



SAFETY DATA SHEET

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

Date last modified: 6 April 2018 - version 6.0

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

1.1 Product Identifier

Product Name: MARICHEM CCI

Product Code #: 673006 (30 lt)

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

Intended Use: Industrial applications; Boiler Water Treatment.

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

2.1 Classification of the mixture

Classification under EC 1272/2008 regulation - GHS classification.

Acute Toxicity - Oral: Acute Tox. 4
Acute Toxicity - Dermal: Acute Tox. 4
Acute Toxicity - Inhalation: Acute Tox. 4
Skin Corrosion / Irritation: Skin Corr. 1B

SIGNAL WORD: DANGER



Hazard Statement(s):

H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.

2.2 Label Elements

Labelling according to Regulation (EC) No. 1272/2008.

The substance is classified and labelled according to the CLP Regulation.

Hazard Pictograms



GHS05 GHS07

Signal Word: DANGER

Hazard Statements

H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.

Precautionary Statements

Prevention:

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P271: Use only outdoors or in a well-ventilated area.
P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P260g: Do not breathe dust or mist.
P243: Take precautionary measures against static discharge.

P264: Wash with plenty of water and soap thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P233: Keep container tightly closed.
P242: Use only non-sparking tools.
P240: Ground/bond container and receiving equipment.

Response:

P310: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303 + P361: IF ON SKIN (or hair): Wash with plenty of soap and water.
P361: Remove/Take off immediately all contaminated clothing.
P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P363: Wash contaminated clothing before reuse.
P370 + P378.1: In case of fire: Use extinguishing powder, foam or CO₂ for extinction.

Storage:

P405: Store locked up.
P403 + P235: Store in a well-ventilated place. Keep cool.

Disposal:

P501: Dispose of contents/container to hazardous or special waste collection point.

2.3 Other hazards

PBT Substances: None
P Substances: None

Other Hazards
No other hazards.

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

Symbol: C, Corrosive



C, Corrosive

Risk (R) -phrases: 20/21/22: Harmful by inhalation, in contact with skin and if swallowed.
34 : Causes burns.

Safety (S) -phrases: 2: Keep out of the reach of children
23: Do not breathe vapors.
36: Wear suitable protective clothing.

45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical Composition:

Ingredients	CAS Number	Proportion	Hazard Code(s)*
Morpholine	110-91-8	40% - 60%	H226; H302; H312; H314; H332.
Other ingredients that do not contribute to the classification of the product	-	40% - 60%	-

*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

Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.

If inhaled:

Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:

Immediately wash thoroughly with plenty of water, apply sterile dressings, and consult a skin specialist.

On contact with eyes:

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:

Rinse mouth immediately and then drink plenty of water, seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see Chapter 2) and/or in Chapter 11.

4.3. Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote. Pulmonary oedema prophylaxis. Medical monitoring for at least 24 hours.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media:
water spray, dry powder, foam, carbon dioxide.

5.2. Special hazards arising from the substance or mixture

toxic gases/vapours.

The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters

Special protective equipment:

Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation. Avoid contact with the skin, eyes and clothing.

6.2. Environmental precautions

Do not empty into drains.

6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product.

For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).

Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Collect waste in suitable containers, which can be labeled and sealed. Incinerate or take to a special waste disposal site in accordance with local authority regulations.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

7.2. Conditions for safe storage, including any incompatibilities

Segregate from acids and acid forming substances.

Suitable materials for containers: carbon steel (iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4301 (V2), Stainless steel 1.4401, glass.

Further information on storage conditions: Containers should be stored tightly sealed in a dry place.

Storage stability:

From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

7.3. Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Components with occupational exposure limits
110-91-8: Morpholine

TWA value 36 mg/m³ ; 10 ppm (OEL (EU))
indicative
STEL value 72 mg/m³ ; 20 ppm (OEL (EU))
indicative

PNEC

freshwater: 0.1 mg/l
marine water: 0.01 mg/l
intermittent release: 0.28 mg/l
sediment (freshwater): 1.49 mg/kg
sediment (marine water): 0.149 mg/kg
soil: 0.239 mg/kg
STP: 10 mg/l

DNEL

worker:
Long-term exposure - local effects, Inhalation: 36 mg/m³
worker:
Long-term exposure- systemic effects, dermal: 1.04 mg/kg
worker:
Long-term exposure- systemic effects, Inhalation: 91 mg/m³
consumer:
Long-term exposure- systemic effects, oral: 6.3 mg/kg
consumer:
Long-term exposure - local effects, Inhalation: 3.2 mg/m³
consumer:
Long-term exposure- systemic effects, dermal: 0.52 mg/kg
consumer:
Long-term exposure- systemic effects, Inhalation: 45 mg/m³
consumer:
Short-term exposure - local effects, Inhalation: 18 mg/m³

8.2. Exposure controls

Personal protective equipment

Respiratory protection

Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)
Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.

Consider the risk management measures as outlined in the exposure scenario.

Hand protection

Chemical resistant protective gloves (EN 374).

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):

butyl rubber (butyl) - 0.7 mm coating thickness

fluoroelastomer (FKM) - 0.7 mm coating thickness

Polyethylene-Laminate (PE laminate) - ca. 0.1 mm coating thickness

Suitable materials short-term contact and/or splashes (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN 374)

nitrile rubber (NBR) - 0.4 mm coating thickness

polyvinylchloride (PVC) - 0.7 mm coating thickness

chloroprene rubber (CR) - 0.5 mm coating thickness

Supplementary note

The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection

Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

Body protection

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapour. Take off immediately all contaminated clothing. Store work clothing separately.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

9.1.1. Appearance

Physical State: Liquid

Color: Clear, Colorless

Odor: Characteristic ammonia-like odor

9.1.2. Basic data

Boiling Point Range: <129°C
Melting Point Range: Not available
Solubility in water: Appreciable
Flash Point: >100°C
Autoignition Temperature: Not Available
Lower Explosion Limit (vol %): Not Available
Upper Explosion Limit (vol %): Not Available
Vapour Pressure: <1.06 kPa
Relative vapor density (air=1): Not Available
Specific Gravity: 1.02 - 1.06 gr/cm³ (at 20°C)
Viscosity: Not Available
pH Value: 11.5 – 13.5

9.2 Other Information: No further relevant information available.

10. STABILITY AND REACTIVITY

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Formation of flammable gases:

Remarks: Forms no flammable gases in the presence of water.

10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions

Strong exothermic reaction with acids.

10.4. Conditions to avoid

Avoid all sources of ignition: heat, sparks, open flame.

10.5. Incompatible materials

Substances to avoid:

acids, nitrosating agents.

10.6. Hazardous decomposition products

Hazardous decomposition products:

Carbon Monoxide, Carbon Dioxide toxic gases/vapours.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Name of substance: Morpholine

Acute toxicity

Assessment of acute toxicity:

Of moderate toxicity after short-term inhalation.

Of moderate toxicity after single ingestion.

Of pronounced toxicity after short-term skin contact.

Experimental/calculated data:

LD50 rat (oral): approx. 1,910 mg/kg (BASF-Test).

LC50 rat (by inhalation): 8 mg/l conservative approach.

LD50 rabbit (dermal): approx. 500 mg/kg.

Literature data.

Irritation

Assessment of irritating effects:

Highly corrosive! Damages skin and eyes.

Experimental/calculated data:

Skin corrosion/irritation: Corrosive. (OECD Guideline 404).

Serious eye damage/irritation rabbit: irreversible damage (BASF-Test).

Serious eye damage/irritation rabbit: Risk of serious damage to eyes. (OECD Guideline 405)

Respiratory/Skin sensitization

Assessment of sensitization:

Study scientifically not justified.

Germ cell mutagenicity

Assessment of mutagenicity:

In the majority of tests performed (bacteria/microorganisms/cell cultures) a mutagenic effect was not found. A mutagenic effect was also not observed in in-vivo assays.

Carcinogenicity

Assessment of carcinogenicity:

Results from a number of long-term carcinogenicity studies and short-term tests are available. Taking into account all of the information, there is no indication that the substance itself is carcinogenic.

IARC Group 3 (not classifiable as to human carcinogenicity).

Under certain conditions the substance can form nitrosamines. Nitrosamines are carcinogenic in animal studies.

Reproductive toxicity

Assessment of reproduction toxicity:

Study does not need to be conducted.

Developmental toxicity

Assessment of teratogenicity:

No indications of a developmental toxic/teratogenic effect were seen in animal studies. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:

After repeated exposure the prominent effect is local irritation.

Aspiration hazard

No aspiration hazard expected.

12. ECOLOGICAL INFORMATION

Name of substance: Morpholine

12.1. Toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish:

LC50 (96 h) 180 mg/l, *Salmo gairdneri*, syn. *O. mykiss* (Fish test acute, static)

The details of the toxic effect relate to the nominal concentration. The study was carried out in soft water. Literature data.

LC50 (96 h) 380 mg/l, *Salmo gairdneri*, syn. *O. mykiss* (Fish test acute, static)

The details of the toxic effect relate to the nominal concentration. The study was carried out in hard water. Literature data.

Aquatic invertebrates:

EC50 (48 h) 45 mg/l, *Daphnia magna* (OECD Guideline 202, part 1, static)

Literature data.

Aquatic plants:

EC50 (96 h) 28 mg/l, *Pseudokirchneriella subcapitata* (Growth Inhibition Test)

The statement of the toxic effect relates to the analytically determined concentration. Literature data.

EC20 (96 h) 10 mg/l, *Pseudokirchneriella subcapitata* (Growth Inhibition Test)

The statement of the toxic effect relates to the analytically determined concentration. Literature data.

Microorganisms/Effect on activated sludge:

EC20 (30 min) > 1,000 mg/l, activated sludge, domestic (OECD Guideline 209)

The details of the toxic effect relate to the nominal concentration. Literature data.

EC20 (0.5 h) > 1,000 mg/l, activated sludge, industrial (OECD Guideline 209)

The details of the toxic effect relate to the nominal concentration.

EC20 (30 h) < 1,000 mg/l, activated sludge, industrial (DIN EN ISO 8192)

Chronic toxicity to fish:

Study scientifically not justified.

Chronic toxicity to aquatic invertebrates:

No observed effect concentration (21 d) 5 mg/l, *Daphnia magna* (OECD Guideline 211, semistatic)

Assessment of terrestrial toxicity:

No toxic effects have been observed in studies with terrestrial plants.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H₂O):

Readily biodegradable (according to OECD criteria).

Elimination information:

90 - 100 % DOC reduction (25 d) (OECD 301E/92/69/EEC, C.4-B) (aerobic, municipal sewage treatment plant effluent)

Assessment of stability in water:

According to structural properties, hydrolysis is not expected/probable.

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:

Accumulation in organisms is not to be expected.

Bioaccumulation potential:

Bioconcentration factor: < 2.8 (42 d), *Cyprinus carpio* (OECD Guideline 305 C)

12.4. Mobility in soil (and other compartments if available)

Assessment transport between environmental compartments:

The substance will not evaporate into the atmosphere from the water surface.

Adsorption to solid soil phase is not expected.

The data refers to the undissociated form of the substance.

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative).

Self classification.

12.6. Additional information

The product contains:

The heavy-metal content in the product is below the limit values laid down in normative EN 71 Part III.

13. DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

Incinerate in suitable incineration plant, observing local authority regulations.

Contaminated packaging:

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

14. TRANSPORT INFORMATION

14.1 PROPER SHIPPING NAME: Corrosive Liquid NOS (Morpholine)

14.2 LAND TRANSPORT

UN number: 1760
ADR class: 8 RID: 8
Packing Group: III

14.3 SEA TRANSPORT

UN number: 1760 EmS: F-A, S-B
IMDG class: 8
IMDG packing group: III

14.4 AIR TRANSPORT

UN number: 1760
IATA/ICAO class: 8 Packing group: III

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.

15.2 Chemical Safety Assessment

A CSA has been carried out for the raw materials in this product, from the raw materials manufacturers (when needed to be carried out).

16. OTHER INFORMATION

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

H226: Flammable liquid and vapour.
H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.

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.