

City of Santa Barbara
Integrated Pest Management Advisory Committee
MATERIAL EXEMPTION REQUEST FOR PESTICIDE APPLICATION

Name Andrew Bermond Department Airport
Pesticide Applicator (employee or company) Lenz Pest Control Phone (805) 962-9151
Application Site 1603 Cecil Cook Place Specific Location Airport Building 321
Date(s) of Application November 2022 Date of Request October 18, 2022
Product Name Vikane/Chloropicrin Active Ingredient Sulfuryl Fluoride/Chloropicrin
Type: One-time Programmatic Emergency
Number of Applications: One Other _____
Product type: Herbicide Insecticide Fungicide Other _____
Application: Ornamental Sports Field Golf Course Vector Control Park Tree Street Tree
 Airport Runways Right of Way City Facility Other _____
Is the pesticide on the *Approved Materials List*? No Yes If yes, provide the color _____
If the pesticide is not on the *Approved Materials List*, provide the following information. Please use the Material Selection Criteria and work with a Certified Pesticide Applicator to determine the estimated color.
EPA Reg # 2025-78, 62341-15 Signal Danger _____ Estimated Color Red
Restricted No Yes/Describe Inhalation toxicity _____
P Waste _____ PBT _____ WA PBT _____ Persistent _____ Mobil _____
Cancer _____ Repro _____ Neuro _____ Endocrine _____
Bird _____ Fish _____ Bees _____ Wildlife _____

Please attach product label and MSDS to this form.

Describe the pest problem.

Termite infestation in studs discovered during remodel.

Describe the overall management goals and objectives for this site.

Eradication of termites to protect both existing structure and new wood installed in remodel.

What is the damage or action threshold for this pest at this site? (The action threshold is the number of pests or level of damage beyond which management action should be taken.)

There is no record of fumigation of this building since 2006. Action threshold is notice of substantial damage, pellets, and frass.

Describe the monitoring of the pest and potential predators that was conducted and the control methods previously used at the site.

Property was vacated by previous tenant in December 2021. New tenant's contractor has been working in the space since March 2022. Termites were not noticed until interior wall demolition took place.

Describe how the product would be applied including frequency, concentration, and method of application.

In accordance with manufacturer's guidelines and instructions, the application would be a one-time 48 hour tenting and fumigation. Concentrations of 3850 (1lb/1000ft³) of gas. Chloropicrin would be introduced for 10 minutes prior to release

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of fumigant. Dispersion of the gas from the pressure vessels to the tented volume of the exterior would occur via tubing that leads to fans for increased dispersion.

What non-target impacts are anticipated?

Building will be closed, sealed and inaccessible to humans. Pests not cleared will be killed.

How does the use of this product help achieve the site management goals? Note if this is curative or preventative.

This product is recognized for its fumigation purposes and will rid the infestation populations from eating at the structure. Maintaining structural integrity and extending the useful life of the building. Fumigation is considered palliative care for a wood structure, so this application is curative of unmet maintenance need.

How will the effectiveness of this product be monitored? Include expected results and indicators of success.

The new tenant will monitor the building for termite activity. No visible termite presence for three years is the expectation.

Describe what precautions would be used for application. For example consider restricting access, distance from a creek or body of water, degree of runoff, weather conditions, etc.

Clearance of the Airfield Operations Area (AOA) must be maintained. The building abuts the AOA, so Airport Operations and Maintenance staff will need to escort the applicator for set up and tear down of tent. The site is 800 feet from Carneros Creek.

List alternatives considered, alternatives implemented and why they were eliminated.

Heat treatment is a viable alternative for smaller structures, at 10,600 square feet, Building 321 would not be successfully cleared of termites with heat treatment.

Justification: describe why is applying this pesticide is the best solution and why a less-hazardous chemical, non-chemical option or taking no action is not feasible.

Fumigation is the most expedient, cost-effective, thorough, and longest lasting treatment available. Taking no action would reduce the remaining useful life of Building 321 and would incur damage to City facilities and costs to repair.

Was outside expertise utilized? No Yes / Describe

Lenz pest control was consulted, provided comments, and recommended fumigant.

Describe future plans to prevent using the chemical again.

With proper preventative inspections, heat treatment can be a viable solution.

Signatures


Department IPM Coordinator

City IPM Coordinator

Completed by the City of Santa Barbara IPM Staff

Vote Tally ____ Disposition: Approved Denied/Reason _____

If approved, follow the attached best management practices.

Comments:

Safety Data Sheet

Issue Date: 17-Jul-2019

Revision Date: 18-Jul-2019

Version 1

1. IDENTIFICATION

Product identifier

Product Name Chloropicrin Warning Agent

Other means of identification

SDS # DOUG-008
Document ID # SDS.Chloropicrin Warning Agent.English.20190718.1
Synonyms Nitrotrichloromethane, Trichloronitromethane, Nitrochloroform.
UN/ID No UN1580

Recommended use of the chemical and restrictions on use

Recommended Use Fumigation Warning Agent.

Details of the supplier of the safety data sheet

Supplier Address

Douglas Products and Packaging Company, LLC
 1550 East Old 210 Highway
 Liberty, MO 64068
 Customer Information Number: 800-223-3684

Emergency telephone number

Emergency Telephone 1-844-845-3129 or 1-352-326-7641

2. HAZARDS IDENTIFICATION

Appearance slightly oily, clear to light green/brown liquid **Physical state** Liquid **Odor** Tear gas odor (odor is intensely irritating)

Classification

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Specific target organ toxicity (single exposure)	Category 3

Signal Word

Danger

Hazard statements

Toxic if swallowed
 Fatal if inhaled
 Causes skin irritation
 Causes serious eye irritation
 May cause respiratory irritation



Precautionary Statements - Prevention

Wear protective gloves/protective clothing/eye protection/face protection
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Do not breathe dust/fume/gas/mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Wear respiratory protection

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 If eye irritation persists: Get medical advice/attention
 IF ON SKIN: Wash with plenty of water and soap
 Immediately call a POISON CENTER or doctor
 Take off immediately all contaminated clothing and wash it before reuse
 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 Immediately call a POISON CENTER or doctor
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 Rinse mouth

Precautionary Statements - Storage

Store locked up
 Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other hazards

Very toxic to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Nitrotrichloromethane, Trichloronitromethane, Nitrochloroform.

Chemical name	CAS No	Weight-%
Chloropicrin	76-06-2	>99.5

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General Advice	Provide this SDS to medical personnel for treatment. Any additional important symptoms and effects are described in Section 11: Toxicology Information.
Eye Contact	Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available. Obtain medical attention promptly, preferably from an ophthalmologist.
Skin Contact	Liquid: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Get medical attention immediately. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Gas: Skin absorption is unlikely due to physical properties.

Inhalation	Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc.). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
Ingestion	Call a physician and/or transport to emergency facility immediately. Do not induce vomiting unless told to do so by the poison control or doctor. Never give anything by mouth to an unconscious person.
Self-Protection of the First Aider	First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Most important symptoms and effects, both acute and delayed

Symptoms	May cause lung, liver and kidney damage. May cause allergic respiratory and skin reaction and could be fatal if inhaled. Causes eye, skin and respiratory tract irritation.
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Indication of any immediate medical attention and special treatment needed

Notes to Physician	Chloropicrin can cause irritation of the mucous membrane and upper respiratory tract. Inhalation may cause anemia, weak and irregular heart, recurrent asthmatic attacks, bronchitis, pulmonary edema, and possible death. Gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion may cause colic and death. Treat appropriately. Ensure medical personal are aware of the materials involved.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water. Dry chemical. Carbon dioxide (CO₂).

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Container may rupture from gas generation in a fire situation.

Hazardous combustion products Smoke, fumes or vapors, and oxides of carbon.

Protective equipment and precautions for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water runoff, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during firefighting operations. If contact is likely, change to full chemical resistant firefighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Isolate area. Stay upwind and out of low areas. Ventilate area of leak or spill. Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up **Small spills:** Absorb with materials such as: Clay, Dirt or Sand. Sweep up. Collect in suitable and properly labeled containers.
Large spills: Contact Douglas Products for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Wear appropriate personal protective equipment. Wash face, hands and any exposed skin thoroughly after handling. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Store locked up. Store containers upright. Protect from direct sunlight. Keep/store only in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

Incompatible Materials Amines, aniline, sodium methoxide, particularly at elevated temperatures. Do not use with PVC, aluminum, magnesium or their alloys. Mixing with water may cause formation of corrosive products over time. Contact with oxidizing and reducing agents, strong acids or bases may cause fires or explosions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Chloropicrin 76-06-2	TWA: 0.1 ppm	TWA: 0.1 ppm TWA: 0.7 mg/m ³ (vacated) TWA: 0.1 ppm (vacated) TWA: 0.7 mg/m ³	IDLH: 2 ppm TWA: 0.1 ppm TWA: 0.7 mg/m ³

Other Information RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. **APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.**

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits. Showers. Eyewash stations. Use explosion-proof ventilation equipment. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point.

Individual protection measures, such as personal protective equipment

Eye/Face Protection	Chemical safety goggles/face-shield. Refer to 29 CFR 1910.133 for eye and face protection regulations.
Skin and Body Protection	Wear clean, body-covering clothing. Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Consistent with general hygienic practice for any material, skin contact should be minimized. Refer to 29 CFR 1910.138 for appropriate skin and body protection.
Respiratory Protection	Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air purifying respirators: Organic vapor cartridge with a particulate pre-filter. Approved self-contained breathing apparatus with full face piece may be appropriate for certain operations. Refer to 29 CFR 1910.134 for respiratory protection requirements.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid		
Appearance	slightly oily, clear to light green/brown liquid	Odor	Tear gas odor (odor is intensely irritating)
Color	Clear to light green/brown	Odor Threshold	Not determined
Property	Values	Remarks • Method	
pH	non-aqueous		
Melting point / freezing point	-64°C		
Boiling point / boiling range	112°C		
Flash point	Not determined		
Evaporation Rate	Not determined		
Flammability (Solid, Gas)	Not determined		
Flammability Limit in Air			
Upper flammability or explosive limits	Not determined		
Lower flammability or explosive limits	Not determined		
Vapor Pressure	23.9 mm Hg		
Vapor Density	5.7	(Air=1)	
Relative Density	1.657		
Water Solubility	1.6 g/L 25°C, Unbuffered		
Solubility in other solvents	Not determined		
Partition Coefficient	2.1		
Autoignition temperature	Not determined		
Decomposition temperature	Not determined		
Kinematic viscosity	Not determined		
Dynamic Viscosity	Not determined		
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		

Other information

NOTE: The physical data presented above are typical values and should not be construed as a specification

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid

Incompatible Materials. Excessive heat.

Incompatible materials

Amines, aniline, sodium methoxide, particularly at elevated temperatures. Do not use with PVC, aluminum, magnesium or their alloys. Mixing with water may cause formation of corrosive products over time. Contact with oxidizing and reducing agents, strong acids or bases may cause fires or explosions.

Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: hydrogen chloride, phosgene, carbon monoxide, oxides of nitrogen, irritating and toxic fumes and gases, carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye Contact	Causes serious eye irritation. Corneal injury is unlikely. Powerful lachrymator, commonly referred to as tear gas.
Skin Contact	Skin absorption is unlikely due to physical properties. Prolonged skin contact is unlikely to result in absorption of harmful amounts. As a product the Dermal LD50 has not been determined.
Inhalation	Pungent, sore throat, coughing, labored breathing, dizziness, nausea, vomiting, bluish skin, faintness. Serious cases may be fatal. As a product the Inhalation LC50 has not been determined.
Ingestion	May cause severe burns of the mouth and throat. Ingestion may cause gastrointestinal irritation or ulceration. In animals, effects have been reported on the following organ: liver. As a product the Oral LD50 has not been determined.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Causes redness and chemical burns. Liquid chloropicrin has a corrosive action on the skin. Scratches or abrasions exposed to chloropicrin fumes invariably become septic.
Germ cell mutagenicity	Has been shown to have mutagenic activity in bacteria. Animal mutagenicity studies were inconclusive.
Carcinogenicity	Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
STOT - single exposure	May cause drowsiness or dizziness.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life. This material is toxic to mammals, birds, and aquatic invertebrates.

Chemical name	Algae/aquatic plants	Fish	Crustacea
Chloropicrin 76-06-2		0.092 - 0.119: 96 h <i>Lepomis macrochirus</i> mg/L LC50 static 0.0142 - 0.019: 96 h <i>Oncorhynchus mykiss</i> mg/L LC50 static	

Persistence/Degradability

The half-life of chloropicrin in sandy loam soil was 8-24 hours and 4.5 days with carbon dioxide being the terminal breakdown product.

Bioaccumulation

The octanol/water partition coefficient (Log₁₀ K_{ow}) is 2.50 at 25°C indicating that chloropicrin would not be expected to bioaccumulate in mammalian cells.

Mobility

Chloropicrin moves rapidly in soils within twelve inches of injection but may diffuse to a maximum depth of four feet in sandy soil. Since it is only slightly soluble in water, it will not move rapidly in aquatic environments. In an anaerobic aquatic/soil system, chloropicrin was converted to nitromethane with a half-life of 1.3 hours. In the absence of sunlight or microorganisms, chloropicrin does not undergo hydrolysis.

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

UN/ID No UN1580
Proper Shipping Name Chloropicrin
Hazard class 6.1
Packing Group I
Special Provisions Toxic-Inhalation Hazard Zone B
Marine Pollutant Yes.

IATA

Forbidden

IMDG

UN number UN1580
Proper Shipping Name Chloropicrin
Transport hazard class(es) 6.1
Packing Group I
Special Provisions Toxic-Inhalation Hazard Zone B
Marine Pollutant Yes

15. REGULATORY INFORMATION

International Inventories

Chemical name	TSCA	TSCA Inventory Status	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Chloropicrin	X	ACTIVE	X	X	X	X	X	X	X

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 311/312 Hazard Categories

Acute Health Hazard Yes
Chronic Health Hazard No
Fire Hazard No
Sudden Release of Pressure Hazard No
Reactive Hazard No

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS No	Weight-%	SARA 313 - Threshold Values %
Chloropicrin - 76-06-2	76-06-2	>99.5	1.0

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Chloropicrin 76-06-2	X	X	X

16. OTHER INFORMATION**NFPA****Health Hazards**

4

Flammability

0

Instability

3

Special Hazards

None

HMIS**Health Hazards**

4

Flammability

0

Physical hazards

3

Personal Protection

See Section 8

Issue Date: 17-Jul-2019

Revision Date: 18-Jul-2019

Revision Note: New format

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

1. IDENTIFICATION

Product identifier**Product Name** Vikane™**Other means of identification****SDS #** DOUG-005
Document ID # SDS.VIKANE.English.20190715.1
Registration Number(s) EPA Reg. No. 1015-78
UN/ID No UN2191**Recommended use of the chemical and restrictions on use****Recommended Use** End Use Fumigant.**Details of the supplier of the safety data sheet****Supplier Address**Douglas Products and Packaging Company, LLC
1550 East Old 210 Highway
Liberty, MO 64068
Customer Information Number: 800-223-3684**Emergency telephone number****Emergency Telephone** 1-844-845-3129 or 1-352-326-7641

2. HAZARDS IDENTIFICATION

Emergency Overview: This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance: Colorless gas**Physical state:** Gas**Odor:** Odorless**Classification**

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Gases)	Category 2
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 1
Specific target organ toxicity (repeated exposure)	Category 2
Gases under pressure	Liquefied gas

Signal Word**Danger****Hazard statements**Toxic if swallowed
Fatal if inhaled
May cause cancer
Causes damage to organs
May cause damage to organs through prolonged or repeated exposure
Contains gas under pressure; may explode if heated

**Precautionary Statements - Prevention**

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Do not breathe dust/fume/gas/mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Wear respiratory protection

Precautionary Statements - Response

If exposed or concerned: Get medical advice/attention
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 Immediately call a poison center or doctor/physician
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 Rinse mouth

Precautionary Statements - Storage

Store locked up
 Store in a well-ventilated place. Keep container tightly closed
 Protect from sunlight

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other hazards

Very toxic to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No	Weight-%
Sulfuryl fluoride	2699-79-8	99.8
Other ingredients	Proprietary	0.1

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures**General Advice**

Provide this SDS to medical personnel for treatment. Any additional important symptoms and effects are described in Section 11: Toxicology Information.

Eye Contact

Liquid: In case of frostbite, immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention promptly, preferably from an ophthalmologist.
 Gas: No treatment required.

Skin Contact	Liquid: Immediately apply water to contaminated area of clothing before removing. Once area has thawed, remove contaminated clothing, shoes, and other items covering skin. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice. Thoroughly aerate clothing and shoes contacted by liquid fumigant before wearing again. Gas: No treatment required. No decontamination of clothing or shoes covering the skin is required.
Inhalation	Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel. If the person is not breathing and has no pulse, consider cardiopulmonary resuscitation (CPR); use pocket resuscitation mask, bag valve mask etc., to avoid risk of poisoning rescuer. To prevent pulmonary edema have the person inhale 5 shots of an aerosol corticosteroid metered dose inhaler (if available), such as beclomethasone or fluticasone, etc., every 10 minutes until the person is evaluated by a physician.
Ingestion	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
Self-Protection of the First Aider	First Aid responders should pay attention to self-protection and use the recommended protective clothing (gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Most important symptoms and effects, both acute and delayed

Symptoms	Fatal if inhaled. Toxic if swallowed. See Section 11: Toxicological Information of this SDS for more detailed symptoms.
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Indication of any immediate medical attention and special treatment needed

Notes to Physician	Maintain adequate ventilation and oxygenation of the patient. Sulfuryl fluoride is a gas which has no warning properties such as odor or eye irritation. The prediction of possible human effects is based in part on observations made on laboratory animals. Treat for frostbite from exposure to the liquid fumigant if present (eyes, skin) with gentle rewarming by water irrigation for at least 15 minutes. Clinical observation is essential. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. There is no known antidote for overexposure to sulfuryl fluoride. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. It is predicted that persons exposed to sulfuryl fluoride will show little evidence of intoxication at first, unless the concentration is very high (greater than 400 ppm). Early symptoms of exposure to sulfuryl fluoride are respiratory irritation and central nervous system depression. Excitation may follow. Slowed movement, reduced awareness, and slow or garbled speech may be noted. It is essential to keep such an individual at bed rest for at least 24 hours. Clinical observations should be directed at the pulmonary, hepatic, and renal systems. Prolonged exposure can produce lung irritation, pulmonary edema, nausea, and abdominal pain. Repeated exposure to high concentrations can result in significant lung and kidney damage. Convulsions may ensue with respiratory arrest being the terminal event. Assisted respiration may be necessary. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Respiratory symptoms, including pulmonary edema, may be delayed. Consider administering a complete aerosol corticosteroid metered dose inhaler (100-150 shots) or equivalent as initial preventive treatment for incipient pulmonary edema. Consider administering 250-1000 mg prednisolone IV on the first day of treatment. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Container may rupture from gas generation in a fire situation.

Hazardous combustion products: Decomposition products can include and are not limited to: Hydrogen fluoride. Sulfur oxides. Toxic gases are released during decomposition.

Protective equipment and precautions for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain fire water run-off if possible. Fire water runoff, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during firefighting operations. If contact is likely, change to full chemical resistant firefighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Isolate area. Stay upwind and out of low areas. Ventilate area of leak or spill. Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Isolate area until gas has dispersed. Small spills: Knock down and dilute vapors with water fog or spray. Apply vapor suppression foams until spill can be cleaned up. Use non-sparking tools in cleanup operations.

Large spills: Contact Douglas Products for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep/store only in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

Incompatible Materials Strong bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuryl fluoride 2699-79-8	STEL: 10 ppm TWA: 5 ppm TWA: 2.5 mg/m ³ F	TWA: 5 ppm TWA: 20 mg/m ³ TWA: 2.5 mg/m ³ F (vacated) TWA: 5 ppm (vacated) TWA: 20 mg/m ³ (vacated) TWA: 2.5 mg/m ³ (vacated) STEL: 10 ppm (vacated) STEL: 40 mg/m ³	IDLH: 200 ppm IDLH: 250 mg/m ³ F TWA: 5 ppm TWA: 20 mg/m ³ STEL: 10 ppm STEL: 40 mg/m ³
Other ingredients	TWA: 10 ppm	TWA: 50 ppm (vacated) TWA: 1 ppm (vacated) TWA: 4 mg/m ³ (vacated) STEL: 2 ppm (vacated) STEL: 8 mg/m ³ Ceiling: 100 ppm	IDLH: 50 ppm TWA: 1 ppm TWA: 4 mg/m ³ STEL: 2 ppm STEL: 8 mg/m ³

Other Information RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. **APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.**

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits. Showers. Eyewash stations. Ventilation systems. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

Individual protection measures, such as personal protective equipment

Eye/Face Protection For handling the gas, wear safety glasses (with side shields). When contact with the liquid (condensed gas) is possible, wear chemical goggles. Refer to 29 CFR 1910.133 for eye and face protection regulations.

Skin and Body Protection Wear clean, body-covering clothing. Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized. Refer to 29 CFR 1910.138 for appropriate skin and body protection.

Respiratory Protection Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. When respirator protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. Refer to 29 CFR 1910.134 for respiratory protection requirements.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Gas	Odor	Odorless
Appearance	Colorless gas	Odor Threshold	Odorless
Color	Colorless		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not applicable	
Melting point / freezing point	-137°C / -215°F	
Boiling point / boiling range	-54°C / -65°F	
Flash point	Not applicable	
Evaporation Rate	Not applicable	
Flammability (Solid, Gas)	Not Flammable	
Flammability Limit in Air		
Upper flammability or explosive limits	Not applicable	
Lower flammability or explosive limits	Not applicable	
Vapor Pressure	18,000 hPa	(at 20°C/68°F)
Vapor Density	3.5	(at 20°C/68°F) (Air=1)
Relative Density	1.35	(Water=1)
Water Solubility	1.04 g/L 20°C, Unbuffered	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Autoignition temperature	Not applicable	
Decomposition temperature	Not determined	
Kinematic viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

Other information

Softening Point NOTE: The physical data presented above are typical values and should not be construed as a specification

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid

Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials

Strong bases.

Hazardous decomposition products

Decomposition products can include and are not limited to: Hydrogen fluoride. Sulfur oxides. Toxic gases are released during

decomposition.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye Contact	No hazard from gas. Liquid may cause frostbite.
Skin Contact	Prolonged skin contact is unlikely to result in absorption of harmful amounts. The dermal LD50 of Sulfuryl fluoride has not been determined.
Inhalation	Fatal if inhaled. Vapor concentrations are attainable which may be fatal with single exposure. Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs.
Ingestion	Toxic if swallowed. Swallowing is unlikely because of the physical state. Single dose oral LD50 of Sulfuryl fluoride has not been determined.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Sulfuryl fluoride 2699-79-8	-	-	= 991-1122 ppm (Rat) 4 h
Other ingredients	= 680 mg/kg (Rat)	= 4890 mg/kg (Rabbit)	= 4 mg/L (Rat) 6 h

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Please see section 4 of this SDS for symptoms.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Essentially nonirritating to skin. Liquid may cause frostbite upon skin contact.
Germ cell mutagenicity	Most in vitro genetic toxicity studies were negative, but some were positive due to artifacts associated with the test system. Animal genetic toxicity studies were negative.
Carcinogenicity	Carcinogenic potential is unknown.

Chemical name	ACGIH	IARC	NTP	OSHA
Sulfuryl fluoride 2699-79-8		Group 2A		X
Other ingredients		Group 2B	Reasonably Anticipated	X

Reproductive toxicity	In animal studies, did not interfere with reproduction.
Teratogenicity	Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
STOT - single exposure	Causes damage to organs. Route of Exposure: Inhalation Target Organs: Kidney.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure. In animals, effects have been reported on the following organs: Central nervous system, Kidney, Lung, Respiratory tract, Thyroid observations in animals include: Convulsions, Tremors. May cause fluorosis of teeth and bones.

Numerical measures of toxicity

Oral LD50	100.20 mg/kg
Gas	100.20 mg/L
ATEmix (inhalation-dust/mist)	0.50 mg/L

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life.

Component Information

Chemical name	Algae/aquatic plants	Fish	Crustacea
Sulfuryl fluoride	EyC50, Pseudokirchneriella subcapitata (green algae), static test, 96 Hour, Growth inhibition (cell density reduction), 3.05 mg/l EbC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Biomass, 0.58 mg/l ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, 1.13 mg/l	LC50, Danio rerio (zebra fish), static test, 96 Hour, 0.89 mg/l	EC50, Daphnia magna (Water flea), static test, 48 Hour, 0.62 mg/l
Other ingredients	433: 96 h Pseudokirchneriella subcapitata mg/L EC50 166: 96 h Desmodesmus subspicatus mg/L EC50 static	225: 96 h Oncorhynchus mykiss mg/L LC50 static 110 - 123: 96 h Pimephales promelas mg/L LC50 flow-through 230 - 710: 96 h Lepomis macrochirus mg/L LC50 flow-through	140 - 190: 48 h Daphnia magna mg/L EC50 Static

Persistence/Degradability

Chemical degradation (hydrolysis) is expected in the environment.

Bioaccumulation

Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Partition coefficient: n-octanol/water (log Pow): 0.41 Estimated.

Mobility

Potential for mobility in soil is very high (Koc between 0 and 50). Partition coefficient (Koc): 6 Estimated

Chemical name	Partition coefficient
Other ingredients	1.45

Other Adverse Effects

Toxicity to Above Ground Organisms

LC50, Apis mellifera (bees), 2 Hour, mortality, 6.5mg/l

LC50, Colinus virginianus (Bobwhite quail), 4 Hour, 1,844 ppm

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

Chemical name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Other ingredients	U077	Included in waste streams: F024, F025, F039, K018, K019, K020, K029, K030, K096	0.5 mg/L regulatory level	U077

Chemical name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Other ingredients	Category I - Volatiles		Toxic waste waste number F025 Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	

California Hazardous Waste Status

Chemical name	California Hazardous Waste Status
Sulfuryl fluoride 2699-79-8	Toxic
Other ingredients	Toxic Ignitable

14. TRANSPORT INFORMATION**Note**

Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

UN/ID No UN2191
Proper Shipping Name Sulfuryl Fluoride
Hazard class 2.3

IATA

Forbidden

IMDG

UN number UN2191
Proper Shipping Name Sulfuryl Fluoride
Transport hazard class(es) 2.3
Marine Pollutant Yes

15. REGULATORY INFORMATION**International Inventories**

Chemical name	TSCA	DSL/NDSL	EINECS/E LINC S	ENCS	IECSC	KECL	PICCS	AICS
Sulfuryl fluoride	X	X	X	X	X	X	X	
Thionyl fluoride	X	X	X					
Ethylene dichloride	X	X	X	X	X	X	X	X

Legend:

- TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical name	CAS No	Weight-%	SARA 313 - Threshold Values %
Sulfuryl fluoride - 2699-79-8	2699-79-8	99.8	1.0
Other ingredients	Proprietary	0.1	0.1

US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals.

Chemical name	California Proposition 65
Other ingredients	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Sulfuryl fluoride 2699-79-8	X	X	X
Other ingredients	X	X	X

EPA Pesticide Registration Number EPA Reg. No. 1015-78

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label

Extremely Hazardous Liquid And Vapor Under Pressure. Fatal If Inhaled. May Be Fatal If Swallowed. Liquid May Cause Freeze Burns of Exposed Skin. Do not get in eyes, on skin, or on clothing. Vikane specialty gas fumigant is odorless. Exposure to toxic levels may occur without warning or detection by the user.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Danger	Danger
Acute toxicity - Oral	May be fatal if swallowed	Toxic if swallowed
Acute toxicity - Inhalation	Fatal if inhaled	Fatal if inhaled
Carcinogenicity	N/A	May cause cancer
Specific target organ toxicity (single exposure)	N/A	Causes damage to organs
Specific target organ toxicity (repeated exposure)	N/A	May cause damage to organs through prolonged or repeated exposure

16. OTHER INFORMATION**NFPA****Health Hazards****Flammability****Instability****Special Hazards**

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None

HMIS**Health Hazards****Flammability****Physical hazards****Personal Protection**

Not determined

Not determined

Not determined

Not determined

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Revision Note:

Editorial updates

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet