

Material Safety Data Sheet
 according to Regulation (EU) N° 1272/2008

Cod.
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GG_004
 September 2022

KrioNext® R507

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

1.1 Product identifier

Trade name : R507 – Krionext R507
 SDS No. : GG_004
 Registration-No. : 000000009882
 Product Use Description : Refrigerant

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 : Liquefied gas
 Color : Colourless
 Odor : Very faint sweet

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. May cause eye and skin irritation.

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 nature : Mixture

GENERAL GAS (ZHEJIANG) CO., LTD

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info@generalgas-krionext.com

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www.generalgas.eu/krionext

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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.
 ASTM E-681
 Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Specific hazards during firefighting** : 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.
 Container may rupture on heating.
 Cool closed containers exposed to fire with water spray.
 Do not allow run-off from fire fighting to enter drains or water courses.
 Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
 Fire may cause evolution of:
 Halogenated compounds Hydrogen fluoride Carbon oxides
 Carbonyl halides

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- 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 evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Wear personal protective equipment. Unprotected persons must be kept away.
- Remove all sources of ignition.
- Avoid skin contact with leaking liquid (danger of frostbite). Ventilate the area.
- After release, disperses into the air.
- Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
- Avoid accumulation of vapours in low areas.
- Unprotected personnel should not return until air has been tested and determined safe.
- Ensure that the oxygen content is $\geq 19.5\%$.
- 6.2 Environmental precautions** : Prevent further leakage or spillage if safe to do so.
- The product evaporates 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**
- Safe use of the product : Handle with care.
- Avoid inhalation of vapour or mist.
- Do not get in eyes, on skin, or on clothing. Wear personal protective equipment.
- Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C.
- Follow all standard safety precautions for handling and use of compressed gas cylinders.
- Use authorized cylinders only.
- Protect cylinders from physical damage.
- Do not puncture or drop cylinders, expose them to open flame or excessive heat.
- Do not pierce or burn, even after use. Do not spray on a naked flame or any incandescent material.
- Do not remove screw cap until immediately ready for use. Always replace cap after use.
- Advice on protection against fire and explosion : The product is not flammable.
- Can form a combustible mixture with air at pressures above atmospheric pressure.
- 7.2 Conditions for safe storage, including any incompatibilities** : Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use.
- Keep containers tightly closed in a dry, cool and well-ventilated place.

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Storage rooms must be properly ventilated.
 Ensure adequate ventilation, especially in confined areas. Protect cylinders from physical damage.

Section 8 Exposure controls/personal protection

8.1	Protective measures	: Do not breathe vapour. Avoid contact with skin, eyes and clothing. Ensure that eyewash stations and safety showers are close to the workstation location.
8.1.1	Engineering measures	: General room ventilation is adequate for storage and handling. Perform filling operations only at stations with exhaust ventilation facilities.
	Eye/face protection	: Wear as appropriate: Safety glasses with side-shields If splashes are likely to occur, wear: Goggles or face shield, giving complete protection to eyes
	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	: Avoid skin contact with leaking liquid (danger of frostbite). Wear cold insulating gloves/ face shield/ eye protection.
	Respiratory protection	: In case of insufficient ventilation, wear suitable respiratory equipment. Wear a positive-pressure supplied-air respirator. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. For rescue and maintenance work in storage tanks use self- contained breathing apparatus.
	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	: Very faint sweet
Odor threshold	: Note: no data available
pH	: Note: neutral
Freezing point	: Note: no data available
Boiling point/boiling range	: -46.7 °C
Flash point	: Note: Not applicable

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Evaporation rate	:	> 1 Method: Compared to CCl4.
Lower explosion limit	:	Note: None
Upper explosion limit	:	Note: None
Vapor pressure	:	10,611 hPa at 21.1 °C(70.0 °F) 25,289 hPa at 54.4 °C(129.9 °F)
Vapor density	:	3.43 Note: (Air = 1.0)
Density	:	1.07 g/cm3 at 21.1 °C
Water solubility	:	1.5 g/l
Partition coefficient: n-	:	log Pow: 1.48
9.2 Other information		
octanol/water	:	Test substance: Ethane, pentafluoro- (HFC-125)
Ignition temperature	:	> 750 °C
Decomposition temperature	:	> 250 °C

Section 10 Stability and reactivity

10.2 Chemical stability	:	Stable under normal conditions.
10.3 Possibility of hazardous reactions	:	Hazardous polymerisation does not occur.
10.4 Conditions to avoid	:	Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50 °C. Decomposes under high temperature. Some risk may be expected of corrosive and toxic decomposition products. Can form a combustible mixture with air at pressures above atmospheric pressure. Do not mix with oxygen or air above atmospheric pressure.
10.5 Incompatible materials	:	Oxidizing agents Finely divided metal powders such as aluminum, magnesium, or zinc.
10.6 Hazardous decomposition products	:	Halogenated compounds - Hydrogen fluoride - Carbonyl halides - Carbon oxides

Section 11 Toxicological information

11.1 Information on toxicological effects		
Acute inhalation toxicity Pentafluoroethane	:	> 769000 ppm Exposure time: 4 h Species: Rat
1,1,1-Trifluoroethane	:	LC50: > 540000 ppm Exposure time: 4 h Species: Rat
	:	LC50: > 106 mg/l Exposure time: 4 h Species: Rat

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Sensitisation

Pentafluoroethane

Cardiac sensitization

Species: dogs

Note: No-observed-effect level

75 000 ppm

Lowest observed effect level

100 000 ppm

1,1,1-Trifluoroethane

Cardiac sensitization

Species: dogs

Note: 1,1,1,2-tetrafluoroethane (HFC-134a): Cardiac sensitisation threshold (dog): 80000 ppm.

Repeated dose toxicity

Pentafluoroethane

Species: Rat

Application Route: Inhalation

Exposure time: (4 Weeks)

NOEL: 50000 ppm

Subchronic toxicity

1,1,1-Trifluoroethane

Species: Rat

Application Route: Inhalation

Exposure time: (90 d)

NOEL: 40000 ppm

Subchronic toxicity

Genotoxicity in vitro

Pentafluoroethane

Test Method: Ames test

Result: negative

1,1,1-Trifluoroethane

Test Method: Ames test

Result: negative

Cell type: Human lymphocytes

Result: negative

Cell type: Chinese Hamster Ovary Cells

Result: negative

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Cell type: Human lymphocytes
 Result: negative

Genotoxicity in vivo
 1,1,1-Trifluoroethane

Species: Mouse
 Cell type: Bone marrow
 Application Route: Inhalation
 Result: negative

Teratogenicity
 Pentafluoroethane

Species: Rabbit
 Application Route: Inhalation exposure
 NOAEL, Teratog: 50,000 ppm
 NOAEL, Maternal: 50,000 ppm
 Note: Did not show teratogenic effects in animal experiments.

Species: Rat
 Application Route: Inhalation exposure
 NOAEL, Teratog: 50,000 ppm
 NOAEL, Maternal: 50,000 ppm
 Note: Did not show teratogenic effects in animal experiments.

1,1,1-Trifluoroethane

Species: Rat
 Application Route: Inhalation exposure
 NOAEL, Teratog: 40,000 ppm
 NOAEL, Maternal: 40,000 ppm
 Note: Did not show teratogenic effects in animal experiments.

Species: Rabbit
 Application Route: Inhalation exposure
 NOAEL, Teratog: 40,000 ppm
 NOAEL, Maternal: 40,000 ppm
 Note: Did not show teratogenic effects in animal experiments.

Further information

- : Acute toxicity Ethane, pentafluoro- (HFC-125): Cardiac sensitisation threshold (dog): 75000 ppm. 1,1,1- trifluoroethane (HFC-143a): Cardiac sensitisation threshold (dog): >250000 ppm. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Rapid evaporation of the liquid may cause frostbite. Irritating to eyes and skin. Avoid skin contact with leaking liquid (danger of frostbite). May cause cardiac arrhythmia.

Section 12 Ecological information

12.1 Biodegradability

Pentafluoroethane

- : Result: Not readily biodegradable.
 Value: 5 %

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Method: OECD 301 D

12.2 Further information on ecology

Additional ecological information

: Accumulation in aquatic organisms is unlikely.
 This product contains greenhouse gases which may contribute to global warming. Do NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered.

Section 13 Disposal considerations

- 13.1 Disposal methods** : Observe all Federal, State, and Local Environmental regulations.
- Note** : This product is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

Section 14 Transport information

- 14.1 DOT**
- UN/ID No. : UN 3163
- Proper shipping name : LIQUEFIED GAS, N.O.S.
(Pentafluoroethane, 1,1,1-Trifluoroethane)
- Class : 2.2
- Packing group : 2.2
- Hazard Labels : 2.2
- 14.2 IATA**
- UN/ID No. : UN 3163
- Description of the goods : LIQUEFIED GAS, N.O.S.
(Pentafluoroethane, 1,1,1-Trifluoroethane)
- Class : 2.2
- Hazard Labels : 2.2
- Packing instruction (cargo aircraft) : 200
- Packing instruction (passenger aircraft) : 200
- 14.4 IMDG**
- UN/ID No. : UN 3163
- Description of the goods : LIQUEFIED GAS, N.O.S.
(Pentafluoroethane, 1,1,1-Trifluoroethane)
- 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
- On the inventory, or in compliance with the inventory

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Australia. Industrial Chemical (Notification and Assessment) Act

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.

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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.

End of Document

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