## **SAFETY DATA SHEET**

Chemtronics<sup>®</sup>

Arctic Blast™

Section 1. Identifi	cation
GHS product identifier	: Arctic Blast™
Product code	: ES1054
Chemical name	: HFO-1234ZE
Other means of identification	: 1-Propene, 1,3,3,3-tetrafluoro-, (1E)-; (1E)-1,3,3,3-tetrafluoroprop-1-ene; E-HFC- 1234ze; HFO-1234ze(E); trans-1,3,3,3-tetrafluoropropene; trans-1,3,3,3-tetrafluoroprop- 1-ene; HFC-1234ze; (E)-1,3,3,3-tetrafluoroprop-1-ene; trans- 1,3,3,3-Tetrafluoropropylene; E-1,3,3,3-Tetrafluoropropene; trans-1,1,1,3-Tetrafluoro- 2-propene; (1E)-1,3,3,3-Tetrafluoro-1-propene Industrial/Professional use
Product type	: Aerosol.
Relevant identified uses of	the substance or mixture and uses advised against
Not applicable.	
Supplier's details	: Chemtronics 8125 Cobb Center Drive Kennesaw, GA 30152 Tel. 770-424-4888 or toll free 800-645-5244
Emergency telephone number (with hours of operation)	: Chemtrec - 1-800-424-9300 or collect 703-527-3887 24/7
Section 2. Hazard	Is 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	: GASES UNDER PRESSURE - Compressed gas
GHS label elements	
Hazard pictograms	
Signal word	: Warning
Hazard statements	: Contains gas under pressure; may explode if heated.
Precautionary statements	· Contains gas under pressure, may explode in heated.
Prevention	: Not applicable.
Response	Not applicable.     Protect from suplight. Store in a well ventilated place.
Storage	: Protect from sunlight. Store in a well-ventilated place.
Disposal	: Not applicable.
Hazards not otherwise classified	: None known.

### Section 3. Composition/information on ingredients

Substance/mixture	: Substance
Chemical name	: HFO-1234ZE
Other means of identification	: 1-Propene, 1,3,3,3-tetrafluoro-, (1E)-; (1E)-1,3,3,3-tetrafluoroprop-1-ene; E-HFC- 1234ze; HFO-1234ze(E); trans-1,3,3,3-tetrafluoropropene; trans-1,3,3,3-tetrafluoroprop- 1-ene; HFC-1234ze; (E)-1,3,3,3-tetrafluoroprop-1-ene; trans- 1,3,3,3-Tetrafluoropropylene; E-1,3,3,3-Tetrafluoropropene; trans-1,1,1,3-Tetrafluoro- 2-propene; (1E)-1,3,3,3-Tetrafluoro-1-propene Industrial/Professional use

### **CAS number/other identifiers**

CAS number	: 29118-24-9		
Ingredient name		%	CAS number
HFO-1234ZE		100	29118-24-9

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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

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

### Section 4. First aid measures

<b>Description of necess</b>	ary first aid measures
Eye contact	<ul> <li>Immediately flush eyes with plenty of water, 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 if irritation occurs.</li> </ul>
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 adverse health effects persist or are severe. 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. 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	<ul> <li>Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.</li> </ul>
Ingestion	: Wash out mouth with water. Remove dentures if any. 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 adverse health effects persist or are severe. 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 symp	toms/effects, acute and delayed

MOSt important symptoms/ener	sts, acute and delayed
Potential acute health effects	
Eye contact :	Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation :	At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.
Skin contact :	Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion :	Do not ingest. If swallowed then seek immediate medical assistance.
Over-exposure signs/sympton	<u>15</u>

### Section 4. First aid measures

Eye contact	: Adverse symptoms may include the following: irritation redness
Inhalation	: Adverse symptoms may include the following: respiratory tract irritation coughing
Skin contact	: Adverse symptoms may include the following: frostbite irritation
Ingestion	: Adverse symptoms may include the following: Irritating to mouth, throat and stomach. Ingestion Seek medical attention.
Indication of immediate r	nedical attention and special treatment needed, if necessary
Notes to physician	: 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.
Specific treatments	: No specific treatment.

See toxicological information (Section 11)

**Protection of first-aiders** 

### Section 5. Fire-fighting measures

Extinguishing media	
Suitable extinguishing media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: None known.
Specific hazards arising from the chemical	: 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.
Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds 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.

: 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.

### 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. 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.
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### Section 6. Accidental release measures

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 co	ont	ainment and 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.

### Section 7. Handling and storage

### Precautions for safe handling

Protective measures	Put on appropriate personal protective equipment (see Section 8). 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 only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Empty containers retain product residue and can be hazardous.
Advice on general occupational hygiene	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. See also Section 8 for additional information on hygiene measures.
Conditions for safe storage, including any incompatibilities	Do not store above 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. See Section 10 for incompatible materials before handling or use.

### Section 8. Exposure controls/personal protection

#### **Control parameters**

Ingredient name	Exposure limits
HFO-1234ZE	ACGIH TLV (United States, 1/2021).
	TWA: 2.5 mg/m³, (as F) 8 hours.
	OSHA PEL 1989 (United States, 3/1989)
	TWA: 2.5 mg/m³, (as F) 8 hours.
	OSHA PEL (United States, 5/2018).
	TWA: 2.5 mg/m³, (as F) 8 hours.
	OSHA PEL Z2 (United States, 2/2013).
	TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust

### Section 8. Exposure controls/personal protection

Appropriate engineering controls	<ul> <li>Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.</li> </ul>
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 meas	<u>ures</u>
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.
Skin protection	
Hand protection	: 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.
Body protection	: 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.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
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# Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

<u>Appearance</u>	
Physical state	: Gas. [aerosol]
Color	: Clear. Colorless.
Odor	: Characteristic. [Slight]
Odor threshold	: Not available.
рН	: Not applicable.
Melting point/freezing point	: Not applicable.
Boiling point, initial boiling point, and boiling range	: -19°C (-2.2°F)
Flash point	: Not applicable.
Evaporation rate	: >1 (butyl acetate = 1)
Flammability	: Not available.

## Section 9. Physical and chemical properties and safety characteristics

Lower and upper explosion limit/flammability limit	:	Lower: 7% Upper: 9.5%	ASHRAE 34 @ 100 C ASHRAE 34 @ 100 C
Vapor pressure	:	Not available.	-
Relative vapor density	:	4 [Air = 1]	
Relative density	:	1.13	
Solubility	:	Not available.	
Solubility in water	:	0.373 g/l	
Partition coefficient: n- octanol/water	:	1.6	
Auto-ignition temperature	:	368°C (694.4°F	-)
Decomposition temperature	:	Not available.	
Heat of combustion	:	10.7	
Viscosity	:	Not applicable.	
Flow time (ISO 2431)	:	Not available.	
Particle characteristics			
Median particle size	1	Not applicable.	
Aerosol product			
Type of aerosol	:	Spray	
Ignition distance	:	0 cm	
Enclosed space ignition - Time equivalent	:	347 s/m³	
Enclosed space ignition - Deflagration density	:	443 g/m³	

### Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
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	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

### Section 11. Toxicological information

### Information on toxicological effects

### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
HFO-1234ZE	LC50 Inhalation Gas.	Rat	207000 ppm	4 hours

### Irritation/Corrosion

Not available.

### **Sensitization**

Not available.

### Section 11. Toxicological information

### **Mutagenicity**

Product/ingredient name	Test	Experiment	Result
HFO-1234ZE	- 475 Mammalian Bone Marrow Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Human Cell: Somatic Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative Negative

#### **Carcinogenicity**

Not available.

### **Reproductive toxicity**

Not available.

#### **Teratogenicity**

Product/ingredient name	Result	Species	Dose	Exposure
	Negative - Inhalation Negative - Inhalation		15000 ppm 15000 ppm	-

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Not available.

### **Aspiration hazard**

Not available.

Information on the likely routes of exposure	: Not available.
Potential acute health effe	<u>cts</u>
Eye contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: At very high concentrations, can displace the normal air and cause suffocation from lack of oxygen.
Skin contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion	: Do not ingest. If swallowed then seek immediate medical assistance.
	hysical, chemical and toxicological characteristics
Eye contact	: Adverse symptoms may include the following: irritation redness
Inhalation	: Adverse symptoms may include the following: respiratory tract irritation coughing
Skin contact	: Adverse symptoms may include the following: frostbite irritation
Ingestion	: Adverse symptoms may include the following: Irritating to mouth, throat and stomach. Ingestion Seek medical attention.
Delayed and immediate eff	fects and also chronic effects from short and long term exposure
Short term exposure Potential immediate effects	: Not available.

### Section 11. Toxicological information

### Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure	
HFO-1234ZE	Chronic NOEL Inhalation Gas.	Rat	5000 ppm	13 weeks	
General	: No known significant effects or critical hazards.				
Carcinogenicity	: No known significant effects or critical hazards.				
Mutagenicity	: No known significant effects or critical hazards.				
Reproductive toxicity	: No known significant effects or critical hazards.				

### Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name				(vapors)	Inhalation (dusts and mists) (mg/ I)
HFO-1234ZE	N/A	N/A	207000	N/A	N/A

### Section 12. Ecological information

#### **Toxicity**

Product/ingredient name	Result	Species	Exposure
HFO-1234ZE	EC50 >160 mg/l	Daphnia	48 hours
	NOEC >170 mg/l	Algae	72 hours
	NOEC >117 mg/l	Fish	96 hours

#### Persistence and degradability

Not available.

#### **Bioaccumulative potential**

Product/ingredient name	LogPow	BCF	Potential
HFO-1234ZE	1.6	-	low

#### Mobility in soil

Soil/water partition : Not available. coefficient (Koc)

### Other adverse effects

: No known significant effects or critical hazards.

### 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	Mexico Classification	IMDG	ΙΑΤΑ
UN number	UN3163	UN1950	UN1950	UN1950	UN3163
UN proper shipping name	Liquefied gas, n.o.s.	AEROSOLS	AEROSOLS	AEROSOLS	Liquefied gas. n.o.s.
Transport hazard class(es)	2.2	2.2	2.2	2.2	2.2
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

Additional information

**DOT Classification** 

**TDG Classification** 

#### : Special provisions DOT SP 11516

- : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 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 : Not available.

to IMO instruments

### Section 15. Regulatory information

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

### Section 15. Regulatory information

### SARA 302/304

#### **Composition/information on ingredients**

No products were found.

#### **SARA 304 RQ**

: Not applicable.

### SARA 311/312

**Classification** 

: GASES UNDER PRESSURE - Compressed gas

#### **Composition/information on ingredients**

Name	%	Classification
HFO-1234ZE		FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas

#### **State regulations**

Massachusetts	: None of the components are listed.
New York	: None of the components are listed.
New Jersey	: The following components are listed: FLUORIDES
Pennsylvania	: None of the components are listed.
<u>California Prop. 65</u>	

This product does not require a Safe Harbor warning under California Prop. 65.

#### **International regulations**

Chemical Weapon Convention List Schedules I, II & III Chemicals Not listed.

#### **Montreal Protocol**

Not listed.

#### **Stockholm Convention on Persistent Organic Pollutants**

Not listed.

### **Rotterdam Convention on Prior Informed Consent (PIC)**

Not listed.

#### **UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

#### **Inventory list**

interiory net	
Australia	: All components are listed or exempted.
Canada	: All components are listed or exempted.
China	: Not determined.
Europe	<ul> <li>At least one component is not listed in EINECS but all such components are listed in ELINCS. Please contact your supplier for information on the inventory status of this material.</li> </ul>
Japan	<ul> <li>Japan inventory (CSCL): All components are listed or exempted.</li> <li>Japan inventory (ISHL): All components are listed or exempted.</li> </ul>
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: All components are listed or exempted.
Turkey	: Not determined.
United States	: All components are active or exempted.
Viet Nam	: All components are listed or exempted.

### Section 16. Other information

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



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 and the associated label are not required on SDSs or products leaving a facility 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 trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

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



### Procedure used to derive the classification

	Classification	Justification	
GASES UNDER PRESSURE - Compressed gas		On basis of test data	
<u>History</u>			
Date of printing	: 4/14/2022		
Date of issue/Date of revision	: 4/14/2022		
Date of previous issue	: No previous validation		
Version	: 1		
Key to abbreviations	<ul> <li>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) N/A = Not available SGG = Segregation Group UN = United Nations</li> </ul>		
References	: Not available.		

✓ Indicates information that has changed from previously issued version.

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

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.