

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

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

- **Product identifier**
- **Trade name:** morpholine
- **Article number:** A0287219
- **CAS Number:**  
110-91-8
- **EC number:**  
203-815-1
- **Index number:**  
613-028-00-9
- **Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture** For use in research and production.
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Chemos GmbH & Co. KG  
Werner-von-Siemens-Straße 3  
93128 Regenstauf  
Deutschland  
chemos@chemos.de  
www.chemos.de
- **Further information obtainable from:** Abteilung Produktsicherheit
- **Emergency telephone number:** Germany: +49(0)613119240

**2 Hazards identification**

- **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS05 corrosion

Met. Corr.1 H290 May be corrosive to metals.

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H312 Harmful in contact with skin.

Acute Tox. 4 H332 Harmful if inhaled.

- **Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
The substance is classified and labelled according to the CLP regulation.

(Contd. on page 2)

GB

# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 1)

**· Hazard pictograms**

GHS02   GHS05   GHS07

**· Signal word Danger****· Hazard statements**

- H226                      *Flammable liquid and vapour.*  
 H290                      *May be corrosive to metals.*  
 H302+H312+H332 *Harmful if swallowed, in contact with skin or if inhaled.*  
 H314                      *Causes severe skin burns and eye damage.*

**· Precautionary statements**

- P303+P361+P353 *IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*  
 P305+P351+P338 *IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*  
 P310                      *Immediately call a POISON CENTER/doctor.*  
 P321                      *Specific treatment (see on this label).*  
 P362+P364              *Take off contaminated clothing and wash it before reuse.*  
 P405                      *Store locked up.*  
 P501                      *Dispose of contents/container in accordance with local/regional/national/international regulations.*

**· Other hazards****· Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

**· Chemical characterisation: Substances****· CAS No. Description**

110-91-8 morpholine

**· Identification number(s)**· **EC number:** 203-815-1· **Index number:** 613-028-00-9

### 4 First aid measures

**· Description of first aid measures****· General information:***Immediately remove any clothing soiled by the product.**Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.***· After inhalation:***Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.**In case of unconsciousness place patient stably in side position for transportation.***· After skin contact:** *Immediately wash with water and soap and rinse thoroughly.***· After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.***· After swallowing:***Call for a doctor immediately.**Drink plenty of water and provide fresh air. Call for a doctor immediately.***· Information for doctor:****· Most important symptoms and effects, both acute and delayed** *No further relevant information available.*

(Contd. on page 3)

# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 2)

- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**  
Dilute with plenty of water.  
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Use neutralising agent.  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace.
- **Information about fire - and explosion protection:**  
Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep container tightly sealed.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

**CAS: 110-91-8 morpholine**

WEL	Short-term value: 72 mg/m <sup>3</sup> , 20 ppm
	Long-term value: 36 mg/m <sup>3</sup> , 10 ppm
Sk	

(Contd. on page 4)

# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 3)

· **Additional information:** The lists valid during the making were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Fluid

Colour: Colourless

· **Odour:** Characteristic

· **Odour threshold:** Not determined.

· **pH-value:** Not determined.

· **Change in condition**

Melting point/freezing point: -4.9 °C

Initial boiling point and boiling range: 128.3 °C

· **Flash point:** 33 °C

· **Flammability (solid, gas):** Not applicable.

· **Ignition temperature:** 320 °C

· **Decomposition temperature:** Not determined.

(Contd. on page 5)

# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 4)

· <b>Auto-ignition temperature:</b>	Not determined.
· <b>Explosive properties:</b>	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· <b>Explosion limits:</b>	
<b>Lower:</b>	1.8 Vol %
<b>Upper:</b>	15.2 Vol %
· <b>Vapour pressure at 20 °C:</b>	10.7 hPa
· <b>Density at 20 °C:</b>	1.0049 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with water at 20 °C:</b>	1 g/l
· <b>Partition coefficient: n-octanol/water:</b>	Not determined.
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Other information</b>	No further relevant information available.

### 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity**  
Harmful if swallowed, in contact with skin or if inhaled.

#### · **LD/LC50 values relevant for classification:**

Oral	LD50	1,050 mg/kg (rat)
Dermal	LD50	500 mg/kg (rabbit)

- **Primary irritant effect:**
- **Skin corrosion/irritation**  
Causes severe skin burns and eye damage.
- **Serious eye damage/irritation**  
Causes serious eye damage.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure** Based on available data, the classification criteria are not met.

(Contd. on page 6)

# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 5)

· **Aspiration hazard** Based on available data, the classification criteria are not met.



### 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behaviour in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
 Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water  
 Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.  
 Must not reach sewage water or drainage ditch undiluted or unneutralised.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

### 13 Disposal considerations

- **Waste treatment methods**
  - **Recommendation**  
 Must not be disposed together with household garbage. Do not allow product to reach sewage system.
  - **European waste catalogue**
- |      |                |
|------|----------------|
| HP 3 | Flammable      |
| HP 6 | Acute Toxicity |
| HP 8 | Corrosive      |
- **Uncleaned packaging:**
  - **Recommendation:** Disposal must be made according to official regulations.
  - **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

### 14 Transport information

- **UN-Number**
  - **ADR, IMDG, IATA** UN2054
  - **UN proper shipping name**
  - **ADR** 2054 MORPHOLINE
  - **IMDG, IATA** MORPHOLINE
  - **Transport hazard class(es)**
  - **ADR**
- 

- **Class** 8 Corrosive substances.

(Contd. on page 7)





**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 6)

· <b>Label</b>	8+3
· <b>IMDG</b>	
 	
· <b>Class</b>	8 Corrosive substances.
· <b>Label</b>	8/3
· <b>IATA</b>	
 	
· <b>Class</b>	8 Corrosive substances.
· <b>Label</b>	8 (3)
· <b>Packing group</b>	
· <b>ADR, IMDG, IATA</b>	I
· <b>Environmental hazards:</b>	Not applicable.
· <b>Special precautions for user</b>	Warning: Corrosive substances.
· <b>Danger code (Kemler):</b>	883
· <b>EMS Number:</b>	F-E,S-C
· <b>Stowage Category</b>	A
· <b>Transport in bulk according to Annex II of Marpol and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b>	
· <b>ADR</b>	
· <b>Limited quantities (LQ)</b>	0
· <b>Excepted quantities (EQ)</b>	Code: E0 Not permitted as Excepted Quantity
· <b>Transport category</b>	1
· <b>Tunnel restriction code</b>	D/E
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	0
· <b>Excepted quantities (EQ)</b>	Code: E0 Not permitted as Excepted Quantity
· <b>UN "Model Regulation":</b>	UN 2054 MORPHOLINE, 8 (3), I

### 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Directive 2012/18/EU
- Named dangerous substances - ANNEX I Substance is not listed.
- Seveso category P5c FLAMMABLE LIQUIDS
- Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 40
- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

GB

(Contd. on page 8)

**Safety data sheet**  
**according to 1907/2006/EC, Article 31**

Printing date 06.08.2018

Revision: 06.08.2018

**Trade name: morpholine**

(Contd. of page 7)

**16 Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Department issuing SDS:** Abteilung Umweltschutz

· **Contact:** Hr. Gräwe

· **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)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 3: Flammable liquids – Category 3

Met. Corr. 1: Corrosive to metals – Category 1

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

GB