

# SAFETY DATA SHEET

Halocarbon 134a (1,1,1,2-Tetrafluoroethane)

**Airgas**  
an Air Liquide company

## Section 1. Identification

|                                      |                                                                                                                                                                                                                                                                |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GHS product identifier</b>        | : Halocarbon 134a (1,1,1,2-Tetrafluoroethane)                                                                                                                                                                                                                  |
| <b>Chemical name</b>                 | : 1,1,1,2-Tetrafluoroethane                                                                                                                                                                                                                                    |
| <b>Other means of identification</b> | : Ethane, 1,1,1,2-tetrafluoro-; 1,1,1,2-Tetrafluoroethane; 1,1,1,2-Tetrafluoroethane (Refrigerant gas R134A); HFC 134a; HCF 134a; HCFC-134a; HFC-134a; R134a; halon 134a; freon 134a; Tetrafluoroethane, 1,1,1,2-; HFC-134a; 1,1,1,2-tetrafluoroethane; F 134a |
| <b>Product type</b>                  | : Liquefied gas.                                                                                                                                                                                                                                               |
| <b>Product use</b>                   | : Synthetic/Analytical chemistry.                                                                                                                                                                                                                              |
| <b>Synonym</b>                       | : Ethane, 1,1,1,2-tetrafluoro-; 1,1,1,2-Tetrafluoroethane; 1,1,1,2-Tetrafluoroethane (Refrigerant gas R134A); HFC 134a; HCF 134a; HCFC-134a; HFC-134a; R134a; halon 134a; freon 134a; Tetrafluoroethane, 1,1,1,2-; HFC-134a; 1,1,1,2-tetrafluoroethane; F 134a |
| <b>SDS #</b>                         | : 001055                                                                                                                                                                                                                                                       |
| <b>Supplier's details</b>            | : Airgas USA, LLC and its affiliates<br>259 North Radnor-Chester Road<br>Suite 100<br>Radnor, PA 19087-5283<br>1-610-687-5253<br>Inside the US: 1-800-424-9300 (Chemtrec, 24 hours)<br>Outside the US: 1-703-527-3887 (Chemtrec, 24 hours)                     |
| <b>24-hour telephone</b>             | : Airgas Emergency Response Center 1-866-734-3438                                                                                                                                                                                                              |

## Section 2. Hazards identification

|                                                   |                                                                                                       |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>OSHA/HCS status</b>                            | : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). |
| <b>Classification of the substance or mixture</b> | : GASES UNDER PRESSURE - Liquefied gas                                                                |

### GHS label elements

#### **Hazard pictograms**



|                          |                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Signal word</b>       | : Warning                                                                                                                         |
| <b>Hazard statements</b> | : Contains gas under pressure; may explode if heated.<br>May cause frostbite.<br>May displace oxygen and cause rapid suffocation. |

### Precautionary statements

#### **General**

: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position.

#### **Prevention**

: Not applicable.

#### **Response**

: Not applicable.

#### **Storage**

: Protect from sunlight. Store in a well-ventilated place.

#### **Disposal**

: Not applicable.

#### **Hazards not otherwise classified**

: Liquid can cause burns similar to frostbite.

## Section 3. Composition/information on ingredients

|                                      |                                                                                                                                                                                                                                                                |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Substance/mixture</b>             | : Substance                                                                                                                                                                                                                                                    |
| <b>Chemical name</b>                 | : 1,1,1,2-Tetrafluoroethane                                                                                                                                                                                                                                    |
| <b>Other means of identification</b> | : Ethane, 1,1,1,2-tetrafluoro-; 1,1,1,2-Tetrafluoroethane; 1,1,1,2-Tetrafluoroethane (Refrigerant gas R134A); HFC 134a; HCF 134a; HCFC-134a; HFC-134a; R134a; halon 134a; freon 134a; Tetrafluoroethane, 1,1,1,2-; HFC-134a; 1,1,1,2-tetrafluoroethane; F 134a |
| <b>Product code</b>                  | : 001055                                                                                                                                                                                                                                                       |

### CAS number/other identifiers

**CAS number** : 811-97-2

| Ingredient name                             | %   | CAS number |
|---------------------------------------------|-----|------------|
| Halocarbon 134a (1,1,1,2-Tetrafluoroethane) | 100 | 811-97-2   |

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 as hazardous to health or the environment and hence require reporting in this section.**

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

## Section 4. First aid measures

### Description of necessary first aid measures

|                     |                                                                                                                                                                                                                                                                      |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : 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.                                                                                |
| <b>Inhalation</b>   | : Remove victim to fresh air and keep at rest in a position comfortable for breathing.                                                                                                                                                                               |
| <b>Skin contact</b> | : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. |
| <b>Ingestion</b>    | : Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. As this product rapidly becomes a gas when released, refer to the inhalation section.                                                                        |

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

|                     |                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | : Liquid can cause burns similar to frostbite.                                                         |
| <b>Inhalation</b>   | : No known significant effects or critical hazards.                                                    |
| <b>Skin contact</b> | : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite. |
| <b>Frostbite</b>    | : Try to warm up the frozen tissues and seek medical attention.                                        |
| <b>Ingestion</b>    | : Ingestion of liquid can cause burns similar to frostbite.                                            |

#### Over-exposure signs/symptoms

|                     |                                                            |
|---------------------|------------------------------------------------------------|
| <b>Eye contact</b>  | : Adverse symptoms may include the following:<br>frostbite |
| <b>Inhalation</b>   | : No specific data.                                        |
| <b>Skin contact</b> | : Adverse symptoms may include the following:<br>frostbite |
| <b>Ingestion</b>    | : Adverse symptoms may include the following:<br>frostbite |

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

|                           |                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Notes to physician</b> | : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|

## Section 4. First aid measures

- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

## 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** : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
halogenated compounds

- 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. Contact supplier immediately for specialist advice. 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. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

## 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. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. 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). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. 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** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

| Ingredient name                             | Exposure limits                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Halocarbon 134a (1,1,1,2-Tetrafluoroethane) | <b>OSHA PEL Z2 (United States, 2/2013).</b><br>TWA: 2.5 mg/m <sup>3</sup> 8 hours. Form: Dust<br><b>OARS WEEL (United States, 1/2021).</b><br>TWA: 1000 ppm 8 hours.<br><b>ACGIH TLV (United States, 1/2021).</b><br>TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.<br><b>OSHA PEL 1989 (United States, 3/1989).</b><br>TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours.<br><b>OSHA PEL (United States, 5/2018).</b><br>TWA: 2.5 mg/m <sup>3</sup> , (as F) 8 hours. |

### Biological exposure indices

No exposure indices known.

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

### Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

## Section 8. Exposure controls/personal protection

### 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. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. 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.

#### Thermal hazards

: If there is a risk of contact with the liquid, all protective equipment worn should be suitable for use with extremely low temperature materials.

## Section 9. Physical and chemical properties

### Appearance

#### Physical state

: Gas. [Compressed gas.]

#### Color

: Not available.

#### Odor

: Characteristic.

#### Odor threshold

: Not available.

#### pH

: Not applicable.

#### Melting point

: -108°C (-162.4°F)

#### Boiling point

: -26°C (-14.8°F)

#### Critical temperature

: 100.9°C (213.6°F)

#### Flash point

: [Product does not sustain combustion.]

#### Evaporation rate

: Not available.

#### Flammability (solid, gas)

: Not available.

#### Lower and upper explosive (flammable) limits

: Not available.

#### Vapor pressure

: 81.3 (psig)

#### Vapor density

: 3.5 (Air = 1)

#### Specific Volume (ft<sup>3</sup>/lb)

: 3.7078

#### Gas Density (lb/ft<sup>3</sup>)

: 0.2697 (25°C / 77 to °F)

#### Relative density

: Not applicable.

#### Solubility in water

: 1 g/l

#### Partition coefficient: n-octanol/water

: 1.06 [OECD 107]

#### Auto-ignition temperature

: >743°C (>1369.4°F)

#### Decomposition temperature

: Not available.

#### Flow time (ISO 2431)

: Not available.

#### Molecular weight

: 102.04 g/mole

## 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.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

| Product/ingredient name     | Result                | Species | Dose                  | Exposure |
|-----------------------------|-----------------------|---------|-----------------------|----------|
| 1,1,1,2 - tetrafluoroethane | LC50 Inhalation Vapor | Rat     | 1500 g/m <sup>3</sup> | 4 hours  |

#### Irritation/Corrosion

Not available.

#### Sensitization

Not available.

#### Mutagenicity

Not available.

#### Carcinogenicity

Not available.

#### Reproductive toxicity

Not available.

#### Teratogenicity

Not available.

#### 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 effects

**Eye contact** : Liquid can cause burns similar to frostbite.

## Section 11. Toxicological information

- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
- Ingestion** : Ingestion of liquid can cause burns similar to frostbite.

### Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:  
frostbite
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
frostbite
- Ingestion** : Adverse symptoms may include the following:  
frostbite

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

#### Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

#### Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

#### Potential chronic health effects

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.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

| Route               | ATE value |
|---------------------|-----------|
| Inhalation (vapors) | 1500 mg/l |

## Section 12. Ecological information

### Toxicity

Not available.

### Persistence and degradability

Not available.

### Bioaccumulative potential

| Product/ingredient name     | LogP <sub>ow</sub> | BCF | Potential |
|-----------------------------|--------------------|-----|-----------|
| 1,1,1,2 - tetrafluoroethane | 1.06               | -   | Low       |

## Section 12. Ecological information

### Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**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. Empty pressure vessels should be returned to the supplier. 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                                                                                        | TDG                                                                                        | Mexico                                                                                     | IMDG                                                                                         | IATA                                                                                         |
|-----------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>UN number</b>                  | UN3159                                                                                     | UN3159                                                                                     | UN3159                                                                                     | UN3159                                                                                       | UN3159                                                                                       |
| <b>UN proper shipping name</b>    | 1,1,1,2-Tetrafluoroethane                                                                  | 1,1,1,2-TETRAFLUOROETHANE                                                                  | 1,1,1,2-TETRAFLUOROETANO                                                                   | 1,1,1,2-TETRAFLUOROETHANE                                                                    | 1,1,1,2-Tetrafluoroethane                                                                    |
| <b>Transport hazard class(es)</b> | 2.2<br> | 2.2<br> | 2.2<br> | 2.2<br> | 2.2<br> |
| <b>Packing group</b>              | -                                                                                          | -                                                                                          | -                                                                                          | -                                                                                            | -                                                                                            |
| <b>Environmental hazards</b>      | No.                                                                                        | No.                                                                                        | No.                                                                                        | No.                                                                                          | No.                                                                                          |

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

### Additional information

#### DOT Classification

: **Limited quantity** Yes.  
**Packaging instruction** Exceptions: 306. Non-bulk: 304. Bulk: 314, 315.  
**Quantity limitation** Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.  
**Special provisions** T50

#### TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).  
**Explosive Limit and Limited Quantity Index** 0.125  
**Passenger Carrying Road or Rail Index** 75

#### IMDG

: **Emergency schedules** F-C, S-V

#### IATA

: **Quantity limitation** Passenger and Cargo Aircraft: 75 kg. Packaging instructions: 200. Cargo Aircraft Only: 150 kg. Packaging instructions: 200. Limited Quantities - Passenger Aircraft: Forbidden. Packaging instructions: Forbidden.

**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.

## Section 14. Transport information

Transport in bulk according to IMO instruments : Not available.

## 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

### SARA 302/304

#### Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

### SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

### State regulations

Massachusetts : This material is not listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is not listed.

### California Prop. 65

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

| Ingredient name | Status           |
|-----------------|------------------|
| HFC-134a        | Annex F, Group I |

#### 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 : This material is listed or exempted.

## Section 15. Regulatory information

|                                |                                                                                                                                                |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Canada</b>                  | : This material is listed or exempted.                                                                                                         |
| <b>China</b>                   | : This material is listed or exempted.                                                                                                         |
| <b>Eurasian Economic Union</b> | : <b>Russian Federation inventory</b> : Not determined.                                                                                        |
| <b>Japan</b>                   | : <b>Japan inventory (CSCL)</b> : This material is listed or exempted.<br><b>Japan inventory (ISHL)</b> : This material is listed or exempted. |
| <b>New Zealand</b>             | : This material is listed or exempted.                                                                                                         |
| <b>Philippines</b>             | : This material is listed or exempted.                                                                                                         |
| <b>Republic of Korea</b>       | : This material is listed or exempted.                                                                                                         |
| <b>Taiwan</b>                  | : This material is listed or exempted.                                                                                                         |
| <b>Thailand</b>                | : This material is listed or exempted.                                                                                                         |
| <b>Turkey</b>                  | : This material is listed or exempted.                                                                                                         |
| <b>United States</b>           | : This material is active or exempted.                                                                                                         |
| <b>Viet Nam</b>                | : This material is listed or exempted.                                                                                                         |

## Section 16. Other information

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

|                  |   |   |
|------------------|---|---|
| Health           | / | 1 |
| Flammability     |   | 1 |
| Physical hazards |   | 0 |
|                  |   |   |

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.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

### Procedure used to derive the classification

| Classification                       | Justification   |
|--------------------------------------|-----------------|
| GASES UNDER PRESSURE - Liquefied gas | Expert judgment |

### History

|                                       |              |
|---------------------------------------|--------------|
| <b>Date of printing</b>               | : 2/4/2025   |
| <b>Date of issue/Date of revision</b> | : 2/4/2025   |
| <b>Date of previous issue</b>         | : 10/26/2023 |

## Section 16. Other information

**Version** : 0.03

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

**References** : Not available.

### 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.