Safety Data Sheet

Halotron® I

Section 1. Identification

GHS product identifier : Halotron® I

Synonyms : HCFC Blend B, Halotron I Pre-Sat Base

Product use : Fire extinguishing agents

Restrictions on use : None known.

In case of emergency - Chemical

Hours of operation : 24 hours a day, 7 days a week

CHEMTREC Customer Number : CCN721187

Telephone number : +1 703 741 5970 (International)
+1 800 424 9300 (US & Canada)

Manufacturer / Supplier

American Pacific
10622 West 6400 North
Cedar City, UT 84721

Telephone: +1 (435) 865-5000
Fax: +1 (435) 865-5005

Use of substance/ preparation : Halotron® I is a clean fire-extinguishing agent for streaming and local applications. NFPA 2001, "Standard on Clean Agent Fire Extinguishing Systems" defines a "Clean Agent" to be "electrically non-conducting, volatile, or gaseous fire extinguishant that does not leave a residue upon evaporation." Halotron® I is a safe, effective, environmentally acceptable clean agent. It is discharged as a liquid, which rapidly evaporates (i.e. it is volatile). It is a proprietary three component chemical blend based on HCFC-123 that has been found acceptable by the U.S. EPA under its Significant New Alternatives Policy (SNAP) program (referred to as “HCFC Blend B”) for all non-residential use (including commercial/industrial, military, and maritime use) in streaming applications as a substitute for halon 1211 (bromochlorodifluoromethane or "BCF").

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : CHEMICALS UNDER PRESSURE - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
AQUATIC HAZARD (ACUTE) - Category 3
HAZARDOUS TO THE OZONE LAYER - Category 1

GHS label elements

Hazard pictograms :



Signal word : Warning

Section 2. Hazards identification

Hazard statements : Chemical under pressure: May explode if heated.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure. (liver)
Harmful to aquatic life.
Harms public health and the environment by destroying ozone in the upper atmosphere.

Precautionary statements

Prevention : Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

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

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations. Refer to manufacturer or supplier for information on disposal or recovery or recycling.

Other hazards which do not result in classification : None known.

Hazards identified when used : Based on known or expected use, no additional hazards are expected.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Synonyms : Ethane, 2,2-dichloro-1,1,1-trifluoro-; HCFC-123; Dichlorotrifluoroethane

Ingredient name	Identifiers	Conc. (% w/w)	GHS Classification
2,2-dichloro-1,1,1-trifluoroethane	CAS: 306-83-2 EC: 206-190-3	>93	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 AQUATIC HAZARD (ACUTE) - Category 3 HAZARDOUS TO THE OZONE LAYER - Category 1
argon	CAS: 7440-37-1 EC: 231-147-0	<3.5	GASES UNDER PRESSURE - Compressed gas
carbon tetrafluoride	CAS: 75-73-0 EC: 200-896-5	<3.5	GASES UNDER PRESSURE - Compressed gas

Any concentration shown as a range is to protect confidentiality or is due to batch variation. If specific chemical identify is withheld, it is to protect confidentiality.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open

Section 4. First aid measures

airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Irritation and tearing may result. Mild to moderate reversible eye effects.

Inhalation : Significant exposure may cause central nervous system effects such as dizziness, drowsiness, anesthesia, or unconsciousness.High concentrations of 20,000 ppm (v/v) or higher, may cause cardiac arrhythmia.

Skin contact : Evaporative cooling can result in chilling sensations or frostbite effects. Short exposures, such as when filling equipment or in other situations, should not have a lasting effect.

Ingestion : Not likely to occur in industrial use. Highly volatile liquid.
Can cause central nervous system (CNS) depression.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : Halotron I is a colorless volatile, pressurized liquid with a slight ether-like odor. As with any chemical, dose and exposure are critically important variables to understand any potential treatment. Short-term exposure to high concentrations may result in central nervous system and cardiac effects. Long-term exposure to concentrations above those time-weighted averages recommended herein may result in liver effects.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : This material may make the heart more susceptible to arrhythmias. Catecholamines such as adrenaline, and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire-fighting measures

Extinguishing media : The properties of this chemical make it an ideal extinguishing media itself.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion. Bursting aerosol containers may be propelled from a fire at high speed. Runoff to sewer may create fire or explosion hazard.The concentrated agent when applied to fire can produce toxic by-products specifically hydrogen halides, which can cause damage. Avoid inhalation of these materials by evacuating and ventilating the area.

Section 5. Fire-fighting measures

Hazardous thermal decomposition products : Decomposition products may include the following materials:
halogenated compounds
carbonyl halides
hydrogen halides
hydrochloric acid
hydrofluoric acid
carbonyl halides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. In the case of aerosols being ruptured, care should be taken due to the rapid escape of the pressurized contents and propellant. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Allow for adequate ventilation, and do not re-enter an area without a self-contained breathing apparatus (SCBA) until adequate ventilation is accomplished. For spills that might result in overexposure, evacuate the area and use protective gear and SCBA's. The vapours are heavier than air; therefore use caution when large volume releases occur in low-lying areas where concentrated vapors may accumulate.
Recommended 1 Hr. Emergency Exposure Limit: 1000 ppm (v/v) on the same basis as above
Recommended 1 Min. Emergency Exposure Limit: 2500 ppm (v/v) on the same basis as above.
Approach release from upwind. Contaminated absorbent material may pose the same hazard as the spilled product.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not pierce or burn, even after use. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous.

Advice on general occupational hygiene : Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
argon	**ACGIH TLV (United States, 1/2025)** Oxygen depletion [asphyxiant].
carbon tetrafluoride	**ACGIH TLV (United States, 1/2025) [Fluorides]** A4. TWA 8 hours: 2.5 mg/m³ (as F). **OSHA PEL (United States, 5/2018) [Fluorides]** TWA 8 hours: 2.5 mg/m³ (as F). **OSHA PEL Z2 (United States, 2/2013) [Fluoride as dust]** TWA 8 hours: 2.5 mg/m³. Form: Dust.
Time Weighted Exposure Limits: (For persons regularly exposed to material) Workplace Environmental Exposure Level, WEEL (AIHA) (8 hrs.): 50 ppm (v/v), based on the primary component (HCFC-123)	
carbon tetrafluoride	**Safe Work Australia (Australia, 11/2025) [Fluorides]** TWA 8 hours: 2.5 mg/m³ (as F).
2,2-DICHLORO-1,1,1-TRIFLUOROETHANE	**ISHA Article 42 (Republic of Korea, 1/2020)** TWA 8 hours: 10 ppm.
TETRAFLUOROMETHANE	**ISHA Article 42 (Republic of Korea, 1/2020) [Fluorides]** TWA 8 hours: 2.5 mg/m³ (as F).
2,2-Dichloro-1,1,1-trifluoroethane	**Japan Society for Occupational Health (Japan, 9/2025)** OEL-M 8 hours: 10 ppm. OEL-M 8 hours: 62 mg/m³.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. This statement is not intended to apply to use of a fire extinguisher where the nozzle arrangement is intended to direct the discharge away from the user of the extinguisher.

Skin protection

Section 8. Exposure controls/personal protection

Hand protection : Hand Protection: Wear chemical resistant gloves. Nitrile gloves of minimum thickness 0.4 mm have an expected breakthrough time of 480 minutes or less when in frequent contact with the product. Due to variable exposure conditions the user must consider that the practical use of a chemical-protective glove in practice may be much shorter than the permeation time above. Manufacturer's directions for use, especially about the minimum thickness and the minimum breakthrough time, must be observed. This information does not replace suitability tests by the end user since glove protection varies depending on the conditions under which the product is used.

Body protection : Protective shoes, such as steel toed shoes, should be worn in addition to the other specified personal protective equipment (PPE) when handling bulk containers. If handling bulk material or transferring the material from fire protection equipment, wear safety glasses with side shields. This statement is not intended to apply to use of a fire extinguisher where the nozzle arrangement is intended to direct the discharge away from the user of the extinguisher. Wear protective clothing when handling a leak in a storage container (does not apply to fire protection equipment servicing, other than safety goggles and gloves if large volumes can be exposed to skin). Short exposures to skin are not likely to pose a hazard. Respiratory protection is not normally needed, however, if handled in enclosed spaces where applicable exposure limits might be exceeded, a SCBA should be used. When performing filling or servicing operations, PERFORM THESE ACTIVITIES IN A WELL-VENTILATED AREA.

Other skin protection : Protective shoes, such as steel toed shoes, should be worn in addition to the other specified personal protective equipment (PPE) when handling bulk containers.

Respiratory protection : If handled in enclosed spaces where applicable exposure limits might be exceeded, a SCBA should be used.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Chemicals under pressure]

Color : Colorless.

Odor : Ether-like. [Slight]

Odor threshold : Not available.

pH : Not applicable.

Melting point : Not applicable.

Boiling point : 27°C (80.6°F)

Flash point : Not applicable.

Evaporation rate : Faster than water, slower than ether

Flammability (solid, gas) : Not applicable

Lower and upper explosive (flammable) limits : Not applicable

Vapor pressure : 655 kPa (4913 mm Hg) 95 psig

Vapor density : approx. 6.08 kg/m3 (0.387 lb./ft3) at 25° C (77° F)

Density : 1.48 g/cm³ [77°F (25°C)] [Liquid.]

Relative density : 5.1 [Air = 1]

Molecular weight : 150.7

Solubility(ies) :

Media	Result
water	0.39% wt. @ 25° C (77° F), 1 atm

Partition coefficient: n-octanol/water : 2 to 2.8

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (104°F (40°C)): Not available.

Explosive properties : Not applicable

Section 9. Physical and chemical properties

Oxidizing properties : Not applicable

Section 10. Stability and reactivity

Reactivity : Decomposes on heating.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Not available

Incompatible materials : Strong oxidizing and reducing agents. Incompatible with alkali or alkaline earth metals, and powdered metals Al, Zn, Be, etc.

Hazardous decomposition products : hydrochloric acid
hydrofluoric acid
carbonyl halides

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Dose	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 401 [Acute Oral Toxicity]	Rat - Oral - LD50	<9000 mg/kg	
	OECD 402 [Acute Dermal Toxicity]	Rat - Dermal - LD50	>2000 mg/kg	
	None available.	Rat - Inhalation - LC50 Gas.	32000 ppm [4 hours]	
carbon tetrafluoride	OECD 403 [Acute Inhalation Toxicity]	Rat - Inhalation - LC50 Gas.	>186000 ppm [4 hours]	Based on data for a similar substance.

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Test	Result	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 404 [Acute Dermal Irritation/Corrosion]	Rabbit - Skin - Not irritant	
	OECD 405 [Acute Eye Irritation/ Corrosion]	Rabbit - Eyes - Not irritant	

Conclusion/Summary

Skin : Not available.

Eyes : Not available.

Respiratory : Not available.

Respiratory or skin sensitization

Product/ingredient name	Test	Result	Remarks
2,2-dichloro-1,1,1-trifluoroethane	None available.	Guinea pig - skin Not sensitizing	

Conclusion/Summary

Skin : Not available.

Respiratory : Not available.

Germ cell mutagenicity

Section 11. Toxicological information

Product/ingredient name	Test	Result	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 471 [Bacterial Reverse Mutation Test]	In vitro - Bacteria Negative	
	OECD 473 [In vitro Mammalian Chromosomal Aberration Test]	In vitro - Mammalian-Human Positive	WOE does not support classification
	OECD 473 [In vitro Mammalian Chromosomal Aberration Test]	In vitro - Mammalian-Human Positive	WOE does not support classification
	None available.	In vivo - Mammalian-Animal - Inhalation Negative	
	None available.	In vivo - Mammalian-Animal - Inhalation Negative	
	None available.	In vivo - Mammalian-Animal - Inhalation Negative	
carbon tetrafluoride	OECD 471 [Bacterial Reverse Mutation Test]	In vitro - Bacteria Negative	Based on data for a similar substance.
	OECD 473 [In vitro Mammalian Chromosomal Aberration Test]	In vitro - Mammalian-Animal Equivocal	Based on data for a similar substance. WOE does not support classification
	OECD 476 [In vitro Mammalian Cell Gene Mutation Test]	In vitro - Mammalian-Animal Negative	Based on data for a similar substance.
	OECD 474 [Mammalian Erythrocyte Micronucleus Test]	In vivo - Mammalian-Animal Negative	Based on data for a similar substance.

Conclusion/Summary : Not available.

Carcinogenicity

Product/ingredient name	Test	Result	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 453 [Combined Chronic Toxicity/ Carcinogenicity Studies]	Rat - Inhalation - NOAEL <300 ppm [6 hours per day] [2 years] Positive	WOE does not support classification

Conclusion/Summary : Not available.

Reproductive toxicity

Product/ingredient name	Test	Species	Result	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 416 [Two-Generation Reproduction Toxicity Study]	Rat - Inhalation	Maternal toxicity: Positive Fertility effects: Equivocal Developmental: Positive	WOE does not support classification
	OECD 414 [Prenatal Developmental Toxicity Study]	Rabbit - Inhalation	Maternal toxicity: Positive Fertility effects: Negative Developmental: Negative	
carbon tetrafluoride	OECD 422 [Reproduction/ Developmental Toxicity Screening Test]	Rat - Inhalation	Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative	Based on data for a similar substance.
	OECD 414 [Prenatal Developmental Toxicity Study]	Rat - Inhalation	Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative	Based on data for a similar substance.
	OECD 414 [Prenatal Developmental Toxicity Study]	Rabbit - Inhalation	Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative	Based on data for a similar substance.

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
2,2-dichloro-1,1,1-trifluoroethane	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
2,2-dichloro-1,1,1-trifluoroethane	Category 2	inhalation	liver

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Irritation and tearing may result. Mild to moderate reversible eye effects.

Inhalation : Significant exposure may cause central nervous system effects such as dizziness, drowsiness, anesthesia, or unconsciousness.High concentrations of 20,000 ppm (v/v) or higher, may cause cardiac arrhythmia.

Skin contact : Evaporative cooling can result in chilling sensations or frostbite effects. Short exposures, such as when filling equipment or in other situations, should not have a lasting effect.

Ingestion : Not likely to occur in industrial use. Highly volatile liquid.
Can cause central nervous system (CNS) depression.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : Halotron I is a colorless volatile, pressurized liquid with a slight ether-like odor. As with any chemical, dose and exposure are critically important variables to understand any potential treatment. Short-term exposure to high concentrations may result in central nervous system and cardiac effects. Long-term exposure to concentrations above those time-weighted averages recommended herein may result in liver effects.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Result	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 453 [Combined Chronic Toxicity/ Carcinogenicity Studies] OECD 413 [Subchronic Inhalation Toxicity: 90-day Study] None available.	Chronic - Rat - Inhalation - LOAEL Vapor 300 ppm [6 hours per day] [2 years] Sub-chronic - Rat - Inhalation - LOAEL Vapor 300 ppm [6 hours per day] [90 days] Sub-acute - Rat - Inhalation - NOAEL 500 ppm [6 hours per day] [3 months]	

Section 11. Toxicological information

carbon tetrafluoride	OECD 412 [Repeated Dose Inhalation Toxicity: 28-day or 14-day Study] None available.	Sub-acute - Rat - Inhalation - LOAEL Vapor 1000 ppm [6 hours per day] [4 weeks] Sub-chronic - Rat - Inhalation - NOAEL Gas. 10000 ppm [90 days]	Based on data for a similar substance.

Conclusion/Summary : Not available.

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Result	Species	Remarks
2,2-dichloro-1,1,1-trifluoroethane	OECD 203 [Fish, Acute Toxicity Test] OECD 202 [Daphnia sp. Acute Immobilization Test and Reproduction Test]	Acute - LC50 55.5 mg/l [96 hours] Acute - EC50 17.3 mg/l [48 hours] Acute - EC50 96.6 mg/l [72 hours]	Fish - *Oncorhynchus mykiss* Crustaceans - *Daphnia magna* Algae - *Raphidocelis subcapitata*	

Conclusion/Summary : Harmful to aquatic life.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1956	UN1956	UN1956	UN1956
UN proper shipping name	Compressed gases n.o.s. (Argon, Tetrafluoromethane)	Compressed gases n.o.s. (Argon, Tetrafluoromethane)	Compressed gases n.o.s. (Argon, Tetrafluoromethane)	Compressed gases n.o.s. (Argon, Tetrafluoromethane)
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Section 14. Transport information

This product is classified when shipped as a fire extinguisher: UN1044 FIRE EXTINGUISHERS with compressed or liquefied gas, 2.2

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Notice to reader : The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

Section 15. Regulatory information

United States

TSCA 5(a)2 final significant new use rules

None of the components are listed.

TSCA 5(a)2 proposed significant new use rules

None of the components are listed.

TSCA 5(e) substance consent order

None of the components are listed.

TSCA 6 final risk management

None of the components are listed.

TSCA 12(b) - Chemical export notification

None of the components are listed.

SARA 302/304

None of the components are listed.

SARA 304 RQ : Not applicable.

Canada

Canada Significant New Activity Notice : None of the components are listed.

Canadian NPRI : The following components are listed: HCFC-123 (all isomers)

CEPA Toxic substances : The following components are listed: hydrochlorofluorocarbons; perfluorocarbons

Singapore

Singapore - hazardous chemicals under government control

Ingredient name	Status
Dichlorotrifluoroethane	Listed
Carbon tetrafluoride	Listed

Korea

K-REACH/CCA - Banned : None of the components are listed.

K-REACH/Article 39 (Accident Precaution Chemicals) : None of the components are listed.

Dangerous Materials Safety Management Act : Not applicable.

International regulations

Montreal Protocol

Section 15. Regulatory information

Ingredient name	List name	Status
HCFC 123	Montreal protocol	Annex C, Group I

Stockholm Convention on Persistent Organic Pollutants

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

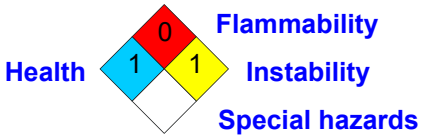
Not listed.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



National Fire Protection Association (U.S.A.)



Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
WOE = Weight of Evidence

Indicates information that has changed from previously issued version.

Notice to reader

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