KrioNext® R134A

Section 1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name	:	R134A – Krionext R134A
SDS No.	:	GG_005
Chemical Name	:	Tetrafluoroethane
Type of Product		Substance

1.3 Details of the supplier of the safety data sheet

Company identification	:	General Gas (Zhejiang) CO., LTD Room 1802, West Tower, No. 1001, Jiangxi Road, Shangyu District, Shaoxing, Zhejiang, 312399
Phone		☎ 008613685862252
E-Mail		carter.gu@generalgas-krionext.com

Section 2 Hazards identification

2.1 Classification of the substance or mixture

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

Form	: Liquiefied gas
Color	: Colourless
Odor	: Weak

Classification of the substance or mixture

Classification of the substance or mixture	Gases under pressure, Liquefied gas Simple Asphyxiant

2.2 GHS Label elements, including precautionary statements

Symbol(s) :

Signal word (CLP)	:	Warning
Hazard statements (CLP)	:	Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.
Precautionary statements (CLP)	:	**Storage:** Protect from sunlight. Store in a well-ventilated place. May cause cardiac arrhythmia. May cause frostbite.

2.3 Carcinogenicity : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

Section 3 Composition/information on ingredients

3.1

Chemical Name	CAS-No. Index-No. Registration Number EC-No	Classification 1272/2008	Concentration	Formula
Tetrafluoroethane	811-97-2 01-2119459374-33 212-377-0	Press. Gas ;	100	CF3CH2F

Section 4 First aid measures

4.1 Description of first aid measures

Inhalation : Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Use oxygen as required, provided a qualified operator is present. Call a physician. Do not give drugs from adrenaline-ephedrine group.

Skin contact : After contact with skin, wash immediately with plenty of water.
If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. If symptoms persist, call a physician.

Eye contact : Rinse immediately with plenty of water, also under the eyelids,
for at least 15 minutes. In case of frostbite water should be lukewarm, not hot. If symptoms persist, call a physician.

Ingestion : Unlikely route of exposure. As this product is a gas, refer to the inhalation section. Do not induce vomiting without medical advice. Call a physician immediately.

4.3 Indication of any immediate medical attention and special treatment needed : Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions. Treat frostbitten areas as needed.

Section 5 Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media : The product is not flammable.
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture : Possibility of generating hazardous reactions during a fire due to the presence of F and Cl groups. Heating will cause pressure rise with risk of bursting
Cool closed containers exposed to fire with water spray.

This product is not flammable at ambient temperatures and atmospheric pressure. However, this material can ignite when mixed with air under pressure and exposed to strong ignition sources.

5.2 Special protective equipment for firefighters : Wear full protective clothing and self-contained breathing apparatus.

Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Section 6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures : Immediately contact emergency personnel. Wear personal protective equipment. Unprotected persons must be kept away. Ensure adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment.

6.2 Environmental precautions : Prevent further leakage or spillage if safe to do so.
The product evapourates readily.

6.3 Methods and material for containment and cleaning up : Ventilate the area.

Section 7 Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Open drum carefully as content may be under pressure. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material. Do not use in areas without adequate ventilation.
Contaminated equipment (brushes, rags) must be cleaned immediately with water.

Hygiene measures : Provide adequate ventilation. When using do not eat or drink.

7.2 Conditions for safe storage, including any incompatibilities : Store in original container. Keep away from direct sunlight. Keep containers tightly closed in a cool, well-ventilated place.

Section 8 Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits:

Components	Basis / Value Type	Value / Form of exposure	Exceeding Factor	Remarks
Tetrafluoroethane	Twa	1’000 ppm		
Tetrafluoroethane	EH40 WEL TWA	4’240 mg/m3 1000 ppm		

TWA – Time weighted average

DNEL / PNEC-VALUES

Component	End-use / Impact	Exposure Duration	Value	Exposure routes	Remarks
Tetrafluoroethane	Workers / Long-term systemic effects		13936 mg/m3	Inhalation	
Tetrafluoroethane	Consumers / Long-term systemic effects		2476 mg/m3	Inhalation	

Component	Environmental compartment / Value	remarks
Tetrafluoroethane	Fresh water : 0,1 mg/l	Assessment factor : 1'000
Tetrafluoroethane	Marine water : 0,01 mg/l	Assessment factor : 10'000
Tetrafluoroethane	Fresh water sediment : 0,75 mg/kg	Assessment factor : 100
Tetrafluoroethane	Sew age treatment plant : 73 mg/l	Assessment factor : 10

8.2 Perosnal protective equipment

Eye/face protection : Safety glasses with side-shields conforming to EN166 Face-shield

Hand protection : Leather gloves
In case of contact through splashing: Protective gloves
Neoprene gloves
Polyvinyl alcohol or nitrile- butyl-rubber gloves

Skin and body protection : Protective footwear

Respiratory protection : In case of insufficient ventilation wear suitable respiratory equipment. Self-contained breathing apparatus (EN 133)

Hygiene measures : Handle in accordance with good industrial hygiene and safet practice.
Ensure adequate ventilation, especially in confined areas. Do not get in eyes, on skin, or on clothing.
Remove and wash contaminated clothing before re-use. Keep working clothes separately.

Section 9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state		Liquefied gas
Colour	:	Colourless.
Odour	:	Weak
Molecular weight	:	102,02 g/mol
pH	:	Note: neutral
Melting point/range	:	-101 °C
Boiling point/boiling range	:	-26,2 °C
Flash point	:	Note: Not applicable
Evaporation rate	:	> 1 Method: Compared to CCl4.
Lower explosion limit	:	Note: no data available
Upper explosion limit	:	Note: no data available
Vapor pressure	:	5.915 hPa at 21.1 °C(70.0 °F) 14.713 hPa at 54.4 °C(129.9 °F)
Density	:	1,2 g/cm3 at 21.1 °C
Water solubility	:	1.5 g/l
Partition coefficient: n-octanol/water	:	log Pow: 1,06 Test substance: Ethane, pentafluoro- (HFC-125)
Ignition temperature	:	> 750 °C

9.2 Other information

Section 10 Stability and reactivity

10.2	**Chemical stability**	:	no data available
10.3	**Possibility of hazardous reactions**	:	no data available
10.4	**Conditions to avoid**	:	Heating will cause pressure rise with risk of bursting Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.
10.5	**Incompatible materials**	:	Oxidizing agents Possible incompatibility with alkali sensitive materials. Powdered metals
10.6	**Hazardous decomposition products**	:	Halogenated compounds - Hydrogen fluoride - Carbonyl halides - Carbon oxides

Section 11 Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

Not applicable

Acute dermal toxicity	Not applicable
Acute inhalation toxicity	LC50: > 500000 ppm Exposure time: 4 h Species: Rat
Germ cell mutagenicity	Test Method: Ames test Result: negative Method: OECD Test Guideline 471

Section 12 Ecological information

12.1 Toxicity

Toxicity to fish	:	LC50 Semi-static test Species: Oncorhynchus mykiss (rainbow trout) Value: 450 mg/l Exposure time: 96 h Method: 92/69/EEC,C.1
Toxicity to aquatic plants:		Growth rate Species: Selenastrum capricornutum (green algae) Value: > 118 mg/l Exposure time: 72 h Method: OECD Test Guideline +
Toxicity to Microorganisms:		EC10 Growth inhibition Species: Pseudomonas putida Value: > 730 mg/l Exposure time: 6 h
Toxicity to aquatic invertebrates:		EC50 static test Species: Daphnia magna (Water flea) Value: 980 mg/l Exposure time: 48 h Method: EEC 92/69/V, C2

12.2 Persistence and degradability

Biodegradability	:	Biodegradation 3% Exposure time: 28 d Result: Not rapidly biodegradable

			Method: OECD 301 D
	12.3 Results of PBT and vPvB assessment		This substance is not considered to be present, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB)

Section 13 Disposal considerations

13.1	**Waste treatment methods**	:	Offer surplus and non-recyclable solutions to a licensed disposal company. Refer to manufacturer/supplier for information on recovery/recycling. Classification: 14.06.01
	Further information	:	Provisions relating to waste: EC Directive 2006/12/EC; 2008/98/EEC Regulation No. 1013/2006

Section 14 Transport information

14.1 ADR/RID

UN No.	:	UN 3159
Description of the goods		1,1,1,2-TETRAFLUOROETHANE
Class		2
Classification Code		2A
Hazard Identification		20

14.2 IATA

UN/ID No.	:	UN 3159
Description of the goods		1,1,1,2-TETRAFLUOROETHANE
Class		2.2
Hazard Labels		2.2

14.4 IMDG

UN/ID No.	:	UN 3159
Description of the goods	:	1,1,1,2-TETRAFLUOROETHANE
Class	:	2.2
Hazard Labels		2.2
EmS Number		F-C, S-V
Marine pollutant		no

Section 15 Regulatory information

15.1 Inventories

US. Toxic Substances Control Act	On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act	On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List	On the inventory, or in compliance with the inventory
Korea. Existing Chemicals Inventory (KECI)	On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances	On the inventory, or in compliance with the inventory
NZIOC - New Zealand	On the inventory, or in compliance with the inventory

15.2 : A CSA does not need to be carried out for this product.

National regulatory information

SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Acute Health Hazard Sudden Release of Pressure Hazard
California Prop. 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16 Other information

:

		HMIS III	NFPA
Health hazard		**1**	**2**
Flammability	:	1	1
Physical Hazard		0	
Instability			0

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

This Safety Data Sheet has been compiled in accordance with the applicable European Directives and is applicable to all countries that have translated the Directives within their national legislation.
The information contained in this sheet is based on the knowledge available to us at the date of the last version. The user must ensure the

suitability and completeness of the information in relation to the specific use of the product. You should not interpret this document as a guarantee for any specific property of the product. Because the use of the product does not fall under our direct control, it is the user's duty to observe the laws and regulations in force regarding hygiene and safety under its own responsibility. They are not responsible for improper use.

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