SAFETY DATA SHEET

In compliance with EC Regulations No.: 1907/2006, 830/2015 and 1272/2008 (CLP).

Date last modified: 29 October 2020 - Version 6.0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

1.1 Product Identifier

Product Name: REFRIGERANT R22 (Reclaimed)

CAS No.: 75 – 45 – 6
Chemical Formula: $CHClF_2$
Synonyms: Chlorodifluoromethane

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

Relevant identified uses: Refrigerant.
Industrial and professional uses only. Perform risk assessment prior to use.

Uses advised against: This product is not recommended for any industrial, professional or consumer use other than the Intended Uses above and the instructions written in this Safety Data Sheet.

1.3 Details of the supplier of the safety data sheet

Company/undertaking identification

Supplier/Manufacturer:

Marichem Marigases Hellas SA
Sfaktirias 64,
185 45 Piraeus,
Greece
Tel. No.: ++30 210 4148800
Fax No.: ++30 210 4133985
http://www.marichem-marigases.com

e-mail: mail@marichem-marigases.com

1.4 Emergency telephone number

Tel. No.: ++30 210 4148800 (including working hours)

Emergency Information:
Inside U.S. and Canada: (800)-424-9300 (CHEMTREC)
Outside U.S. and Canada: 1-703-527-3887 (CHEMTREC)
National Emergency Centre (Greece): ++30 210 7793777

2. HAZARDS IDENTIFICATION COMPOSITION/INFORMATION ON INGREDIENTS

2.1. Classification of the substance or mixture

Hazard Class and Category Code Regulation EC 1272/2008 (CLP/GHS)

Physical hazards

Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated (H280).
Ozone - Hazardous to the ozone layer (EUH059).

Hazard Statements

H280 - Contains gas under pressure; may explode if heated.
EUH059 - Hazardous to the ozone layer.
EIGA-As - Asphyxiant in high concentrations.

2.2. Label elements

Labelling Regulation EC 1272/2008 (CLP)

Hazard pictograms:

GHS04

Signal word: Danger

Hazard Statements

H280 - Contains gas under pressure; may explode if heated.
EUH059 - Hazardous to the ozone layer.
EIGA-As - Asphyxiant in high concentrations.

Precautionary statements

Prevention

P273 - Avoid release to the environment.
P282 - Wear cold insulating gloves/face shield/eye protection.

Storage

P403 - Store in a well-ventilated place.
P410 - Protect from sunlight.

2.3. Other hazards

Contact with liquid may cause cold burns/frost bite.

Mixture/substance classification and labelling according to Directive 67/548/EEC, European Dangerous Preparations Directive (1999/45/EC), European Regulation 648/2004 and their amendments.

Symbol: **N**

Dangerous for the environment (N)

Risk Phrases:

R59: Dangerous for the ozone layer.

Safety Phrases:

S59: Refer to manufacturer/supplier for information on recovery/recycling.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical Composition:

Substance	CAS Number	Proportion	Classification*
Chlorodifluoromethane	75 – 45 – 6	100%	H280; EUH059.

*See section 16 for the full text of the Hazard Code(s) declared above.

Occupational Exposure Limits, if available, are listed in section 8.

4. FIRST AID MEASURES

4.1. Description of first aid measures

First Aid General Information
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Inhalation
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Skin / Eye
In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. Immediately flush eyes thoroughly with water for at least 15 minutes.

First Aid Ingestion
Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed
In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of coordination.

4.3. Indication of any immediate medical attention and special treatment needed
None.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media
All known extinguishants can be used.

5.2. Special hazards arising from the substance or mixture

Specific hazards
Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products
If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:
Carbon monoxide, Phosgene, Hydrogen chloride, Hydrogen fluoride, Carbonyl fluoride.

5.3. Advice for fire-fighters

Specific methods
If possible, stop flow of product. Move container away or cool with water from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Special protective equipment for fire-fighters
Use self-contained breathing apparatus. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for fire-fighting.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions
Try to stop release.

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

6.4. Reference to other sections
See also sections 8 and 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Only experienced and properly instructed persons should handle gases under pressure. The substance must be handled in accordance with good industrial hygiene and safety procedures. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Do not smoke while handling product. Ensure the complete gas system has been (or is regularly) checked for leaks before use. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Refer to supplier's handling instructions. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminates particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

7.2. Conditions for safe storage, including any incompatibilities

Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. Containers should be stored in the vertical position and properly secured to prevent falling over. Containers should not be stored in conditions likely to encourage corrosion. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

7.3. Specific end use(s)

None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limit value
Value type value Note
ILV 1.000 ppm (EU) 8 h OEL
Great Britain - LTEL 1.000 ppm EH 40/07

PNEC not available.
DNEL not available

8.2. Exposure controls

Appropriate engineering controls

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Product to be handled in a closed system. Keep concentrations well below occupational exposure limits. Oxygen detectors should be used when asphyxiating gases may be released. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance

activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation.

Personal protective equipment
Eye and face protection
Wear a face-shield when transfilling and breaking transfer connections. Safety eyewear, goggles or face-shield to EN166 should be used to avoid exposure to liquid splashes. Wear eye protection to EN 166 when using gases.

Skin protection
Hand protection
Advice: Wear cold insulating gloves.
Guideline: EN 511 Protective gloves against cold.

Body protection
Protect eyes, face and skin from contact with product.

Other protection
Wear working gloves and safety shoes while handling gas cylinders.
ISO 20345 Safety footwear

Thermal hazards
If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

Environmental Exposure Controls
Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

General information

Appearance/Colour: Colourless gas.
Odour: Ethereal Poor warning properties at low concentrations.
Odour threshold: Odour threshold is subjective and inadequate to warn for over exposure.
Melting point: -157 °C
Boiling point: -40.9 °C
Flash point: Not applicable for gases and gas mixtures.
Evaporation rate: Not applicable for gases and gas mixtures.
Flammability range: Non flammable.
Vapour Pressure 20 °C: 9.1 bar
Relative density, gas: 3
Solubility in water: 3628 mg/l
Partition coefficient: n-octanol/water: 1.08 log Pow
Autoignition temperature: Not applicable.
Explosive properties:
Explosive acc. EU legislation: Not explosive.
Explosive acc. transp. reg.: Not explosive.
Molecular weight: 86.5 g/mol
Critical temperature: 96.2 °C
Relative density, liquid: 1.2

9.2. Other information
Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

10. STABILITY AND REACTIVITY

10.1. Reactivity
Unreactive under normal conditions.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
None.

10.4. Conditions to avoid
Heat.

10.5. Incompatible materials
Moisture. May react violently with alkaline-earth and alkali metals.
For material compatibility see latest version of ISO-11114.

10.6. Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced. The following decomposition products may be produced:
Carbon monoxide, Phosgene, Hydrogen chloride, Hydrogen fluoride, Carbonyl fluoride.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

General
May produce irregular heart beat and nervous symptoms.

Acute inhalation toxicity

Value: LC50
Species: Rat
Exposure time: 4 h
Value in standard unit mg/l: 778 mg/l

Value: LC50
Species: Rat
Exposure time: 0,25 h
Value in standard unit mg/l: 1.237 mg/l

Value: LC50
Species: Mouse
Exposure time: 0,5 h
Value in standard unit mg/l: 990 mg/l

Acute dermal toxicity
No known effects from this product.

Acute toxicity other routes
No known effects from this product.

Skin irritation
No known effects from this product.

Eye irritation
No known effects from this product.

Sensitization
No known effects from this product.

Repeated dose toxicity
No known effects from this product.

Assessment mutagenicity
No known effects from this product.

Assessment carcinogenicity
No known effects from this product.

Assessment toxicity to reproduction
No known effects from this product.

Assessment teratogenicity
No known effects from this product.

Experiences with human exposure
Inhalation of vapours in high concentrations may cause shortness of breath (lung oedema).
Narcosis.
Irregular cardiac activity.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Acute and prolonged toxicity fish
Species: Zebra fish (Danio rerio)
Exposure time: 96 h
Value type: LC50
Value in standard unit mg/l: 777 mg/l

Acute and prolonged toxicity fish
Species: Daphnia magna
Exposure time: 48 h
Value type: EC50
Value in standard unit mg/l: 433 mg/l

12.2. Persistence and degradability
No data available.

Biodegradation
Not readily biodegradable.

12.3. Bioaccumulative potential
No data available.

12.4. Mobility in soil
No data available.

12.5. Results of PBT and vPvB assessment
No data available.

12.6. Other adverse effects
Global Warming Potential GWP
When discharged in large quantities may contribute to the greenhouse effect.
1.810

Ozone Depleting Potential ODP
Covered by the 'Montreal Protocol'. Hazardous to the ozone layer.
0,055

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Must not be discharged to atmosphere. Consult supplier for specific recommendations. Gases in pressure containers (including halons) containing dangerous substances
EWC Nr. 16 05 04*

14. TRANSPORT INFORMATION

14.1 Proper shipping name: Chlorodifluoromethane (Refrigerant Gas R22)

14.2 LAND TRANSPORT

UN number: 1018
ADR class: 2.2
RID-class: 2.2
Labeling: 2.2 - Non-flammable gas
Packing group (Packing Instruction): P200

14.3 SEA TRANSPORT

UN number: 1018
IMDG class: 2.2
IMDG packing group (Packing Instruction): P200
Labeling: 2.2 - Non-flammable gas
EmS: F-C, S-V

14.4 AIR TRANSPORT

UN number: 1018
IATA/ICAO class: 2.2
Packing group (Packing Instruction): P200
Labeling: 2.2

14.5 GENERAL
Gas cylinders must be equipped with valve protection caps during transportation.

14.6 OTHER TRANSPORT INFORMATION

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers ensure that they are firmly secured.
Ensure that the cylinder valve is closed and not leaking.
Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted.
Ensure that the valve protection device (where provided) is correctly fitted.
Ensure adequate ventilation.
Ensure compliance with applicable regulations.

15. REGULATORY INFORMATION

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

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

Other regulations

Use of the substance may be subject to registration and authorisation (Regulation on substances that deplete the Ozone Layer(EC) No 1005/2009.)

15.2 Chemical Safety Assessment

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

16. OTHER INFORMATION

16.1 Full text of Hazard Code(s) referred in Section 3.

H280 - Contains gas under pressure; may explode if heated.
EUH059 - Hazardous to the ozone layer.

16.2 Abbreviations and acronyms

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road).
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail).
IMDG: International Maritime Code for Dangerous Goods.
IATA: International Air Transport Association.
ICAO: International Civil Aviation Organization.
bw: Body weight.
Carc.: Carcinogenicity.
CAS number: Chemical Abstracts Service number.
CLP: Classification Labelling Packaging Regulation.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
DNEL: Derived No Effect Level.
dw: Dry weight.
EC number: EINECS and ELINCS number.
EC: European Commission.

EC50: Half maximal effective concentration.
EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EmS: Emergency Schedule.
ERC: Environmental Release Category.
ES: Exposure scenario.
food: oral feed.
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
Irrit.: Irritation.
LC50: Lethal concentration, 50 %.
LD50: Median Lethal dose.
LOAEC: Lowest Observed Adverse Effect Concentration.
LOAEL: Lowest Observed Adverse Effect Level.
MK value: Maximum Concentration value.
NCO: An international corporation that provides customer service contracting.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
NOEC: No Observed Effect Concentration.
OECD: Organisation for Economic Cooperation and Development.
PBT: Persistent, Bioaccumulative and Toxic.
PNEC: Predicted No Effect Concentration.
PROC: Process category.
REACH: The Registration, Evaluation, Authorisation and Restriction of Chemicals.
Resp.: Respiratory.
Sens.: Sensitization.
STEL value: Short Term Exposure Limit value.
STOT RE: Specific target organ toxicity — repeated exposure.
STOT SE: Specific target organ toxicity — single exposure.
STOT: Specific Target Organ Toxicity.
STP: Sewage Treatment Plant.
SU: Sector of use.
Tox.: Toxicity.
TWA value: Time Weighted Average value.
vPvB: Very Persistent and Very Bioaccumulative.

16.3 Notice to reader

All information, instructions and statements contained in this Material Safety Data Sheet are compiled in accordance with European Directives, corresponding national legislation and on the basis of information given by our suppliers.
The information disclosed in this Material Safety Data Sheet (which supersedes all previous versions) is believed to be correct, at the date of issue, to the best of our current knowledge and experience. It only relates to the specific product designated herein and it may not be valid when said product is used in combination with any other products or in any processed form, unless specified in the text. This document aims to provide the necessary health and safety information of the product and is not to be considered a warranty or quality specification. It is the responsibility of the recipient of this Material Safety Data Sheet to ensure that information given here is read and understood by all who use, handle, dispose of or in any way come in contact with the product.
Also, it is the responsibility of the user to comply with local legislation relating to safety, health, environment and waste management. Data and information provided concerning the product are informative, exclusively presented to the customer.