

Material Safety Data Sheet

Arctic Storm™

1. Product and company identification

Product name	: Arctic Storm™
Supplier	: Chemtronics 8125 Cobb Center Drive Kennesaw, GA 30152 Tel. 770-424-4888 or toll free 800-645-5244
Synonym	: trans - 1,3,3,3 - tetrafluoroprop-1-ene
Trade name	: Arctic Storm™ Freeze Spray
Material uses	: Industrial applications: Aerosol Propellant. Blowing agent. Refrigerant.
Manufacturer	: Chemtronics 8125 Cobb Center Drive Kennesaw, GA 30152 Tel. 770-424-4888 or toll free 800-645-5244
Code	: ES1056
MSDS #	: 1056
Validation date	: 10/18/2013.
Print date	: 10/18/2013.
<u>In case of emergency</u>	: Chemtrec - 1-800-424-9300 or collect 703-527-3887 24/7
Product type	: Aerosol.

2. Hazards identification

Emergency overview

Physical state	: Gas. [aerosol]
Color	: Clear. Colorless.
Odor	: Characteristic. [Slight]
Signal word	: CAUTION!
Precautionary measures	: CONTENTS UNDER PRESSURE CONTAINER MAY EXPLODE IF HEATED Use only with adequate ventilation. Do not spray on an open flame or other ignition source. Do not expose to temperatures exceeding 50 °C/122 °F. Pressurized container: Do not pierce or burn, even after use.
OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential acute health effects

Inhalation	: Harmful by inhalation. At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	: Ingestion of liquid can cause burns similar to frostbite.
Skin	: Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
Eyes	: May cause eye irritation.

Potential chronic health effects

Chronic effects	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.

2. Hazards identification

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
headache
nausea or vomiting

Ingestion : Adverse symptoms may include the following:
Irritating to mouth, throat and stomach.
frostbite

Skin : Adverse symptoms may include the following:
frostbite
irritation

Eyes : Adverse symptoms may include the following:
irritation
redness
frostbite

Medical conditions aggravated by over-exposure : None known.

See toxicological information (Section 11)

3. Composition/information on ingredients

Name	CAS number	%
Trans-1,3,3,3-tetrafluoroprop-ene	29118-24-9	100

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.

4. First aid measures

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

- Flammability of the product** : In a fire or if heated, a pressure increase will occur and the container may burst. Bursting aerosol containers may be propelled from a fire at high speed.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : 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.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
carbonyl halides
- 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.
- Special remarks on explosion hazards** : This product is not flammable at ambient temperatures and atmospheric pressure. However, it can be ignited when mixed with air under pressure and exposed to strong ignition sources.

6. Accidental release measures

- Personal precautions** : 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. If a large number of containers are ruptured, treat as a bulk material spillage according to the instructions in the clean-up section. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- 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 for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Avoid breathing vapor or mist. Use

7. Handling and storage

- only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Empty containers retain product residue and can be hazardous.
- Storage** : Do not store below the following temperature: 50°C (122°F). 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. Protect from sunlight. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
- Engineering measures** : 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.
- 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.
- Personal protection**
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Eyes** : 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 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.
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- 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.

9. Physical and chemical properties

- Physical state** : Gas. [aerosol]
- Auto-ignition temperature** : 368°C (694.4°F)
- Color** : Clear. Colorless.
- Odor** : Characteristic. [Slight]
- Boiling/condensation point** : -19°C (-2.2°F)

9. Physical and chemical properties

Relative density	: 1.13
Vapor density	: 4 [Air = 1]
Volatility	: 100% (v/v), 100% (w/w)
Evaporation rate	: >1 (butyl acetate = 1)
Aerosol product	
Type of aerosol	: Spray

10. Stability and reactivity

Chemical stability	: The product is stable.
Conditions to avoid	: Do not spray on a naked flame or any incandescent material. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. open flames, sparks and static discharge Avoid all possible sources of ignition (spark or flame).
Incompatible materials	: Reactive or incompatible with the following materials: Strong oxidizing materials Alkaline alkalis
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Trans-1,3,3,3-tetrafluoropropene	LC50 Inhalation Gas.	Rat	207000 ppm	4 hours

Conclusion/Summary : Not available.

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Trans-1,3,3,3-tetrafluoropropene	Chronic NOEL Inhalation Gas.	Rat	5000 ppm	13 weeks

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitizer

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Trans-1,3,3,3-tetrafluoropropene	-	Experiment: In vitro Subject: Mammalian-Human Cell: Somatic	Negative
	475 Mammalian Bone Marrow Chromosomal Aberration Test	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative

Conclusion/Summary : Not available.

Teratogenicity

11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
Trans-1,3,3,3-tetrafluoropropene	Negative - Inhalation	Rabbit	15000 ppm	-
	Negative - Inhalation	Rat	15000 ppm	-

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

12. Ecological information

Ecotoxicity : This product shows a low bioaccumulation potential.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Trans-1,3,3,3-tetrafluoropropene	EC50 >160 mg/l	Daphnia	48 hours
	NOEC >170 mg/l	Algae	72 hours
	NOEC >117 mg/l	Fish	96 hours

Conclusion/Summary : Not available.

Persistence/degradability

Conclusion/Summary : Not readily biodegradable.

Partition coefficient: n-octanol/water : 1.6

Bioconcentration factor : Not available.

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal : 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.




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

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	-	Consumer commodity ORM-D	ORM-D	-		-
TDG Classification	-	Consumer commodity ORM-D	ORM-D	-		-
Mexico Classification	-	Consumer commodity ORM-D	ORM-D	-		-

14. Transport information

ADR/RID Class	1950	AEROSOLS (Non-flammable)	2	-		Tunnel code (E)
IMDG Class	1950	AEROSOLS (trans-1, 3,3,3-tetrafluoroprop- ene)	2.2	-		-
IATA-DGR Class	1078	Refrigerant Gas n.o.s (trans-1,3,3, 3-tetrafluoroprop-ene)	2.2	-		-

PG* : Packing group

15. Regulatory information

HCS Classification : Compressed gas

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Sudden release of pressure

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Trans-1,3,3,3-tetrafluoroprop-ene	100	No.	Yes.	No.	No.	No.

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

Canada inventory : All components are listed or exempted.

15. Regulatory information

International regulations

International lists	: Australia inventory (AICS): Not determined. China inventory (IECSC): Not determined. Japan inventory: All components are listed or exempted. Korea inventory: Not determined. Malaysia Inventory (EHS Register): Not determined. New Zealand Inventory of Chemicals (NZIoC): Not determined. Philippines inventory (PICCS): Not determined. Taiwan inventory (CSNN): Not determined.
Chemical Weapons Convention List Schedule I Chemicals	: Not listed
Chemical Weapons Convention List Schedule II Chemicals	: Not listed
Chemical Weapons Convention List Schedule III Chemicals	: Not listed

16. Other information

Label requirements :
Hazardous Material Information System (U.S.A.) :

Health	1
Flammability	0
Physical hazards	1

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

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



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16. Other information

Date of previous issue : 10/18/2013.

Version : 2

Prepared by : Not available.

☑ Indicates information that has changed from previously issued version.

Notice to reader

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.