

SAFETY DATA SHEET

Product Name: Klea™ 508 Revision: GHS04-3 Date: 02/2024 Page: 1 of 9

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name Klea™ 508 , (R508A)
 CAS No. Not available.
 EC No. Not available.
 REACH Registration No. Not available.

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

Identified Use(s) Subject to Member State regulations, applicable uses are: refrigerant.
 Uses Advised Against Not known.

1.3 Details of the supplier of the safety data sheet

Manufacturer
 Company Identification Mexichem Fluor Japan Limited
 Address of Manufacturer Tennoz First Tower
 2-4, Higashi-shinagawa 2-chome
 Shinagawa-ku, Tokyo
 JAPAN
 Postal code 140-0002
 Telephone: +81-3-5462-8661
 FAX: +81-3-5462-8686

1.4 Emergency telephone number

Emergency Phone No. For specialist advice in an emergency telephone +81-848-67-5232

SECTION 2: HAZARDS IDENTIFICATION

Low acute toxicity. Very high atmospheric concentrations may cause an abnormal heart rhythm, anaesthetic effects and asphyxiation. Liquid splashes or spray may cause freeze burns to skin and eyes.

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP) Press. Gas (Liq.) :Contains gas under pressure; may explode if heated.

2.2 Label elements

Product Name According to Regulation (EC) No. 1272/2008 (CLP)
 Klea™ 508

Hazard Pictogram(s)



GHS04

Signal Word(s) Warning

Hazard Statement(s) H280: Contains gas under pressure; may explode if heated.

Precautionary Statement(s) P410+P403: Protect from sunlight. Store in a well-ventilated place.

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2.3 Other hazards

None known.

2.4 Additional Information

None.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Alternative names R 508

3.1 Substances

Not applicable.

3.2 Mixtures

| HAZARDOUS INGREDIENT(S) | %W/W | CAS No. | EC No. | Hazard Pictogram(s) and Hazard Statement(s) |
|---------------------------|------|---------|-----------|---|
| Trifluoromethane (HFC 23) | 39 | 75-46-7 | 200-872-4 | GHS04 H280 |
| Hexafluoroethane (FC 116) | 61 | 76-16-4 | 200-939-8 | GHS04 H280 |

SECTION 4: FIRST AID MEASURES



The first aid advice given for skin contact, eye contact, and ingestion is applicable following exposures to the liquid or spray. See Also Section 11

4.1 Description of first aid measures

Inhalation

Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.

Skin Contact

Thaw affected areas with water. Remove contaminated clothing. Caution: clothing may adhere to the skin in the case of freeze burns. After contact with skin, wash immediately with plenty of warm water. If irritation or blistering occur obtain medical attention.

Eye Contact

Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 10 minutes. Obtain immediate medical attention.

Ingestion

Unlikely route of exposure. Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink. Obtain immediate medical attention.

Further Medical Treatment

Symptomatic treatment and supportive therapy as indicated. Adrenaline and similar sympathomimetic drugs should be avoided following exposure as cardiac arrhythmia may result with possible subsequent cardiac arrest.

4.2 Most important symptoms and effects, both acute and delayed

Very high atmospheric concentrations may cause an abnormal heart rhythm, anaesthetic effects and asphyxiation.

4.3 Indication of any immediate medical attention and special treatment needed

Remove patient from exposure, keep warm and at rest. Administer oxygen if necessary. Apply artificial respiration if breathing has ceased or shows signs of failing. In the event of cardiac arrest apply external cardiac massage. Obtain immediate medical attention.

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SECTION 5: FIREFIGHTING MEASURES

This refrigerant is not flammable in air under ambient conditions of temperature and pressure. Certain mixtures of this refrigerant and air when under pressure may be flammable. Mixtures of this refrigerant and air under pressure should be avoided. Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions.

5.1 Extinguishing media

Suitable Extinguishing media As appropriate for surrounding fire.
Keep fire exposed containers cool by spraying with water.

Unsuitable extinguishing media None.

5.2 Special hazards arising from the substance or mixture

Thermal decomposition will evolve very toxic and corrosive vapours (hydrogen fluoride). Containers may burst if overheated.

5.3 Advice for firefighters

A self contained breathing apparatus and full protective clothing must be worn in fire conditions. See Also Section 8

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure suitable personal protection (including respiratory protection) during removal of spillages. See Also Section 8

6.2 Environmental precautions

Prevent liquid from entering drains, sewers, basements and workpits since the vapour may create a suffocating atmosphere.

6.3 Methods and material for containment and cleaning up

Provided it is safe to do so, isolate the source of the leak. Allow small spillages to evaporate provided there is adequate ventilation.

Large spillages: Ventilate area. Contain spillages with sand, earth or any suitable adsorbent material. Prevent liquid from entering drains, sewers, basements and workpits since the vapour may create a suffocating atmosphere.

6.4 Reference to other sections

See Also Section 8, 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid inhalation of high concentrations of vapours. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Atmospheric concentrations well below the occupational exposure limit can be achieved by good occupational hygiene practice. The vapour is heavier than air, high concentrations may be produced at low levels where general ventilation is poor, in such cases provide adequate ventilation or wear suitable respiratory protective equipment with positive air supply. Avoid contact with naked flames and hot surfaces as corrosive and very toxic decomposition products can be formed. Avoid contact between the

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liquid and skin and eyes. For correct refrigerant composition, systems should be charged using the liquid phase and not the vapour phase.
Avoid venting to atmosphere.
The fluorinated greenhouse gas R 508 may be supplied in returnable containers (drums/cylinders). The container contains fluorinated greenhouse gases covered by the Kyoto Protocol. The fluorinated greenhouse gases in containers may not be vented to the atmosphere. Regulation (EU) No. 517/2014 of the European Parliament and the Council on certain fluorinated greenhouse gases.
Liquid refrigerant transfers between refrigerant containers and to and from systems can result in static generation. Ensure adequate earthing. Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. Care must be taken to mitigate the risk of developing high pressures in systems caused by a temperature rise when liquid is trapped between closed valves or in cases where containers have been overfilled.

Process Hazards

7.2 Conditions for safe storage, including any incompatibilities

Keep in a well ventilated place away from fire risk and avoid sources of heat such as electric or steam radiators. Avoid storing near to the intake of air conditioning units, boiler units and open drains.
Avoid high temperatures.
Stable under normal conditions.
finely divided metals, alkali metals (sodium, potassium), alkaline earth metals (barium, magnesium), alloys containing more than 2% magnesium.

Storage temperature

Storage life

Incompatible materials

7.3 Specific end use(s)

Subject to Member State regulations, applicable uses are: refrigerant.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

| SUBSTANCE | CAS No. | LTEL (8 hr TWA ppm) | LTEL (8 hr TWA mg/m³) | STEL (ppm) | STEL (mg/m³) | Note |
|---------------------------|---------|---------------------|-----------------------|------------|--------------|------|
| Trifluoromethane (HFC 23) | 75-46-7 | 1000 | | | | COM |
| Hexafluoroethane (FC 116) | 76-16-4 | 1000 | | | | COM |

Source COM: The company aims to control exposure in its workplace to this limit.

8.2 Exposure controls

8.2.1. Appropriate engineering controls Provide adequate ventilation. Atmospheric levels should be controlled in compliance with the occupational exposure limit.

8.2.2. Personal protection equipment Wear suitable protective clothing and eye/face protection.



Eye Protection

Wear protective eyewear (goggles, face shield, or safety glasses).

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Skin protection

Wear thermal insulating gloves when handling liquefied gases.



Respiratory protection

In cases of insufficient ventilation, where exposure to high concentrations of vapour is possible, suitable respiratory protective equipment with positive air supply should be used.



Thermal hazards

See above - Skin protection

8.2.3. Environmental Exposure Controls Prevent liquid from entering drains, sewers, basements and workpits since the vapour may create a suffocating atmosphere.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|--|---|
| Appearance | Liquefied gas. Colour: Colourless. |
| Odour | Slight ethereal |
| Odour threshold | No information available. |
| pH | Not applicable. |
| Melting point/freezing point | No information available. |
| Initial boiling point and boiling range | -86.62°C |
| Flash Point | Not applicable. |
| Evaporation rate | Not applicable. |
| Flammability (solid, gas) | Non-flammable. |
| Upper/lower flammability or explosive limits | Not applicable. |
| Vapour pressure | 12075 mm Hg @ -20°C |
| Vapour Density (Air=1) | 3.35 at normal boiling point |
| Density (g/ml) | 1.25 @ -20°C |
| Relative density | No information available. |
| Solubility(ies) | Solubility (Water) : Insoluble. Solubility (Other) : Soluble in: Alcohols, Chlorinated solvents, hydrocarbon solvents. |
| Partition coefficient: n-octanol/water | No information available. |
| Auto-ignition temperature | No information available. |
| Decomposition Temperature (°C) | No information available. |
| Viscosity | Not applicable. |
| Explosive properties | Not explosive. |
| Oxidising properties | Not oxidising. |

9.2 Other information

None.

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SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

See Section: Possibility of hazardous reactions

10.2 Chemical Stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Certain mixtures of HFCs and chlorine may be flammable or reactive under certain conditions. Incompatible materials: finely divided metals, magnesium and alloys containing more than 2% magnesium. Can react violently if in contact with alkali metals and alkaline earth metals - sodium, potassium, barium.

10.4 Conditions to avoid

Avoid high temperatures.

10.5 Incompatible materials

finely divided metals, alkali metals (sodium, potassium), alkaline earth metals (barium, magnesium), alloys containing more than 2% magnesium.

10.6 Hazardous decomposition products

hydrogen fluoride by thermal decomposition and hydrolysis.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

| | |
|--------------------------------|--|
| Acute toxicity - Ingestion | Highly unlikely - but should this occur freeze burns will result. |
| Acute toxicity - Skin Contact | Unlikely to be hazardous by skin absorption. |
| Acute toxicity - Inhalation | HFC 23: LC50 (rat) (4 hrs) > 663000 ppm FC 116: LC50 (rat) (4 hrs) > 500000 ppm Very high atmospheric concentrations may cause an abnormal heart rhythm, anaesthetic effects and asphyxiation. |
| Skin corrosion/irritation | Liquid splashes or spray may cause freeze burns. |
| Serious eye damage/irritation | Liquid splashes or spray may cause freeze burns. |
| Skin sensitization data | It is not a skin sensitiser. |
| Respiratory sensitization data | Not classified. |
| Germ cell mutagenicity | HFC 23: The substance is not considered to be genotoxic. FC 116: No evidence of mutagenic effects. |
| Carcinogenicity | It is unlikely to present a carcinogenic hazard to man. |
| Reproductive toxicity | FC 116: No evidence of reproductive effects. FC 116, HFC 23: Studies in animals have shown that exposures produce no teratogenic effects. |
| Lactation | Not classified. |
| STOT - single exposure | Not classified. |

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STOT - repeated exposure

Not classified.

Aspiration hazard

Not applicable.

11.2 Other information

Respiratory irritation

Non-irritant.

Repeated dose toxicity

HFC 23: An inhalation study in animals has shown that repeated exposures produce no significant effects (10000ppm in rats).

FC 116: An inhalation study in animals has shown that repeated exposures produce no significant effects (50000ppm in rats).

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity - Aquatic invertebrates

The product is predicted to have low toxicity to aquatic organisms.

Low toxicity to aquatic invertebrates.

Toxicity - Fish

Low toxicity to fish.

Toxicity - Algae

Low toxicity to algae.

Toxicity - Sediment Compartment

Not classified.

Toxicity - Terrestrial Compartment

Not classified.

Environmental Fate and Distribution

High tonnage material produced in wholly contained systems. High tonnage material used in open systems. Gas.

12.2 Persistence and Degradation

HFC 23: Decomposed slowly in the lower atmosphere (troposphere). Atmospheric lifetime is 270 years.

FC 116: Decomposed only above the stratosphere and hence is persistent.

Atmospheric lifetime is 10000 years.

R 508: Does not deplete ozone. Has a Global Warming Potential (GWP) of 13214 (relative to a value of 1 for carbon dioxide at 100 years) according to Annex I of Regulation (EU) No. 517/2014 on certain fluorinated greenhouse gases. Values in Annex I are taken from the fourth assessment report (AR4) of the Intergovernmental Panel on Climate Change.

United Nations Framework Convention on Climate Change (UNFCCC) reporting GWP is 10175.

12.3 Bioaccumulative potential

The product has no potential for bioaccumulation.

12.4 Mobility in soil

Not applicable.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

None known.

Effect on Effluent Treatment

Discharges of the product will enter the atmosphere and will not result in long term aqueous contamination.

SECTION 13: DISPOSAL CONSIDERATIONS

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13.1 Waste treatment methods

Best to recover and recycle. If this is not possible, destruction is to be in an approved facility which is equipped to absorb and neutralise acid gases and other toxic processing products.

13.2 Additional Information

Disposal should be in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

UN No. 3163

14.2 UN proper shipping name

UN proper shipping name LIQUEFIED GAS, N.O.S. (TRIFLUOROMETHANE, HEXAFLUOROETHANE)

14.3 Transport hazard class(es)

ADR/RID

ADR/RID Class 2.2

IMDG

IMDG Class 2.2

ICAO/IATA

ICAO/IATA Class 2.2

Labels



14.4 Packing group

Packing group Not applicable.

14.5 Environmental hazards

Environmental hazards Not classified as a Marine Pollutant.

14.6 Special precautions for user

Special precautions for user Not known.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Transport in bulk according to Annex II of Not applicable.

Marpol and the IBC Code

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

European Regulations

EC Classification According to Regulation (EC) No. 1272/2008 (CLP)

Gases under pressure - liquefied gas

Special Restrictions:

The fluorinated greenhouse gas R 508 may be supplied in returnable containers (drums/cylinders). The container contains fluorinated greenhouse gases covered by the Kyoto Protocol. The fluorinated greenhouse gases in containers may not be vented to the atmosphere.

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Regulation (EU) No. 517/2014 of the European Parliament and the Council on certain fluorinated greenhouse gases.

Directive 2006/40/EC of the European Parliament and the Council relating to emissions from air-conditioning systems in motor vehicles and amending Council Directive 70/156/EC.

15.2 Chemical Safety Assessment

A chemical safety assessment is not required under REACH.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16

LEGEND

Hazard Statement(s)

H280: Contains gas under pressure; may explode if heated.

Acronyms

ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road
 CAS : Chemical Abstracts Service
 CLP : Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
 EC : European Community
 IATA : International Air Transport Association
 IBC : Intermediate Bulk Container
 ICAO : International Civil Aviation Organization
 IMDG : International Maritime Dangerous Goods
 LTEL : Long term exposure limit
 PBT : Persistent, Bioaccumulative and Toxic
 REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals
 RID : Regulations concerning the International Carriage of Dangerous Goods by Rail
 STEL : Short term exposure limit
 STOT : Specific Target Organ Toxicity
 UN : United Nations
 vPvB : very Persistent and very Bioaccumulative

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