SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier: HALOTRON® I
Synonyms: HCFC Blend B, Halotron® I Pre-Sat Base
Product Code: Reach Registration - N/A
SDS compliant with regulations: (EC) No 1907/2006 (REACH), (EC) No 1272/2008 (CLP)
Manufacturer/Supplier: American Pacific Corporation, Halotron Division
Address: 10622 West 6400 North, Cedar City, UT 84721
Telephone: +1 (435) 865-5000 Fax: +1 (435) 865-5005
Emergency Contact: CHEMTREC
Customer Number: CCN721187
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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").

2. HAZARDS IDENTIFICATION

Signal word:
Warning

Preparation classification:

Physical Hazard:
H280: Contains gas under pressure; may explode if heated

Health Hazard:
H336: May cause drowsiness and dizziness

Precautionary Statements:
P261: Avoid breathing vapors/spray
P271: Use only outdoors or in a well-ventilated area
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing
P 312 Call a POISON CENTER or doctor/physician if you feel unwell
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up
P501: Dispose of contents/container to an approved waste disposal plant

Information pertaining to particular dangers for man and environment: Inhalation of high concentrations of vapour may cause central nervous system effects such as dizziness, drowsiness, anesthesia, or unconsciousness. When used on a fire, hazardous decomposition products are formed, but typically are within safe emergency exposure limits. Misuse or intentional inhalation abuse may lead to death without warning.

3. COMPOSITION/INFORMATION OR INGREDIENTS

Ingredient Name	Chemical Makeup	CAS#	EC#	%
HCFC-123	2, 2-Dichloro-1, 1, 1-trifluoroethane	306-83-2	206-190-3	Greater than 93%
Gas Mixture	Proprietary			Less than 7%

4. FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a physician

Routes of exposure	Signs and symptoms of exposure:	Emergency and first aid procedures:
Skin:	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.	Wash exposed area with water. If irritation develops and persists, call a physician.
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.	Remove to fresh air. Oxygen or artificial respiration if necessary Call a physician if breathing difficulties occur.
Ingestion:	Not likely to occur in industrial use. Highly volatile liquid.	Clean mouth with water and drink plenty of water. Do not induce vomiting. If vomiting occurs, lean person forward to reduce risk of aspiration. Call a physician.
Eyes:	Irritation and tearing may result. Mild to moderate reversible eye effects.	Rinse thoroughly with plenty of water, also under the eyelids. If eye irritation persists, consult a specialist.

Description of the most important symptoms or effects:
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.

Note 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.

5. FIRE FIGHTING MEASURES

Flammable properties:
Flash Point: not flammable.
Flash point method: not applicable.
Auto-ignition temperature: not determined.
Upper flammability limit (volume % in air): not applicable.
Lower flammability limit (volume % in air): not applicable.

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

Special firefighting precautions/instructions: Ensure that the area where the fire occurred is well ventilated before re-entering. Wear protective clothing. Use water spray or fog to cool storage containers to help prevent an uncontrolled pressure release. Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Unsuitable extinguishing media: None.

Unusual fire and explosion hazards: 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.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Other Release: Prevent further leakage or spillage if safe to do so. Keep away from Incompatible products. In the event of a 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. Avoid leakage into waterways. 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

Advice for emergency responders (large spills): Immediately evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Wear SCBA and protective suit. The product evaporates readily. Ventilate the area.

Environmental precautions: Prevent material from entering into waterways, soil or drains.

Methods and materials for containment and cleaning up: Dam up. Soak up with inert absorbent material. Prevent product from entering drains. Keep in properly labelled containers. Keep in suitable, closed containers for disposal. Refer to other sections and to protective measures listed in Section 8.

Any food items that were directly sprayed by the liquid should be thrown away, and all surfaces that are used for food service should be washed (as normal) before re-use.

Waste Disposal: Observe all federal, state, and local regulations for products of this type when accomplishing disposal

Supplier Notification: (SECTION 313) This product contains more than 93% by weight 2,2-dichloro-1,1,1-trifluoroethane (CAS #306-83-2) which is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40CFR372).

7. HANDLING AND STORAGE

Normal Handling: Precautions for safe handling - transfer material in a closed system. Handle only in well-ventilated areas. Use only equipment and materials which are compatible with the product.

Conditions for storage, including incompatibilities: Keep container closed

Specific use(s): For further information, please contact: Supplier

Additional Note: Approved DOT shipping containers are a normal safe method of storage. Containers should be maintained in good condition. Do not allow material to remain in deteriorating containers. Because this product can volatilize, special care should be taken for over pressurization hazards if the containers are overheated or near a radiant heat source.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Ventilate as necessary to minimize exposure levels. Inspect and clean ventilation systems regularly. Prolonged use should occur only in areas with adequate ventilation. Keep storage containers tightly closed. Vapors are heavier than air posing a potential hazard if large volumes are trapped in enclosed or low places.

Personal Protective Equipment: 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

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).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Pressurized, colorless,	**Physical state:** Liquid	**Molecular weight:** Approx. 150.7	**Chemical formula:** CF_3CHCl_2 plus Proprietary Gas Mixture	**Odor:** Slight ether-like odor
Specific gravity (water = 1.0): 1.47 at 25° C (77° F)	**Solubility in Water:** 0.39% wt. @ 25° C (77° F), 1 atm	**pH:** Not applicable	**Boiling point:** 27°C (80.6°F)	**Melting point:** Not applicable

Relative density, Air = 1: 5.1	**Partition coefficient, n-octanol/water, Log P_{ow}:** 2.0 – 2.8	**Auto-ignition temperature:** Not determined	**Upper flammability or explosive limits:** Not applicable	**Lower flammability or explosive limits:** Not applicable
Vapor pressure at: 655 kPa (95 psig) at 20° C (70° F)	**Vapor density:** approx. 6.08 kg/m^3 (0.387 lb./ft^3) at 25° C (77° F)	**Evaporation rate:** Faster than water, slower than ether	**Flash point:** None	**Liquid density:** 1.48 kg/l (92.3 lb./ft3) at 25° C (77° F)

10. STABILITY AND REACTIVITY

Reactivity: Decomposes on heating.

Chemical Stability: Normally stable (will decompose if exposed to a high radiant heat source, such as fire). The material is intended for use as a fire extinguishant.

Incompatibilities: Incompatible with alkali or alkaline earth metals, and powdered metals Al, Zn, Be, etc.

Hazardous Decomposition Products: Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids, and possibly carbonyl halide.

Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Toxicological Information: Acute toxicity is low.

For 2,2-dichloro-1,1,1-trifluoroethane (CAS # 306-83-2):

LC50 (4 hr.): 3.2% (32,000 ppm), (Inhalation)
Oral Approximate Lethal Dose (ALD): 9 g/kg (body weight)
Cardiotoxic LOAEL (Lowest Observed Adverse Effect Level): 2%vol.
Cardiotoxic NOAEL (No Observed Adverse Effect Level): 1%vol.

Toxicological testing was performed on HCFC-123 by the Program for Alternative Fluorocarbon Testing (PAFT). Data from acute toxicity studies in this program demonstrated that HCFC-123 has very low toxicity by skin application or inhalation.

For the proprietary gas mixture: The toxic effects of the proprietary gas mixture in the absence of extreme temperature are primarily its ability to function as a simple asphyxiant (i.e. displace oxygen).

Other Toxicity Information:

Animal Studies: For 2,2-dichloro-1,1,1-trifluoroethane (CAS #306-83-2): Long-term exposure in a two year study (6 hours/day, 5 days/week) at concentrations of 300, 1000 and 5000 ppm decreased body weight, serum cholesterol, triglycerides and glucose, and increased urinary fluoride concentrations in rats. However, survival was significantly improved in all exposed groups compared to control animals. Inhalation of 300, 1000 and 5000 ppm caused an increase in benign tumors of the liver, pancreas, and testis. Tumors occurred late in life and none were assessed to be life threatening. Tumor formation is thought to occur through non-genotoxic mechanisms associated with a peroxisome proliferating potential or with hormonal disturbances in older rats.

Exposure to dogs, guinea pigs or monkeys at 1000 ppm or greater for 6 hours per day,7 days per week, for a total of 3 weeks, induced slight or mild liver damage with altered enzyme levels.

Rodent studies indicate HCFC-123 is easily absorbed via inhalation. It distributes in all organs, more so in the liver. About 90% of inhaled HCFC-123 is eliminated via the lungs unchanged. The remaining amount is metabolized to trifluoroacetic acid and excreted in the urine. Small amounts of trifluoroacetylated proteins were detected in rats in laboratory studies.

HCFC-123 did not affect reproductive performance in rats or harm the unborn animals in rats or rabbits at 5000 and 10,000 ppm.

HCFC-123 was inactive in several test-tube genetic damage studies except the human lymphocyte chromosome aberration assay. HCFC-123 is also inactive in live animal genetic damage studies. Therefore, it is not considered genotoxic.

Carcinogen: IARC: no NTP: no OSHA: no

12. ECOLOGICAL INFORMATION

Aquatic toxicity:
2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)
96 h LC50: Oncorhynchus mykiss (rainbow trout) 55.5 mg/l
96 h ErC50: Pseudokirchneriella subcapitata (green algae) 96.6 mg/l
96 h EbC50: Pseudokirchneriella subcapitata (green algae) 67.8 mg/l
48 h EC50: Daphnia magna (Water flea) 17.3 mg/l

Environmental Fate:
2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)
Biodegradability: 24%, not readily biodegradable
Bioaccumulation: Bio-concentration factor (BCF): 33, Bioaccumulation is unlikely

The material is a mixture of volatile organic compounds (although exempted from reporting as a VOC under U.S. regulation 40 CFR Part 51.100(s)) and should not be permitted to be mixed with ground or drinking water and should be handled, used, and disposed responsibly in accordance with regulations in the Country, Province, State, County, and locality where it is used.

13. DISPOSAL CONSIDERATIONS

Observe all federal, state, and local regulations for products of this type when accomplishing disposal.

The manufacturer assumes no liability for the use of this product in a manner that causes environmental or other harm.

14. TRANSPORT INFORMATION

UN Number:	**Proper Shipping Name:**	**US DOT Hazard Class:**	**Pack Group:**
UN1956	UN1956, Compressed Gas, N.O.S., 2.2 (Contains Argon, Tetrafluoromethane)	2.2, Nonflammable Gas	N/A

It is recommended that U.S. DOT approved transport containers and carriers be used for shipment of this product.

NOTE: The transportation information above covers the Halotron® I fire extinguishing agent as shipped in bulk containers, and not when contained in fire extinguishers or fire extinguishing systems. When shipped in a stored-pressure type fire extinguisher, and pressurized with argon gas, the fire extinguisher is considered a hazardous material by the US Department of Transportation and Transport Canada. The proper shipping name shall be FIRE EXTINGUISHER and the UN designation is UN 1044. The DOT hazard class/division is LIMITED QUANITITY when pressurized to less than 241 psig and when shipped via highway or rail. Use Class 2.2, Non-Flammable Gas, when shipping via air. Packing Group – N/A

15. REGULATORY INFORMATION

Listed in the Toxic Substances Control Act (TSCA) Inventory: Yes, all components are on the TSCA inventory, listed on EPA SARA (313) Hazard Class, and is **subject to reporting requirements of EPCRA Section 313**

HCFC-123 is listed under EINECS EC Number 206-190-3 for Intermediate Use Only.

All components of the proprietary gas mixture are listed in EINECS based on ESIS lookup for the European Union. This chemical substance is not classified in the Annex I of Directive 67/548/EEC. It is listed as a LPV for Canada, All components listed in Canadian DSL

Information about limitation of use: This blend is intended solely for use as a fire extinguishing agent and should not be used for other purposes without contact and technical discussion with the manufacturer.

This preparation was classified in compliance with the following directives and regulations:
(EC) No 1907/2006 (REACH)
(EC) No 1272/2008 (CLP)
(EC) No 453/2010

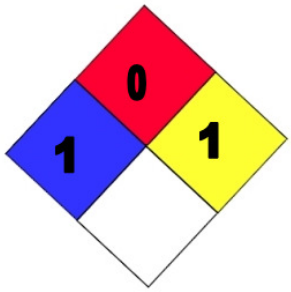
16. OTHER INFORMATION

The user is responsible to evaluate the safety and environmental consequences of any intended uses. The manufacturer assumes no liability for any usages that result in adverse consequences.

Hazardous Materials Identification System (HMIS) ratings (scale 0 – 4)

Health Hazard	**1**
Fire Hazard	**0**
Reactivity	**1**

National Fire Protection Association (NFPA) ratings (scale 0 – 4)



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