

# SAFETY DATA SHEET



Arctic Blast™ UFI

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name                  | : Arctic Blast™ UFI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| UFI                           | : 6RD8-0014-R00Q-SHUM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| EC number                     | : 471-480-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| CAS number                    | : 29118-24-9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Product code                  | : ES1054E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Product description           | : Processing aid Cooling agents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Product type                  | : Aerosol.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Other means of identification | : HFO-1234ZE; 1-Propene, 1,3,3,3-tetrafluoro-, (1E)-; trans-1,3,3,3-Tetrafluoroprop-1-ene; (1E)-1,3,3,3-tetrafluoroprop-1-ene; difluoromethane—1,1,1,2,2-pentafluoroethane—1,1,1,2-tetrafluoroethane—(E)-1,3,3,3-tetrafluoroprop-1-ene; difluoromethane—1,1-difluoroethane—(E)-1,3,3,3-tetrafluoroprop-1-ene; difluoromethane—1,1,1,2,2-pentafluoroethane—1,1,1,2,3,3,3-heptafluoropropane—(E)-1,3,3,3-tetrafluoroprop-1-ene; difluoromethane—1,1,1,2-tetrafluoroethane—(E)-1,3,3,3-tetrafluoropropene; difluoromethane—1,1,1,2,2-pentafluoroethane—(E)-1,3,3,3-tetrafluoroprop-1-ene; 1,1,1,2-tetrafluoroethane—(2E)-1,1,1,4,4,4-hexafluorobut-2-ene—(1E)-1,3,3,3-tetrafluoroprop-1-ene; trans-1,3,3,3-tetrafluoropropene<br>Processing aid Cooling agents<br>Industrial/Professional use |
| Chemical formula              | : C3H2F4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

| Identified uses                                                                                         |                             |
|---------------------------------------------------------------------------------------------------------|-----------------------------|
| Processing aid Cooling agents Product Application and Material uses Reference Website: or Label QR code |                             |
| Uses advised against                                                                                    | Reason                      |
| Other                                                                                                   | Industrial/Professional use |

### 1.3 Details of the supplier of the safety data sheet

Manufacturer  
Chemtronics  
8125 Cobb Center Drive  
Kennesaw, GA 30152  
Tel. 770-424-4888 or toll free 800-645-5244

Distributor

Importer  
ITW Contamination Control BV  
Saffierlaan 5  
VZ-2132 Hoofddorp  
The Netherlands

Email: [info@itw-cc.com](mailto:info@itw-cc.com)

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Tel: +31 88 1307 400  
FAX: +31 88 1307 499  
Website: www.Chemtronicseu.com

**e-mail address of person responsible for this SDS** : Only Representative  
Bay 150  
Shannon Industrial Estate  
Shannon  
County Clare  
Ireland  
V14 DF82  
+353 61 771 500  
customerservice.shannon@itwpp.com

### National contact

ITW Contamination Control BV  
Saffierlaan 5  
VZ-2132 Hoofddorp  
The Netherlands

Email: info@itw-cc.com

Tel: +31 88 1307 400  
FAX: +31 88 1307 499  
Website: www.Chemtronicseu.com

### 1.4 Emergency telephone number

#### National advisory body/Poison Centre

**Telephone number** : EMERGENCY HEALTH INFORMATION: Austria 01 406 43 43, Belgium +070 245 245, Bulgaria +359 2 9154 233, Croatia +3851 2348 342, Cyprus 1401, Czech Republic +420224 919 293, Denmark +45 8212 1212, Estonia 16662, Finland 0800 147 111, France +33 (0) 1 45 42 59 59, Germany Bonn Poison Center +49-228 192 40, Greece (0300) 2107793777, Hungary +36-80-201-199, Iceland 543-4071, Ireland Emergency medical information: (seven days) contact National Poisons Information Centre, Beaumont Hospital, Dublin 9DOV2NHO, Ireland Members of the Public Number (8 am to 10 pm) "+353-(0) 1 809 2166" Healthcare professional telephone Number (24 hrs) "353 (0) 1 809 ", Italy CAV "Ospedale Pediatrico Bambino Gesù" - Rome Tel. (+39) 06.6859.3726, CAV "Azienda Ospedaliera Università di Foggia" - Foggia Tel. 800.183.459, CAV "Azienda Ospedaliera A. Cardarelli" - Naples Tel. (+39) 081.545.3333, CAV Policlinico "Umberto I" - Rome Tel. (+39) 06.4997.8000, CAV Policlinico "A. Gemelli" - Rome Tel. (+39) 06.305.4343, CAV Azienda Ospedaliera "Careggi" U.O. Tossicologia Medica - Florence Tel. (+39) 055.794.7819, CAV National Centre for Toxicological Information - Pavia Tel. (+39) 0382.24.444, CAV Niguarda Hospital - Milan Tel. (+39) 02.66.1010.29, CAV Azienda Ospedaliera Papa Giovanni XXIII - Bergamo Tel. 800.88.33.00, CAV Veneto Poison Control Centre - Verona Tel. 800.011.858, Latvia +371 67042473, Lithuania +370 (85)2362052, Luxembourg +352 8002 5500, Netherlands +31 88 75 585 61, Norway +47 22 59 13 00, Poland +48 42 2530 400, Portugal +351 800 250 250, Romania +40 21 599 2300, Slovakia +421 2 5477 4166, Slovenia 112, Spain +34 91 562 04 20, Sweden 112 United Kingdom (England or Wales) 0845 46 47 or Scotland 08454 24 24 24 (UK only)

#### Supplier

**Telephone number** : Chemtronics Product Information: 800-TECH-401 (800-832-4401)  
Chemtronics Customer Service: 800-645-5244

**Hours of operation** : 8:00 AM to 5:00 PM

**Information limitations** : EMERGENCY HEALTH INFORMATION:  
EMERGENCY SPILL INFORMATION:  
Transport information

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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mono-constituent substance  
Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]  
Aerosol 3, H229

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.  
See Section 16 for the full text of the H statements declared above.  
See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Signal word : Warning  
Hazard statements : Pressurised container: may burst if heated.  
Precautionary statements  
Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not pierce or burn, even after use.  
Response : Not applicable.  
Storage : Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F.  
Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.  
Supplemental label elements : FOR INDUSTRIAL USE ONLY  
For professional use only.  
UFI: 6RD8-0014-R00Q-SHUM  
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.  
Special packaging requirements  
Containers to be fitted with child-resistant fastenings : Not applicable.  
Tactile warning of danger : Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII :

|     |     |     |    |      |     |     |
|-----|-----|-----|----|------|-----|-----|
| PBT | P   | B   | T  | vPvB | vP  | vB  |
| No  | N/A | N/A | No | N/A  | N/A | N/A |

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

SECTION 3: Composition/information on ingredients

3.1 Substances : Mono-constituent substance

| Product/ingredient name | Identifiers                      | %   | Classification                                 | Specific Conc. Limits, M-factors and ATEs | Type |
|-------------------------|----------------------------------|-----|------------------------------------------------|-------------------------------------------|------|
| HFO-1234ZE              | EC: 471-480-0<br>CAS: 29118-24-9 | 100 | Flam. Gas 1B, H221<br>Press. Gas (Comp.), H280 | -                                         | [1]  |

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### SECTION 3: Composition/information on ingredients

|  |  |  |                                                                      |  |  |
|--|--|--|----------------------------------------------------------------------|--|--|
|  |  |  | See Section 16 for the full text of the H statements declared above. |  |  |
|--|--|--|----------------------------------------------------------------------|--|--|

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

#### Type

[1] Constituent

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

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 if symptoms occur.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

#### 4.2 Most important symptoms and effects, both acute and delayed

##### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
irritation  
redness  
frostbite
- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing
- Skin contact** : Adverse symptoms may include the following:  
frostbite  
irritation  
redness  
dryness  
cracking
- Ingestion** : Adverse symptoms may include the following:  
Ingestion Seek medical attention.

#### 4.3 Indication of any immediate medical attention and special treatment needed

- 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.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media** : None known.

### 5.2 Special hazards arising from the substance or mixture

**Hazards from the substance or mixture** : Runoff to sewer may create fire or explosion hazard. 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.

**Hazardous combustion products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
halogenated compounds  
carbonyl halides

### 5.3 Advice for firefighters

**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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

### 6.1 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 pressurised 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Put on appropriate personal protective equipment.

**For emergency responders** : If specialised 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".

### 6.2 Environmental precautions

: Avoid dispersal of spilt 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).

### 6.3 Methods and material for containment and cleaning up

**Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## SECTION 6: Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. 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.
- 6.4 Reference to other sections** : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Pressurised container: protect from sunlight and do not expose to temperature 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 vapour or mist. 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** : 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.

### 7.2 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. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

### 7.3 Specific end use(s)

- Recommendations** : Not available.
- Industrial sector specific solutions** : Not available.

## SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker exposure or environmental releases.

### 8.1 Control parameters

#### Occupational exposure limits

No exposure limit value known.

#### Biological exposure indices

No exposure indices known.

## SECTION 8: Exposure controls/personal protection

**Recommended monitoring procedures** : Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

### DNELs/DMELs

Not available.

### PNECs

Not available.

## 8.2 Exposure controls

**Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour 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. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### 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.

### 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

**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.



## SECTION 8: Exposure controls/personal protection

**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.

## SECTION 9: Physical and chemical properties

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

### 9.1 Information on basic physical and chemical properties

#### Appearance

**Physical state** : Gas. [aerosol]  
**Colour** : Clear. Colourless.  
**Odour** : Characteristic. [Slight]  
**Odour threshold** : Not available.  
**Melting point/freezing point** : Not applicable.  
**Boiling point or initial boiling point and boiling range** : -19°C (-2.2°F)  
**Flammability** : Not available.  
**Lower and upper explosion limit** : Not available.  
**Flash point** : Not applicable.  
**Auto-ignition temperature** : 368°C (694.4°F)  
**Decomposition temperature** : Not available.  
**pH** : Not applicable.  
**Viscosity** : Dynamic (room temperature): Not available.  
Kinematic (room temperature): Not available.  
Kinematic (40°C): Not available.

#### Solubility

Not available.

**Solubility in water** : 0.373 g/l

**Partition coefficient n-octanol/water (log Pow)** : 1.6

**Vapour pressure** : Not available.

**Relative density** : 1.13

**Relative vapour density** : 4 [Air = 1]

#### Particle characteristics

**Median particle size** : Not applicable.

### 9.2 Other information

#### 9.2.1 Information with regard to physical hazard classes

**Heat of combustion** : 10.7

**Explosive properties** : Not available.

**Oxidising properties** : Not available.

#### Aerosol product

**Type of aerosol** : Spray

**Ignition distance** : 0 cm

**Enclosed space ignition - Time equivalent** : 347 s/m<sup>3</sup>

**Enclosed space ignition - Deflagration density** : 447 g/m<sup>3</sup>



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SECTION 9: Physical and chemical properties

9.2.2 Other safety characteristics  
Evaporation rate : >1 (butyl acetate = 1)

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

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

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame).

10.5 Incompatible materials : No specific data.

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

| Product/ingredient name | Result                                               |
|-------------------------|------------------------------------------------------|
| HFO-1234ZE              | Rat - Inhalation - LC50 Gas.<br>207000 ppm [4 hours] |

Conclusion/Summary [Product] : Not available.

Acute toxicity estimates

| Product/ingredient name | Oral (mg/kg) | Dermal (mg/kg) | Inhalation (gases) (ppm) | Inhalation (vapours) (mg/l) | Inhalation (dusts and mists) (mg/l) |
|-------------------------|--------------|----------------|--------------------------|-----------------------------|-------------------------------------|
| HFO-1234ZE              | N/A          | N/A            | 207000                   | N/A                         | N/A                                 |

Skin corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Not available.

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

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SECTION 11: Toxicological information

Not available.

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Product/ingredient name

HFO-1234ZE

Result

In vitro - Mammalian-Human - Somatic

Result: Negative

In vivo - Mammalian-Animal - Somatic

Mammalian Bone Marrow Chromosomal Aberration Test

Result: Negative

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Not available.

Conclusion/Summary [Product] : Not available.

Reproductive toxicity

Not available.

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure

Not available.

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.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact : Adverse symptoms may include the following:
  - irritation
  - redness
  - frostbite

## SECTION 11: Toxicological information

- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing
- Skin contact** : Adverse symptoms may include the following:  
frostbite  
irritation  
redness  
dryness  
cracking
- Ingestion** : Adverse symptoms may include the following:  
Ingestion Seek medical attention.

### Delayed and immediate effects as well as 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**

HFO-1234ZE

#### **Result**

##### **Chronic - Rat - Inhalation - NOEL**

5000 ppm [13 weeks]

Toxic effects: Mild effect on the heart

**Conclusion/Summary [Product]** : Not available.

- 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.

## 11.2 Information on other hazards

### 11.2.1 Endocrine disrupting properties

Not available.

**Conclusion/Summary [Product]** : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

### 11.2.2 Other information

Not available.

## SECTION 12: Ecological information

### 12.1 Toxicity

#### **Product/ingredient name**

HFO-1234ZE

#### **Result**

##### **NOEC**

Fish - Goldfish

>117 mg/l [96 hours]

##### **EC50**

Daphnia

>160 mg/l [48 hours]

##### **NOEC**

Algae

>170 mg/l [72 hours]

**Conclusion/Summary [Product]** : Not available.

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SECTION 12: Ecological information

12.2 Persistence and degradability

Not available.

Conclusion/Summary [Product] : Not available.

12.3 Bioaccumulative potential

| Product/ingredient name | LogP <sub>ow</sub> | BCF | Potential |
|-------------------------|--------------------|-----|-----------|
| HFO-1234ZE              | 1.6                | -   | Low       |

12.4 Mobility in soil

Soil/water partition coefficient

| Product/ingredient name | logK <sub>oc</sub> | K <sub>oc</sub> |
|-------------------------|--------------------|-----------------|
| HFO-1234ZE              | 1.7                | 52.3516         |

Results of PMT and vPvM assessment

| Product/ingredient name | PMT | P   | M   | T   | vPvM | vP  | vM  |
|-------------------------|-----|-----|-----|-----|------|-----|-----|
| HFO-1234ZE              | N/A | N/A | Yes | N/A | N/A  | N/A | Yes |

Mobility : Not available.

Conclusion/Summary : The product does not meet the criteria to be considered as a PMT or vPvM.

12.5 Results of PBT and vPvB assessment

Regulation (EC) No. 1907/2006 [REACH]

According to the results of its assessment, this substance is not a PBT or a vPvB.

Regulation (EC) No. 1272/2008 [CLP]

| Product/ingredient name | PBT | P   | B   | T   | vPvB | vP  | vB  |
|-------------------------|-----|-----|-----|-----|------|-----|-----|
| HFO-1234ZE              | N/A | N/A | N/A | N/A | N/A  | N/A | N/A |

Conclusion/Summary : The product does not meet the criteria to be considered as a PBT or vPvB.  
Regulation (EC) No. 1272/2008 [CLP]

12.6 Endocrine disrupting properties

Not available.

Conclusion/Summary [Product] : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

12.7 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

## SECTION 13: Disposal considerations

- Methods of disposal** : The generation of waste should be avoided or minimised 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.
- Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.
- Packaging**
- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : 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

|                                 | ADR/RID                                                                                  | ADN                                                                                      | IMDG                                                                                        | IATA                                                                                         |
|---------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 14.1 UN number or ID number     | UN1950                                                                                   | UN1950                                                                                   | UN1950                                                                                      | UN1950                                                                                       |
| 14.2 UN proper shipping name    | AEROSOLS                                                                                 | AEROSOLS                                                                                 | AEROSOLS                                                                                    | Compressed gases n. o.s.                                                                     |
| 14.3 Transport hazard class(es) | 2<br> | 2<br> | 2.2<br> | 2.2<br> |
| 14.4 Packing group              | -                                                                                        | -                                                                                        | -                                                                                           | -                                                                                            |
| 14.5 Environmental hazards      | No.                                                                                      | No.                                                                                      | No.                                                                                         | No.                                                                                          |

### Additional information

**ADR/RID** : **Tunnel code** (E)

**14.6 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.

**14.7 Maritime transport in bulk according to IMO instruments** : Not available.

## SECTION 15: Regulatory information

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**EU Regulation (EC) No. 1907/2006 (REACH)**

**Annex XIV - List of substances subject to authorisation**

**Annex XIV**

None of the components are listed above the relevant limit.

**Substances of very high concern**

None of the components are listed above the relevant limit.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles**

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SECTION 15: Regulatory information

No listed substance

Other EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Listed

Industrial emissions (integrated pollution prevention and control) - Water : Not listed

Explosive precursors : Not applicable.

Ozone depleting substances (EU 2024/590)

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Persistent Organic Pollutants

Not listed.

Aerosol dispensers :

3

100% by mass of the contents are flammable.

Seveso Directive

This product is not controlled under the Seveso Directive.

National regulations

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

- Australia : All components are listed or exempted.
- Canada : All components are listed or exempted.
- China : All components are listed or exempted.
- Eurasian Economic Union : Russian Federation inventory: All components are listed or exempted.
- Japan : Japan inventory (CSCL): All components are listed or exempted.  
Japan inventory (ISHL): All components are listed or exempted.
- New Zealand : All components are listed or exempted.
- Philippines : Not determined.
- Republic of Korea : All components are listed or exempted.
- Taiwan : All components are listed or exempted.

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## SECTION 15: Regulatory information

|                      |                                          |
|----------------------|------------------------------------------|
| <b>Thailand</b>      | : All components are listed or exempted. |
| <b>Turkey</b>        | : Not determined.                        |
| <b>United States</b> | : All components are active or exempted. |
| <b>Viet Nam</b>      | : All components are listed or exempted. |

|                                        |                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------|
| <b>15.2 Chemical safety assessment</b> | : This product contains substances for which Chemical Safety Assessments are still required. |
|----------------------------------------|----------------------------------------------------------------------------------------------|

## SECTION 16: Other information

Indicates information that has changed from previously issued version.

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Abbreviations and acronyms</b> | <p>ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway</p> <p>ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road</p> <p>ATE = Acute Toxicity Estimate</p> <p>B = Bioaccumulative</p> <p>BCF = Bioconcentration Factor</p> <p>CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]</p> <p>DMEL = Derived Minimal Effect Level</p> <p>DNEL = Derived No Effect Level</p> <p>EUH statement = CLP-specific Hazard statement</p> <p>IATA = International Air Transport Association</p> <p>IMDG = International Maritime Dangerous Goods</p> <p>IMO = International Maritime Organization</p> <p>M = Mobile</p> <p>N/A = Not available</p> <p>P = Persistent</p> <p>PBT = Persistent, Bioaccumulative and Toxic</p> <p>PMT = Persistent, Mobile and Toxic</p> <p>PNEC = Predicted No Effect Concentration</p> <p>RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail</p> <p>RRN = REACH Registration Number</p> <p>SGG = Segregation Group</p> <p>T = Toxic</p> <p>vB = Very Bioaccumulative</p> <p>vM = Very Mobile</p> <p>vP = Very Persistent</p> <p>vPvB = Very Persistent and Very Bioaccumulative</p> <p>vPvM = Very Persistent and Very Mobile</p> |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

| Classification  | Justification         |
|-----------------|-----------------------|
| Aerosol 3, H229 | On basis of test data |

### Full text of abbreviated H statements

|      |                                                     |
|------|-----------------------------------------------------|
| H221 | Flammable gas.                                      |
| H229 | Pressurised container: may burst if heated.         |
| H280 | Contains gas under pressure; may explode if heated. |

### Full text of classifications [CLP/GHS]

|                    |                                       |
|--------------------|---------------------------------------|
| Aerosol 3          | AEROSOLS - Category 3                 |
| Flam. Gas 1B       | FLAMMABLE GASES - Category 1B         |
| Press. Gas (Comp.) | GASES UNDER PRESSURE - Compressed gas |

|                                        |             |
|----------------------------------------|-------------|
| <b>Date of printing</b>                | : 1/23/2026 |
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SECTION 16: Other information

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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.