |   |
|-------------------------|---|
| <b>Material</b>         | Check for any abrasions, holes, or tears.   |
| <b>Zipper</b>           | Check for overall condition, worn or damaged teeth, ease of operation. Lubricate zipper lightly with paraffin, which is readily available in most grocery stores. Paraffin should be applied lightly to the inner and outer elements. After cycling the fastener several times, the excess flakes should be removed. Do not use a sticky lubricant, which could gather and hold particles of dirt, grease, or contaminant. Garment should be stored with the fastener open. |
| <b>Facepiece</b>        | Check that there are no splits, cracks, or deep scratches.  |
| <b>Gloves</b>           | Check glove integrity, PVC ring, quality of rubber bands, tightness of metal ring.  |
| <b>Exhalation valve</b> | Check for freedom from obstructions and dirt; if replacement of valves are needed, send back to Lakeland for replacement.   |
| <b>Seams</b>            | Visually check for any split seams, tears, or separations of material.  |
| <b>Leak Test</b>        | Follow procedures outlined under "Testing"  |
| <b>Log</b>              | Please mark log according to your findings. Date and sign, so that the status of the suit will be known at all times.   |



Northbrook, Illinois • (847) 272-8800  
Melville, New York • (516) 271-6200  
Santa Clara, California • (408) 985-2400  
Research Triangle Park,  
North Carolina • (919) 549-1400  
Camas, Washington • (360) 817-5500



Underwriters Laboratories, Inc. ®

## CERTIFICATE OF COMPLIANCE



a century of  
public safety  
est. 1894

Page 1 of 1

**CERTIFICATE NUMBER**      **MH28014-20011009**

**ISSUE DATE:**                      **August 27, 2002**

**Issued To:**                      Lakeland Industries, Inc. Chemland Div.  
711-2 Koehler Ave.  
Ronkonkoma, NY 11779 USA

**Report Reference:**              **MH28014**


**This is to Certify that  
representative samples of:**      Vapor-Protective Ensembles: Model Numbers  
TK645  
TK655  
Options - P1, P2, P3, P3SS, P4, P5, P6, P7, P8, P9, P18

**Have been investigated by Underwriters Laboratories, Inc.® in accordance with the Standard(s) indicated  
on this Certificate.**

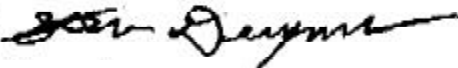
**Standard(s) for Safety:**        NFPA 1991-2000, STANDARD ON VAPOR PROTECTIVE ENSEMBLES  
FOR HAZARDOUS MATERIALS EMERGENCIES.  
  
OPTIONAL-LIQUIFIED GAS  
OPTIONAL-CHEMICAL/BIOLOGICAL

**Additional Information:**

**Only those products bearing the UL Classification Marking should be considered as being covered by UL's Classification and  
Follow-Up Service.**

The UL Classification Marking includes: UL in a circle symbol:  with word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and, the product category name (product identity) as indicated in the appropriate UL Directory.

**LOOK FOR THE UL CLASSIFICATION MARKING ON THE PRODUCT**

Engineer: 

STEPHEN L. DERYNCK  
Underwriters Laboratories, Inc.

Review Engineer: 

STEVEN D. CORRADO  
Underwriters Laboratories, Inc.

A not-for-profit organization  
dedicated to public safety and  
committed to quality service