

INSTRUCTION  
MANUAL  
**Nextteq VeriFit<sup>®</sup>**  
**Irritant Smoke  
Generators**



# Respirator Fit Testing

**NEXTTEQ<sup>®</sup>**  
INTERNATIONAL

BETTER TECHNOLOGY. BETTER QUALITY.  
BETTER VALUE.

# VeriFit<sup>®</sup>

Irritant Smoke Generators  
For Respirator Fit Testing

OSHA compliant  
when testing:

## NIOSH-Approved Respirators

- Half/Full  
Face Mask
- SCBA
- SAR
- PAPR

## NIOSH-Approved Filtering Facepiece Respirators

- N100
- P100
- R100



Available in:  
VeriFit<sup>®</sup> 6-pack  
P/N 90095  
VeriFit<sup>®</sup> 10-pack  
P/N 50811000-310N



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### NOTE:

For your convenience, the Sensitivity Check Protocol (PN 50811340-340N) is available on our website. Please visit [www.nextteq.com](http://www.nextteq.com)

OSHA has reviewed VeriFit Irritant Smoke Generators and determined that they are compliant with OSHA 29 CFR 1910.134.

## I. INTRODUCTION

This manual explains how to use the Nextteq VeriFit Irritant Smoke Generator. The VeriFit Irritant Smoke Generator is manufactured by Nextteq International, LLC in the U.S.A. The patented plastic design integrates all traditional fit testing kit components into one convenient device. The small bellows size provides the optimum amount of smoke for fit testing, yet minimizes the risk of overexposure.

Unlike other test methods, there is no need for chamber construction, nebulizers, electric pumps, mixing jars, batteries, special test masks, mask probes, or testing hoods. There are also no parts to calibrate, warm up, sterilize, or clean.

The VeriFit Irritant smoke Generator comes ready to use. Everything you need for immediate qualitative fit testing is in one sleek, safe, and convenient smoke generator.

Safer to operate and discard than traditional broken glass smoke tubes

**NEXTTEQ**

A brand name that indicates the highest quality available in the market - manufactured in the USA and exclusively sold by Nextteq International LLC

Controlled compression to precisely generate the intended amount of smoke



Reusable cap to store for use within 24 hours

Compact shape that is easily handled and stored

Both bulb and smoke tube of traditional irritant smoke tube kit are combined in one device

## OSHA COMPLIANT

Irritant smoke is the only OSHA-accepted qualitative fit testing method that relies on the test subject's involuntary response of smell or taste.

Qualitative fit tests such as banana oil (isoamyl acetate), saccharin, or Bitrex may cause false negative results. A common cause of false negative results is the failure of a test subject to identify a leak in the respirator. Many factors cause test subjects to not notice a leak:

- Olfactory fatigue (reduction in ability to smell)
- Gustatory fatigue (reduction in ability to taste)
- Allergy or common cold
- Ingestion of food or drink
- Reduced sense of smell or taste due to aging, smoking or other causes.

### Respirators That May Be Qualitatively Fit Tested With Irritant Smoke\*

RESPIRATOR TYPE	OSHA Accepted for Irritant Smoke Fit Test
HALF FACE MASK – negative pressure, APR (100 fit factor)	YES
FULL FACE MASK – negative pressure, APR (100 fit factor) used in atmospheres up to 10 times the PEL	YES
POWERED AIR PURIFYING RESPIRATOR (PAPR)	YES
SUPPLIED – AIR RESPIRATOR (SAR) – used in positive pressure (pressure demand mode); IDLH atmospheres	YES
SELF-CONTAINED BREATHING APPARATUS (SCBA) – used in positive pressure (pressure demand mode); structural firefighting; IDLH atmospheres	YES
DISPOSABLE PARTICULATE RESPIRATORS (N100) – Filters at least 99.7% of airborne particles. Not resistant to oil. (R100) Filters at least 99.7% of airborne particles. Somewhat resistant to oil. (P100) Filters at least 99.7% of airborne particles. Strongly resistant to oil.	YES
MOUTH BIT RESPIRATORS	Fit Testing Not Required
LOOSE FITTING RESPIRATORS – e.g. hoods, helmets, etc.	Fit Testing Not Required

\*Adapted from OSHA Compliance Directive, CPL 2.120 Inspection Procedures for Respiratory Protection Standard, Sept. 18, 1998.



The VeriFit Irritant Smoke Generators for Respirator Fit Testing (**Part Number 90095**) include the following:

1. Six (6) Complete Fit Testing Kits
2. One (1) VeriFit storage box - recyclable (soy-based inks)
3. One (1) VeriFit Irritant Smoke Generator Manual (Part Number 50811300-340N)

The VeriFit Irritant Smoke Generators for Respirator Fit Testing (**Part Number 50811300-340N**) include the following:

1. Ten (10) Complete Fit Testing Kits
2. One (1) VeriFit storage box - recyclable (soy-based inks)
3. One (1) VeriFit Irritant Smoke Generator Manual (Part Number 50811300-340N)

## II. SPECIFICATIONS

### Weight:

0.15 oz (±0.009)  
4.3 g (±0.25)

### Dimensions:

Overall Length: 5.35 in (±0.05) / 136 mm (±1.3)

### Bellows

Length: 1.2 in (±0.025) / 30 mm (±0.5)

Outside Dimension: 0.95 in (±0.025) / 24 mm (±0.5)

Capacity: 8.0 cc (±0.1)

### Barrel

Length: 1.3 in (±0.025) / 33 mm (±0.5)

Outside Dimension: 0.5 in (±0.025) / 12.5 mm (±0.5)

### Active Ingredient:

Stannic Chloride (SnCl<sub>4</sub>)

### Fluid Admitted:

Air

### Number of Generated Smoke Strokes: 300

Smoke generating strokes increase by ~10% at 20% relative humidity  
Smoke generating strokes decrease by ~10% at 80% relative humidity

### Color of Generated Smoke:

White

### Operating Temperature:

32° F to 104° F / 0°C to 40°C

As temperature decreases, smoke lasts longer and is less intense

### Operating Relative Humidity:

10% to 95% RH

### Storage Temperature:

41°F to 77°F / 5°C to 25°C

### Storage Condition:

Secure, dry, cool space away from direct light

### Warranty:

90 days



### III. WARNINGS

1. Before using this product, read, understand, and comply with all labels, warnings, instructions, and other literature accompanying the product, including but not limited to this manual, the SDS in this manual (also available as PN 50811320-340N), and the Sensitivity Check Protocol (PN 50811340-340N - see [www.nextteq.com](http://www.nextteq.com)). Failure to comply with all warnings and instructions could cause property damage, serious injury or death.
2. Operate the product in strict compliance with manufacturer's specifications and instructions. Not using this product in accordance with the manufacturer's specifications and instructions may result in property damage, serious injury, or death.
3. Be thoroughly familiar with this product, the manufacturer's instructions and warnings, and associated equipment before using this product.
4. Inspect this product and associated equipment for damage or defects before using. Do not proceed with Respirator Fit Testing or Sensitivity Check if this product or associated equipment is damaged or defective.
5. Keep all bystanders away from this product during use or testing.
6. Do not remove, alter, or cover any label, instruction, or warning.
7. Use only in well-ventilated areas to prevent the buildup of smoke or fumes. The buildup of smoke or fumes may increase the concentration of the smoke or fumes to dangerous levels, resulting in property damage, serious injury or death.
8. Do not use under a hood or other enclosed area. Do not use in a confined space. Use under a hood, other enclosure, or in a confined space may increase the concentration of fumes or smoke to dangerous levels, resulting in property damage, serious injury or death.
9. Do not breathe the fumes or smoke directly. Avoid prolonged breathing of smoke or fumes. Prolonged breathing of smoke or fumes may result in property damage, serious injury or death.
10. Do not blow smoke or fumes directly into a person's unprotected face. Blowing smoke or fumes directly into a person's unprotected face could result in property damage, serious injury or death.
11. Wear respiratory protection in accordance with OSHA 29 CFR 1910.134 and NIOSH 42 CFR 84 when directly exposed to fumes or smoke.
12. Wear eye protection in accordance with OSHA standards when exposed to fumes or smoke. If contact lenses are worn, they should be worn in strict compliance with applicable NIOSH, OSHA, and ACOEM standards.
13. Do not blow smoke directly into eyes or onto skin. Avoid smoke contacting eyes or skin. Eyes should be tightly closed and remain closed during Respirator Fit Testing and until smoke clears. Blowing smoke into a person's eyes could result in serious injury.
14. Respirator Fit Testing should be performed in strict compliance with OSHA 29 CFR 1910.134 and OSHA 29 CFR 1910.139.
15. Only use the flow rates specified in OSHA 29 CFR 1910.134 and OSHA 29 CFR 1910.139. If the generator is operated at non-specified flow rates, smoke or fume concentrations may increase to dangerous levels, resulting in property damage, serious injury or death.
16. Only operate the smoke generator in strict compliance with the manufacturer's specifications and instructions. If the smoke generator is not operated in accordance with the manufacturer's specifications and instructions, smoke or fume concentrations may increase to dangerous concentrations, resulting in property damage, serious injury or death.
17. Do not operate this product closer to test subjects or test administrator than specified by OSHA 29 CFR 1910.134, OSHA 29 CFR 1910.139, and the manufacturer. Operating at non-specified distances could increase smoke or fume concentrations to dangerous levels, resulting in property damage, serious injury or death.

## Warnings

18. The smoke generator contains stannic chloride that combines with humidity to liberate a white smoke consisting of hydrogen chloride and tin compounds.
  - A. If inhaled and repeated coughing or trouble breathing occurs, immediately remove test subject to fresh clean air. Restore and support breathing as necessary.
  - B. If coughing or breathing difficulty persists, immediately provide oxygen and immediately contact a physician.
  - C. If smoke contacts eyes, immediately flush eyes with copious amounts of clean running water for fifteen minutes, including under eyelids, and immediately contact a physician.
  - D. If smoke contacts a large area of skin, contacts skin for a prolonged period, or if irritation persists, immediately flush affected area with copious amounts of clean running water for fifteen minutes and immediately contact a physician.
19. Do not use this product for Respirator Fit Testing or Sensitivity Check if any of the following conditions are present:
  - A. The test subject has a pre-existing respiratory, cardiovascular, or bronchial medical condition.
  - B. The test subject is under a physician's care for a respiratory, cardiovascular, or bronchial ailment; sinus, nasal or ear infection; or impaired immune system.
  - C. The test subject is hypersensitive or allergic to stannic chloride, stannic oxide, hydrogen chloride, tin tetrachloride, tin compounds, or metal chloride.
  - D. The test subject has failed the medical evaluation specified by OSHA 29 CFR 1910.134.

Failure to comply with this warning could cause property damage, serious injury or death.
20. Do not remove or adjust respirator during Respirator Fit Testing or in the presence of smoke or fumes. Move to an area of fresh clean air before removing or adjusting respirator.
21. The respirator to be tested must be equipped with high efficiency particulate air (HEPA) or P100 series filter as well as any other filtration needed in order to be in compliance with all applicable local regulations.

## Warnings

22. Do not eat, drink, take internally, inhale smoke into mouth, or consume contents of smoke generator as it may result in property damage, serious injury or death.
23. Do not heat or burn the smoke generator or throw the smoke generator into a fire. The smoke generator may emit dangerous toxic fumes.
24. After using smoke generator or after being exposed to smoke or fumes, wash face, hands, and any areas exposed to fumes or smoke thoroughly with soap and water before eating, drinking, smoking, applying cosmetics, inserting or removing contact lenses, or touching eyes or mucous membranes.
25. Do not spray smoke or fumes of smoke generator into ventilation ducts unless you have first checked to ensure the smoke will not be blown onto unprotected people.
26. Do not spray smoke in and/or over areas that have the possibility of contaminating food or beverages, surfaces that come in contact with food or beverages, food or beverage containers, and/or food preparation, serving, or holding areas.
27. This product is only for sale to, for use by, and for storage by trained, qualified, technically competent, and professional, commercial, industrial, military or government users.
28. Do not dispose of expired or used smoke generators in domestic or residential waste. Smoke generators must be disposed of properly because they contain chemicals. Dispose of smoke generators in strict accordance with all federal, state, and local statutes, ordinances and regulations.
29. Smoke generators are primarily composed of plastic, glass, and chemicals. Keep smoke generators out of the reach of children.
30. During the Sensitivity Check, do not place the open end of the smoke generator closer than 36 inches from the test subject's face. Do not point the open end of the smoke generator toward the test subject's face. If the smoke generator is placed too close to the test subject's face or points toward the test subject's face, smoke or fume concentrations may increase to dangerous levels, resulting in property damage, serious injury or death.

## Warnings

31. Perform the Respirator Fit Test and/or Sensitivity Check strictly in accordance with OSHA 29 CFR 1910.134, this manual, Nextteq's Sensitivity Check Protocol (PN 50811340-340N - see [www.nextteq.com](http://www.nextteq.com)), and other instructions provided by Nextteq LLC.
32. Prior to starting the Respirator Fit Test or the Sensitivity Check:
  - A. Instruct the test subject to immediately step into fresh, clean air in the event of any exposure or response to irritant smoke.
  - B. Give the test subject a complete and accurate description of the following:
    - I. The Respirator Fit Test
    - II. The Sensitivity Check
    - III. The test subject's duties and responsibilities in accordance with this manual and the Sensitivity Check Protocol (PN 50811340-340N - see [www.nextteq.com](http://www.nextteq.com)) and OSHA 29 CFR 1910.134
    - IV. The risk of serious injury or death if the instructions or warnings are not followed
33. Do not start or continue the Respirator Fit Test or the Sensitivity Check if any of the following occur:
  - A. The test subject does not pass the initial Sensitivity Check, as outlined in OSHA 29 CFR 1910.134.
  - B. The test subject does not pass the User Seal Check, as outlined in OSHA 29 CFR 1910.134.
  - C. There are any hair, clothing, caps, eyeglasses, hearing aids or other objects between the test subject's skin and the respirator face piece seal surface, or any object that interferes with valve functions.
  - D. The test subject has not correctly donned, positioned, and adjusted the respirator in accordance with OSHA 29 CFR 1910.134.
  - E. The test subject has not passed a medical evaluation in accordance with OSHA 29 CFR 910.134 prior to this test.
- F. The test subject is in poor health or any of the following conditions are present:
  - I. The test subject has a pre-existing respiratory, cardiovascular, or bronchial medical condition.
  - II. The test subject is under a physician's care for a respiratory, cardiovascular, or bronchial ailment; sinus, nasal or ear infection; or impaired immune system.
  - III. The test subject is hypersensitive or allergic to stannic chloride, stannic oxide, hydrogen chloride, tin tetrachloride, tin compounds, or metal chloride.
- G. The Respirator Fit Test and/or Sensitivity Check Administrator is not an experienced, trained, qualified, professional Respirator Fit Test and/or Sensitivity Check Administrator able to perform his or her duties in accordance with OSHA 29 CFR 1910.134 including, but not limited to, correctly performing the following:
  - I. Instructing the test subject.
  - II. Demonstrating the techniques for performing the tests.
  - III. Conducting the tests.
  - IV. Preparing test materials.
  - V. Inspecting and testing all the equipment and components and confirming that all equipment and components are in good working order and may be used together.
  - VI. Demonstrating the proper technique to generate a small, weak, dilute stream of irritant smoke with a smoke generating device.
  - VII. Recognizing an invalid test.
34. Do not distribute VeriFit Irritant Smoke Generators without a complete set of Nextteq instructions, warnings, specifications, and SDS. Distributing VeriFit Irritant Smoke Generators without a complete set of warnings, instructions, specifications, and SDS may result in misuse and lead to serious injury or death.
35. Do not expose the test subject too frequently to irritant smoke. Do not re-expose the test subject to irritant smoke until the test subject specifically and expressly confirms that all effects from the prior exposure to irritant smoke have ceased.

## Warnings

## Warnings

36. A test subject's sensitivity to irritant smoke varies based upon size, weight, heredity, age, health, and other factors. Some test subjects may respond to a greater degree than others to irritant smoke. During the Sensitivity Check, the administrator shall consider the test subject's sensitivity and be careful to generate a small, weak, dilute stream of smoke that is the absolute minimum concentration of irritant smoke necessary to elicit a response from the test subject.
37. VeriFit Irritant Smoke Generators are only to be used for Respirator Fit Testing and Sensitivity Check in strict compliance with OSHA 29 CFR 1910.134, this manual, Nextteq's Sensitivity Check Protocol (PN 50811340-340N - see [www.nextteq.com](http://www.nextteq.com)), and other instructions provided by Nextteq, LLC.
38. Do not substitute, modify, or omit parts or components. Use exact manufacturer replacement parts in configurations specified by the original manufacturer. Substitution of unauthorized parts may result in accidents, serious injury, or death.
39. The VeriFit Irritant Smoke Generator has an internal volume of approximately 8 milliliters. The pump produces a volume of approximately 7 milliliters with each complete and uniform bulb compression.
40. To produce a flow rate of approximately 200 milliliters per minute with the VeriFit Irritant Smoke Generator, uniformly and completely compress the bulb smoothly and continuously every 2 seconds for 1 minute.
41. To produce a small, weak, dilute concentration of smoke using the VeriFit Irritant Smoke Generator, slowly and gently compress the bulb at a controlled, uniform, steady rate until a small, weak, dilute stream of smoke is produced that is the absolute minimum necessary to elicit a response from the test subject being tested. Then immediately stop compressing the bulb and release the partially compressed bulb. No additional smoke is to be generated.
42. Do not dispose of irritant smoke generators with turpentine, alcohols, or amines. Exposure to turpentine, alcohols, or amines may result in chemical reaction and fire, resulting in serious injury or death.

## Warnings

43. Wear safety gloves in accordance with OSHA standards and good practice when using VeriFit Irritant Smoke Generators.
44. This product is designed for qualitative respiratory fit testing in ambient atmospheres of 32°F to 104°F, with 40% relative humidity to 95% relative humidity. Do not use this product in atmospheres of less than 40% relative humidity. Use of this product below 40% relative humidity may increase the irritant effect of the smoke.
45. Do not fit test N95, R95, P95, N99, R99, or P99 particulate respirators with VeriFit Irritant Smoke Generators. Fit testing the particulate respirators listed above with VeriFit Irritant Smoke Generators may result in serious personal injury, sickness, and/or death.
46. Ship or transport this product in accordance with all federal, state and local laws and regulations, including federal DOT regulation 49 CFR and OSHA and FAA regulations.
47. Keep this manual and all Nextteq LLC instructions and warnings available for reference and training.
48. Check with your transportation provider before bringing VeriFit Irritant Smoke Generators on an airplane, train, bus, or other method of transportation.
49. Remember, the product is only as safe as the product user.
50. If you are unsure about the proper use of VeriFit Irritant Smoke Generators for Respirator Fit Testing, any instructions or warnings or labels, specifications, test protocols, or manuals, you should call Nextteq LLC at one of the following telephone numbers: toll free 877-312-2333 or local number 813-249-5888 before using or attempting to use this product.

#### IV. OWNER / USER RESPONSIBILITY

1. The OWNER and/or USER must have an accurate and complete understanding of the manufacturer's warnings and additionally the manufacturer's operating instructions before using this product. Warning information should be emphasized and understood.
2. If the operator of this product or any person tested by this product is not fluent in English, the manufacturer's warnings and the manufacturer's operating instructions shall be accurately and completely read by the OWNER and/or USER and discussed immediately and fully with the operator of the product in the operator's native language prior to the operator using or attempting to use the product. In addition, it is the responsibility and duty of the OWNER and/or USER to make sure that the operator understands and complies with all of the manufacturer's warnings and all of the manufacturer's operating instructions prior to using or attempting to use this product.
3. If the OWNER and/or USER is unsure of or does not understand any of the manufacturer's warnings or the manufacturer's operating instructions, prior to using this product, the OWNER and/or USER should contact the manufacturer at (877)312-2333 (toll free telephone number) or at (813)249-5888 (local telephone number) and/or (877)312-2444 (toll free fax number) or (813)249-0188 (local fax number) as well as review information concerning the product on Nextteq's website at [www.nextteq.com](http://www.nextteq.com).

#### V. SAFETY DATA SHEET (SDS)

The SDS is also available at [www.nextteq.com](http://www.nextteq.com).

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##### 1 Identification

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Product identifier

**Trade name: VeriFit Irritant Smoke Generators**

**Product number:** P/N 50811000-310N & P/N 90095

**CAS number:** 7646-78-8

**EC number:** 231-588-9

**Index number:** 050-001-00-5

##### Product description

Irritant smoke generator, designed for Irritant Smoke Qualitative Fit Testing as specified by the U.S. Occupational Safety and Health Administration (OSHA).

##### Application of the substance / the mixture

Dangerous To Life: Read, understand and comply with all instructions, warnings, labels, and other literature accompanying this product before attempting to use or using this product. Use this product strictly in accordance with the manufacturer's instructions, specifications, and warnings and only with the manufacturer's specified parts, components, and accessories.

Class of Users: This product is only for sale to, only for use by, and only for storage by trained, qualified, technically competent, and professional commercial, industrial, military, or government users.

ASSISTANCE: IF THE USER IS CONFUSED ABOUT THE PROPER USE OF THE SMOKE TUBE / GENERATOR, ANY INSTRUCTIONS, WARNINGS, LABELS, OR THE MANUAL, THE USER SHOULD CONTACT NEXTTEQ LLC FOR ASSISTANCE PRIOR TO USING THE PRODUCT. NEXTTEQ'S TOLL FREE NUMBER IS: (877) 312-2333; LOCAL NUMBER IS (813) 249-5888.

SDS

**Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Nextteq LLC

8406 Benjamin Rd, Ste J

Tampa, FL 33634

877-312-2333

813-249-5888

www.nextteq.com

**Emergency telephone number:** 877-312-2333 or 813-249-5888**2 Hazard(s) identification****Classification of the substance or mixture**

Corrosion

Causes severe skin burns and eye damage.

Harmful to aquatic life with long lasting effects.

**Additional information:**

Stannic chloride reacts with ambient humidity to liberate a white smoke consisting of hydrogen chloride (HCl) and tin compounds. The emitted smoke has a strong irritating odor.

**Label elements****GHS label elements**

The substance is classified and labeled according to the Globally Harmonized System (GHS).

**Hazard pictograms**

GHS05

**Signal word** Danger**Hazard-determining components of labeling:**

stannic chloride

**Hazard statements**

Causes severe skin burns and eye damage.

Harmful to aquatic life with long lasting effects.

**Precautionary statements**

Do not breathe dust/fume/gas/mist/vapors/spray.

Wear protective gloves/protective clothing/eye protection/face protection.

Avoid release to the environment.

Wash thoroughly after handling.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Specific treatment (see on this label).

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Wash contaminated clothing before reuse.

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

Immediately call a POISON CENTER/doctor.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

**Classification system:****NFPA ratings (scale 0 - 4)**

Health = 3

Fire = 0

Reactivity = 0



HEALTH 3 Health = 3

FIRE 0 Fire = 0

REACTIVITY 0 Reactivity = 0

**3 Composition/information on ingredients****Chemical characterization: Substances****CAS No. Description**

7646-78-8 stannic chloride (&lt;0.5 ml in each VeriFit Irritant Smoke Generator)

**Identification number(s)****EC number:** 231-588-9**Index number:** 050-001-00-5**Additional information:**

Stannic chloride reacts with ambient humidity to liberate a white smoke consisting of hydrogen chloride (HCl) and tin compounds. The emitted smoke has a strong irritating odor.

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## 4 First-aid measures

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### Description of first aid measures

**General information:** Immediately remove any clothing soiled by the product.

**After inhalation:** In case of unconsciousness, place patient securely on side position for transportation.

**After skin contact:** Immediately wash with water and soap and rinse thoroughly.

**After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.

### Most important symptoms and effects, both acute and delayed

Effects of Overexposure:

Hydrogen chloride gas is corrosive. Prolonged inhalation of gas concentrations moderately above the ACGIH:

TLV ceiling of 2 ppm can irritate nasal passages. Inhalation of higher concentrations (above 2 ppm) for short periods of time can cause choking and coughing, and produce severe irritation to the mucous membranes of the upper respiratory tract. The NIOSH-recommended IDLH level is 50 ppm. HCl can cause severe irritation and tissue burns. If deeply inhaled; pulmonary edema may occur.

The emitted tin compound is also an irritant to eyes, skin and mucous membranes, due to its acidity.

### Indication of any immediate medical attention and special treatment needed

No further relevant information available.

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## 5 Fire-fighting measures

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### Extinguishing media

#### Suitable extinguishing agents:

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

#### Special hazards arising from the substance or mixture

Fire encompassing the tubes will emit toxic fumes of chlorides. Violently reacts with water to generate heat. Generates smoke with moisture in air. Mixing with alkali metal may result in an explosion.

### Advice for firefighters

If there is a fire around the area where tubes are stored, move the tubes or cool the tubes by dousing with a large amount of water. Do not put water on tubes that have been crushed or broken.

**Protective equipment:** Wear SCBA if there is danger of leakage.

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## 6 Accidental release measures

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### Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

#### Environmental precautions:

Inform respective authorities in case of seepage into water course or sewage system.

#### Methods and material for containment and cleaning up:

Absorb with liquid-binding material (ie. sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to section 13.

Ensure adequate ventilation.

#### Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

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## 7 Handling and storage

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### Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

#### Information about protection against explosions and fires:

No special measures required.

#### Conditions for safe storage, including any incompatibilities

##### Storage:

##### Requirements to be met by storerooms and receptacles:

No special requirements.

##### Information about storage in one common storage facility:

Not required.

##### Further information about storage conditions:

Keep receptacle tightly sealed.

• **Specific end use(s):** No further relevant information available.

## 8 Exposure controls/personal protection

### Additional information about design of technical systems:

No further data; see section 7.

### Control parameters

#### Components with occupational exposure limits:

##### 7646-78-8 stannic chloride

PEL Long-term value: 2 mg/m<sup>3</sup> as Sn

REL Long-term value: 2 mg/m<sup>3</sup> as Sn

TLV Long-term value: 2 mg/m<sup>3</sup> as Sn

### Additional information:

The lists that were valid during the creation were used as basis.

Hydrogen chloride gas is corrosive. Prolonged inhalation of gas concentrations moderately above the ACGIH:

TLV ceiling of 2 ppm can irritate nasal passages. Inhalation of higher concentrations (above 2 ppm) for short periods of time can cause choking and coughing, and produce severe irritation to the mucous membranes of the upper respiratory tract. The NIOSH-recommended IDLH level is 50 ppm. HCl can cause severe irritation and tissue burns. If deeply inhaled, pulmonary edema may occur.

The emitted tin compound is also an irritant to eyes, skin and mucous membranes, due to its acidity.

### Exposure controls

#### Personal protective equipment:

##### General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

#### Breathing equipment:

If voluntary use of respiratory protection is used, select an air purifying respirator equipped, at a minimum, with high efficiency particulate air (HEPA) or P100 series filters for protection against hydrogen chloride fumes that are generated with the use of this product.



### Protection of hands

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/the chemical mixture. Select glove material based on penetration times, rates of diffusion and degradation.

### Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

### Penetration time of glove material

The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

**Eye protection:** Tightly sealed goggles

## 9 Physical and chemical properties

### Information on basic physical and chemical properties

#### General Information

Opaque plastic tube with small integrated bellows pump and internal sealed ampoule of liquid stannic chloride.

#### Appearance:

**Form:** Liquid

**Color:** Colorless

**Odor:** Characteristic

**Odor threshold:** Not determined.

**pH-value:** Not determined.

#### Change in condition

**Melting point/Melting range:** -33.3 °C (-28 °F)

**Boiling point/Boiling range:** 114 °C (237 °F)

**Flash point:** Not applicable.

**Flammability (solid, gaseous):** Not applicable.

#### Ignition temperature:

**Decomposition temperature:** Not determined.

**Auto igniting:** Not determined.

SDS

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

**Lower:** Not determined.

**Upper:** Not determined.

**Vapor pressure @ 20 °C (68 °F):** 24 hPa (18 mm Hg)

**Density @ 20 °C (68 °F):** 2.23 g/cm<sup>3</sup> (18.609 lbs/gal)

**Relative density** Not determined.

**Vapor density** Not determined.

**Evaporation rate** Not determined.

**Solubility in / Miscibility with Water:** Not miscible or difficult to mix.

**Partition coefficient (n-octanol/water):** Not determined.

**Viscosity:**

**Dynamic:** Not determined.

**Kinematic:** Not determined.

**Organic solvents:** 0.0 %

**Other information** No further relevant information available.

---

## 10 Stability and reactivity

**Reactivity** No further relevant information available.

**Chemical stability**

**Thermal decomposition / conditions to be avoided:**

SnCl<sub>4</sub> decomposes upon exposure to moist air or water. HCl is a stable compound. It does not undergo hazardous polymerization; however, HCl can catalyze polymerization of other compounds.

**Possibility of hazardous reactions** No dangerous reactions known.

**Conditions to avoid** Reacts with turpentine, alcohols, and amines causing a potential fire hazard.

**Incompatible materials:**

Incompatible materials include alkali compounds, amines, metal oxides, hydroxides, copper, brass, zinc, other metals, turpentine, and alcohols. Mixing with alkali metals may result in an explosion.

**Hazardous decomposition products:**

When heated to decomposition, the smoke tubes will emit chloride fume.

---

## 11 Toxicological information

**Information on toxicological effects**

**Acute toxicity:**

**Primary irritant effect:**

**on the skin:** Strong caustic effect on skin and mucous membranes.

**on the eye:** Corrosive effect.

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:**

Swallowing will lead to a corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

**Carcinogenic categories**

**IARC (International Agency for Research on Cancer)**

Substance is not listed.

**NTP (National Toxicology Program)**

Substance is not listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

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## 12 Ecological information

**Toxicity**

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability** No further relevant information available.

**Bioaccumulative potential** No further relevant information available.

**Mobility in soil** No further relevant information available.

**Ecotoxicological effects:**

**Remark:** Harmful to fish

**Additional ecological information:**

**General notes:** Generally not hazardous for water

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

Harmful to aquatic organisms

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects** No further relevant information available.

---

## 13 Disposal considerations

**Waste treatment methods**

**Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

SDS

**Uncleaned packagings:**

**Recommendation:**

- i) Used items that no longer generate smoke do not need any special cleaning before disposal.
- ii) Used items should not be disposed of until they no longer generate smoke, or are neutralized using water and sodium carbonate (or equivalent alkaline substance).
- iii) Unused items should not be disposed of until the stannic chloride ampoule is broken and they are either allowed to fully react until they no longer smoke, or are neutralized using water and sodium carbonate (or equivalent alkaline substance).  
Consult local authorities to assure compliance with all local, state, and federal law and regulations, including but not limited to EPA regulations.

**14 Transport information**

**UN-Number, DOT, ADR, IMDG, IATA** UN1827  
**UN proper shipping name, DOT** Stannic chloride, anhydrous  
**ADR** UN1827 Stannic chloride, anhydrous  
**IMDG, IATA** STANNIC CHLORIDE, ANHYDROUS  
**Transport hazard class(es)**

**DOT**



Limited Quantity

**Class** 8 Corrosive substances.  
**Label** 8  
**ADR**



Limited Quantity

**Class** 8 (C1) Corrosive substances  
**Label** 8  
**IMDG, IATA**



Limited Quantity

**Class** 8 Corrosive substances.  
**Label** 8  
**Packing group**  
**DOT, ADR, IMDG, IATA** II  
**Environmental hazards:**  
**Marine pollutant:** No  
**Special precautions for user** Warning: Corrosive substances  
**Danger code (Kemler):** X80  
**EMS Number:** F-A,S-B  
**Segregation groups** Acids  
**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

**Transport/Additional information:**

**DOT** Ground Transportation – 49 CFR 173.4 small quantity exception for net inner packings with less than 1-liter of liquid stannic chloride. Each individual VeriFit Irritant Smoke Generator contains <0.5 ml liquid stannic chloride so this exception applies to net inner packings of up to 2000 individual VeriFit Irritant Smoke Generators.

**IATA** Air Transportation – IATA excepted quantity for net inner packings with less than 500 ml of liquid stannic chloride. Each individual VeriFit Irritant Smoke Generator contains <0.5 ml liquid stannic chloride so this exception applies to net inner packings of up to 1000 individual VeriFit Irritant Smoke Generators.

**UN “Model Regulation”:**

UN1827, Stannic chloride, anhydrous, 8, II

SDS

## 15 Regulatory information

### Safety, health and environmental regulations/legislation specific for the substance or mixture

#### Sara

##### Section 355 (extremely hazardous substances):

Substance is not listed.

##### Section 313 (Specific toxic chemical listings):

Substance is not listed.

##### TSCA (Toxic Substances Control Act):

Substance is listed.

##### Proposition 65

##### Chemicals known to cause cancer:

Substance is not listed.

##### Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

##### Chemicals known to cause reproductive toxicity for males:

Substance is not listed.

##### Chemicals known to cause developmental toxicity:

Substance is not listed.

##### Carcinogenic categories

##### EPA (Environmental Protection Agency)

Substance is not listed.

##### TLV (Threshold Limit Value established by ACGIH)

Substance is not listed.

##### NIOSH-Ca (National Institute for Occupational Safety and Health)

Substance is not listed.

##### GHS label elements

The substance is classified and labeled according to the Globally Harmonized System (GHS).

##### Hazard pictograms



**Signal word** Danger

##### Hazard-determining components of labeling:

stannic chloride

##### Hazard statements

Causes severe skin burns and eye damage.

Harmful to aquatic life with long lasting effects.

##### Precautionary statements

Do not breathe dust/fume/gas/mist/vapors/spray.

Wear protective gloves/protective clothing/eye protection/face protection.

Avoid release to the environment.

Wash thoroughly after handling.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Specific treatment (see on this label).

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Wash contaminated clothing before reuse.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Immediately call a POISON CENTER/doctor.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

##### National regulations:

Substance is not listed.

##### State Right to Know

7646-78-8 stannic chloride

Skin Corr. 1B, H314; Aquatic Chronic 3, H412 ≤ 2.5%

Substance is not listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

##### Recommended restriction of use

Other Precautions: Avoid eye and skin contact with smoke. Do not directly breathe the smoke. Avoid the buildup of smoke.

## SDS

Use in a well-ventilated area. Do not use under a hood or in a confined space. Do not blow smoke directly into anyone's unprotected face or eyes. Test only one person at a time. Do not blow smoke between test subjects. Immediately after using the smoke tube or being exposed to the smoke, scrub face, hands, and any area exposed to the smoke with soap and clean running water and always before eating, drinking, smoking, applying cosmetics, or inserting or removing contact lenses.

Do not use this product for respirator fit testing or a "Sensitivity Check" if any of the following conditions are present:

- a) The test subject has a pre-existing respiratory, cardiovascular, bronchial, and/or sinus medical condition.
- b) The test subject is under a physician's care for respiratory, cardiovascular, bronchial, and/or sinus problems.
- c) The test subject is being treated for allergies, hypersensitivity, and/or asthma and/or has a pre-existing allergy, hypersensitivity, and/or other condition.
- d) The test subject is allergic to or hypersensitive to hydrogen chloride, stannic chloride, stannic oxide, stannic dioxide, tin tetrachloride, tin compounds, hydrochloric acid, and/or metal chloride.

### Abbreviations and acronyms:

**ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

**IMDG:** International Maritime Code for Dangerous Goods

**DOT:** US Department of Transportation

**IATA:** International Air Transport Association

**ACGIH:** American Conference of Governmental Industrial Hygienists

**EINECS:** European Inventory of Existing Commercial Chemical Substances

**CAS:** Chemical Abstracts Service (division of the American Chemical Society)

**NFPA:** National Fire Protection Association (USA)

**HMIS:** Hazardous Materials Identification System (USA)

**Skin Corr. 1B:** Skin corrosion/irritation, Hazard Category 1B

**Aquatic Chronic 3:** Hazardous to the aquatic environment - Chronic Hazard, Category 3

## VI. OPERATING INSTRUCTIONS

### A. Recommended Usage

Nextteq recommends the following in regards to use of VeriFit Irritant Smoke Generators:

1. Qualitative Respirator Fit Testing be performed in accordance with OSH 29 CFR 1910.134 at the following intervals:
  - a. At time of initial respirator selection and fitting
  - b. Every six months after the initial fit testing or other successful qualitative fit test
  - c. Whenever the respirator becomes "unacceptable" to the employee and the employee properly notifies the employer of the condition. A respirator may be unacceptable if it causes irritation or pain to the employee or if because of discomfort the employee is unable to wear the respirator for the time required.
2. After being checked by the test administrator, the test subject should wear the respirator for approximately 10 minutes before starting the fit test.
3. The test subject should not be requested to make any head or facial movements until after the following has occurred:
  - a. The smoke generator has been brought within the OSHA 29 CFR 1910.134 specified distance from the test subject.
  - b. The smoke has been delivered.
  - c. No leakage of the respirator has been detected. At the time the test administrator starts to deliver smoke to the test subject and at the time the test subject is requested to commence making head or facial movements, the test administrator should be extremely alert and aware of any slight indication of the test subject's reaction to the smoke.

### B. Required Steps before Smoke Generation

1. Before using this product, read, understand, and comply with all labels, warnings, instructions, and other literature accompanying the product, including but not limited to this manual, the SDS in this manual (also available as PN 50811320-340N), and the Sensitivity Check Protocol (PN 50811340-340N - see [www.nextteq.com](http://www.nextteq.com)).

2. **Keep this manual for reference and training.**
3. Be thoroughly familiar with this product, the manufacturer's instructions and warnings, and associated equipment before using this product.
4. Inspect this product and associated equipment for damage or defects before using. Do not proceed with Respirator Fit Testing or Sensitivity Check if this product or associated equipment is damaged or defective.
5. Do not start or continue the Respirator Fit Test or the Sensitivity Check if any of the conditions described in the Warnings in Section III of this manual (specifically Warning #19 and Warning #33) exist.
6. Use only in well-ventilated areas to prevent the buildup of smoke or fumes. Do not use under a hood or other enclosed area. Do not use in a confined space.
7. Keep all bystanders away from this product and the smoke and/or fumes during use or testing.
8. Before using or attempting to use this product, users should wear the following:
  - a. Safety gloves in accordance with OSHA standards and good practice.
  - b. Respiratory protection in accordance with OSHA 29 CFR 1910.134 and NIOSH 42 CFR 84.
  - c. Eye protection in accordance with OSHA standards and good practice. Contact lenses should be worn in strict compliance with applicable NIOSH, OSHA, and ACOEM standards.
9. Respirator Fit Testing should be performed in strict compliance with OSHA 29 CFR 1910.134 and any other applicable regulation. The respirator to be tested must be equipped, at a minimum, with high efficiency particulate air (HEPA) or P100 series filters.
10. Test subject's eyes should be tightly closed and remain closed during Respirator Fit Testing or Sensitivity Check until smoke clears. Do not remove or adjust respirator during Respirator Fit Testing or in the presence of smoke or fumes. Move to an area of fresh clean air before removing or adjusting respirator.

11. A test subject's sensitivity to irritant smoke varies based upon size, weight, heredity, age, health, and other factors. Some test subjects may respond to a greater degree than others to irritant smoke. During the Sensitivity Check, the administrator shall consider the test subject's sensitivity and be careful to generate a small, dilute, weak stream of smoke that is the absolute minimum concentration of irritant smoke necessary to elicit a response from the test subject.
12. Do not re-expose the test subject to irritant smoke until the test subject specifically and expressly confirms that all effects from the prior exposure to irritant smoke have ceased.
13. During the Sensitivity Check, do not place the open end of the smoke generator closer than 36 inches from the test subject's face.
14. This product is designed for qualitative respiratory fit testing in ambient atmospheres of 40% relative humidity to 90% relative humidity. Do not use this product in atmospheres of less than 40% relative humidity.
15. Test only one test subject at a time.

### **C. *Smoke Generation and Flow Rate***

1. Ensure you are in compliance with all of the previous steps, which are required prior to smoke generation.
2. The VeriFit Irritant Smoke Generator has an internal volume of approximately 8 milliliters. The pump produces a volume of approximately 7 milliliters with each complete and uniform bulb compression.
3. To produce a flow rate of approximately 200 milliliters per minute with the VeriFit Irritant Smoke Generator, uniformly and completely compress the bulb smoothly and continuously every 2 seconds for 1 minute.
4. To produce a small, weak, dilute concentration of smoke using the VeriFit Irritant Smoke Generator, slowly and gently compress the bulb at a controlled, uniform, steady rate until a small, weak, dilute stream of smoke is produced that is the absolute minimum necessary to elicit a response from the test subject being tested. Then immediately stop compressing the bulb and release the partially compressed bulb. No additional smoke is to be generated.

5. Bend smoke generator in the middle to break the ampoule as shown in Figure 1 below.



**Figure 1** Break Ampoule

6. Remove black cap as shown in Figure 2 below. Be sure that the tip of the VeriFit Irritant Smoke Generator is pointed away from you and others.



**Figure 2** Remove Black Cap

7. Wait 5 seconds for bellows to expand and air to enter smoke generator (See Figure 3 below).



**Figure 3** Allow Air to Enter Bellows

**NOTE:** Prior to compressing the bellows, ensure the smoke generator is aimed in the correct direction and at the correct distance from test subject.

8. Slowly, gently, and uniformly compress the bellows to generate smoke as shown in Figure 4 below.



**Figure 4** Smoke is Generated

9. When testing is complete, carefully compress the pump bulb. When the pump bulb is compressed, replace the black cap over the end of the smoke generator. Store in a secure, dry, cool space away from direct light and out of the reach of children.

**NOTE:** The VeriFit Irritant Smoke Generator's all-in-one design offers convenience and easy disposal. Due to the corrosive nature of the stannic chloride in the smoke generator, discard the smoke generator within one day of activation.

10. When the VeriFit Irritant Smoke Generator is exhausted, carefully compress the pump bulb. When the pump bulb is compressed, replace the black cap over the end of the smoke generator. Dispose of the VeriFit Irritant Smoke Generator in accordance with all Federal, State, and Local laws and regulations as well as the Warnings in Section III and the SDS in Section V of this manual.

## VII. OTHER NEXTTEQ RESPIRATOR FIT TESTING AND AIRFLOW INDICATION PRODUCTS

### NEXTTEQ IRRITANT SMOKE TUBE KITS FOR RESPIRATOR FIT TESTING

P/N NX9500 / P/N NX9500-5

Featuring Nextteq Irritant Smoke Tubes, these qualitative respirator fit test kits provide a fast, safe, and reliable method to meet OSHA 29 CFR 1910.134. These test kits are always ready to use and do not require mixing or additional

equipment. The NX9500 contains everything needed for testing, including a box of 10 Nextteq irritant smoke tubes, aspirator bulb, tube tip breakers, 4 rubber end caps, tube protectors, manual and carrying case.

The NX9500-5 is the same kit with a box of 5 Nextteq irritant smoke tubes.



### NEXTTEQ NON-IRRITANT AIRFLOW TEST KIT

P/N 2106

This kit contains 6 non-corrosive smoke tubes, aspirator bulb with tubing, rubber stoppers, manual and carrying case. Kit contains everything needed for testing, including 6 non-corrosive smoke tubes. Analyzing air currents is simple and economical using Nextteq's AirFlow Test Kit. The non-corrosive smoke is

safe for use in isolation room testing, ventilation ducts, and other environments. To maximize efficiency, tubes can be plugged with the supplied rubber stoppers and reused at other test sites.



## VIII. NEXTTEQ NX-1000 GAS DETECTION SYSTEM

NX-1000  
Pump Manual

NX-1000 Pump Kit  
P/N NX-1000-130

Carrying Case



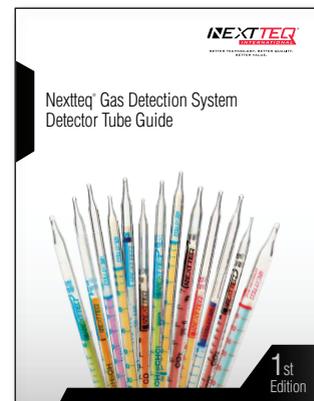
Hand Strap

The Nextteq Gas Detector Tube and Pump System product line represents well over 500 unique applications utilizing over 300 different kinds of detector tubes as part of a complete sampling and analysis system to detect and measure toxic and combustible gases or vapors and materials in support of multiple industries including: Industrial, Manufacturing, Chemical, Energy, Construction, Transportation, Medical, HAZMAT, Uniformed Services and Government Agencies.



NX-1000  
Gas Sampling  
Pump

Nextteq Gas Detection System  
Detector Tube Guide



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### **LIMITATION OF DAMAGES**

THE PARTIES HERETO AGREE THAT BUYER'S SOLE AND EXCLUSIVE DAMAGES FOR SELLER'S BREACH SHALL BE LIMITED TO THE PRICE OF THE GOODS SOLD AND THAT ALL OTHER DAMAGES, INCLUDING BUT NOT LIMITED TO CONSEQUENTIAL, INCIDENTAL, EXEMPLARY, PUNITIVE, AND STATUTORY DAMAGES ARE EXCLUDED. THE PARTIES FURTHER AGREE THAT THIS LIMITATION OF DAMAGES PROVISION IS INDEPENDENT OF THE LIMITATION OF REMEDIES PROVISION AND WILL BE ENFORCEABLE EVEN IF A REMEDY FAILS ITS ESSENTIAL PURPOSE.

### **LIMITATION OF REMEDIES**

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BETTER VALUE.

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Irritant Smoke Generators  
PN 50811300-340N Rev J 11/2020  
U.S. Patent No. 7,290,445

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