

SAFETY DATA SHEET

according to GB/T 16483 and GB/T 17519

1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Product name : Morpholine
Product code : M0465

Manufacturer or supplier's details

Company : ACF Chemical Co., Ltd.
Address : No. 45 Pengwan Road, Qianwan Bonded Port Area, Qingdao Area, China (Shandong)
Telephone : +86-15252035038
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2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance : liquid
Color : colorless - yellow

Flammable liquid and vapor. Harmful if swallowed. Toxic in contact with skin or if inhaled. Causes severe skin burns and eye damage. Causes damage to organs (Respiratory system). Causes damage to organs (Respiratory system) through prolonged or repeated exposure. Harmful to aquatic life.

GHS Classification

Flammable liquids : Category 3
Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 3
Acute toxicity (Dermal) : Category 3
Skin corrosion/irritation : Category 1B
Serious eye damage/eye irritation : Category 1
Specific target organ toxicity - single exposure : Category 1 (Respiratory system)
Specific target organ toxicity - repeated exposure : Category 1 (Respiratory system)
Short-term (acute) aquatic hazard : Category 3

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H226 Flammable liquid and vapor.
H302 Harmful if swallowed.
H311 + H331 Toxic in contact with skin or if inhaled.

H314 Causes severe skin burns and eye damage.
 H370 Causes damage to organs (Respiratory system).
 H372 Causes damage to organs (Respiratory system) through prolonged or repeated exposure.
 H402 Harmful to aquatic life.

Precautionary Statements**Prevention:**

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
 P233 Keep container tightly closed.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
 P264 Wash skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
 P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
 P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
 P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.
 P361 + P364 Take off immediately all contaminated clothing and wash it before reuse.
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P403 + P235 Store in a well-ventilated place. Keep cool.
 P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Physical and chemical hazards

Flammable liquid and vapor.

Health hazards

Harmful if swallowed. Toxic if inhaled. Toxic in contact with skin. Causes severe skin burns and eye damage. Causes serious eye damage. Causes damage to organs. Causes damage to organs through prolonged or repeated exposure.

Environmental hazards

Harmful to aquatic life.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS RN	Concentration (% w/w)
Morpholine	110-91-8	99

4. FIRST AID MEASURES

- If inhaled : Remove person to fresh air and keep comfortable for breathing. Get medical advice/ attention if you feel unwell.
- In case of skin contact : Take off all contaminated clothing immediately. If on skin, rinse well with water. If skin irritation or rash occurs: Get medical advice/ attention.
- In case of eye contact : Rinse with plenty of water. If easy to do, remove contact lens, if worn. If eye irritation persists: Get medical advice/ attention.
- If swallowed : Immediately call a POISON CENTER or doctor/ physician. Rinse mouth. Do NOT induce vomiting.
- Most important symptoms and effects, both acute and delayed : None known.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Dry powder, Foam, Water spray, Carbon dioxide (CO₂)
- Specific hazards during fire fighting : No information available.
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Immediately evacuate personnel to safe areas. Remove undamaged containers from fire area if it is safe to do so.
- Special protective equipment for fire-fighters : Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Wear suitable protective equipment. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.
- Environmental precautions : Prevent product from entering drains.
- Methods and materials for containment and cleaning up : Collect as much of the spill as possible with a suitable absorbent material.

7. HANDLING AND STORAGE**Handling**

- Technical measures : Prevent generation of vapor or mist. Take precautionary measures against static discharge.

- Use explosion-proof equipment.
- Local/Total ventilation : Ensure adequate ventilation.
Handle product only in closed system or provide appropriate exhaust ventilation at machinery.
Use a local exhaust ventilation.
- Advice on safe handling : Avoid contact with skin, eyes and clothing.
Wear personal protective equipment.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not subject to grinding, shock or friction.
Wash hands and face thoroughly after handling.
- Avoidance of contact : Oxidizing agents, Acid chlorides, Acid anhydrides, Metals

Storage

- Conditions for safe storage : Keep container tightly closed.
Store in a cool and shaded area.
Keep in a well-ventilated place.
Use explosion-proof equipment.
Keep under inert gas.
Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters**

Components	CAS RN	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Morpholine	110-91-8	PC-TWA	60 mg/m ³	CN OEL
Further information: Skin				
		TWA	20 ppm	ACGIH

- Engineering measures** : Install a closed system or local exhaust.
Also install safety shower and eye bath.

Personal protective equipment

- Respiratory protection : Gas mask
Self-contained breathing apparatus
- Eye/face protection : Safety glasses
Safety goggles
Face-shield
- Skin and body protection : Impervious protective clothing
- Hand protection : Impervious gloves

*Use personal protective equipment(PPE) approved under appropriate government standards and follow local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Color : colorless - yellow
- Odor : No data available
- Odor Threshold : 0.01 ppm
- pH : 11

(as aqueous solution)

Melting point/freezing point	:	-5 °C
Boiling point/boiling range	:	129 °C
Flash point	:	32 °C
Evaporation rate	:	No data available
Flammability	:	No data available
Upper explosion limit / Upper flammability limit	:	11.2 %(V)
Lower explosion limit / Lower flammability limit	:	1.4 %(V)
Vapor pressure	:	1.06 kPa (20 °C)
Relative vapor density	:	3.00
Relative density	:	1.00
Solubility(ies)		
Water solubility	:	completely miscible
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	-0.86
Autoignition temperature	:	310 °C
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Molecular weight	:	87.12 g/mol

10. STABILITY AND REACTIVITY

Reactivity	:	No data available
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	None under normal processing.
Conditions to avoid	:	Electrical spark Open flame Electrostatic discharge Exposure to air.
Incompatible materials	:	Oxidizing agents, Acid chlorides, Acid anhydrides, Metals
Hazardous decomposition products	:	Carbon monoxide, Carbon dioxide (CO ₂), Nitrogen oxides (NO _x)

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

- Acute oral toxicity : Assessment: The component/mixture is moderately toxic after single ingestion.
- Acute inhalation toxicity : Assessment: The component/mixture is toxic after short term inhalation.
- Acute dermal toxicity : Assessment: The component/mixture is toxic after single contact with skin.

Components:

Morpholine:

- Acute oral toxicity : LD50 (Mouse): 525 mg/kg
Assessment: The component/mixture is moderately toxic after single ingestion.
LD50 (Rat): 1,450 mg/kg
- Acute inhalation toxicity : LC50 (Rat): 8000 ppm
Exposure time: 8 h
Test atmosphere: gas
Assessment: The component/mixture is toxic after short term inhalation.
- Acute dermal toxicity : LD50 (Rabbit): 500 mg/kg
Assessment: The component/mixture is toxic after single contact with skin.

Skin corrosion/irritation

Product:

- Result : Causes burns.

Components:

Morpholine:

- Result : Causes burns.

Serious eye damage/eye irritation

Product:

- Result : Irreversible effects on the eye

Components:

Morpholine:

- Result : Irreversible effects on the eye

Respiratory or skin sensitization : No information available.

Germ cell mutagenicity : No information available.

Carcinogenicity : No information available.

Reproductive toxicity : No information available.

STOT-single exposure**Product:**

Target Organs : Respiratory system
Assessment : Causes damage to organs.

Components:**Morpholine:**

Target Organs : Respiratory system
Assessment : Causes damage to organs.

STOT-repeated exposure**Product:**

Target Organs : Respiratory system
Assessment : Causes damage to organs through prolonged or repeated exposure.

Components:**Morpholine:**

Target Organs : Respiratory system
Assessment : Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity : No information available.

Aspiration toxicity : No information available.

RTECS No. : QD6475000 (Morpholine)

12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:****Ecotoxicology Assessment**

Acute aquatic toxicity : Harmful to aquatic life.

Components:**Morpholine:**

Toxicity to fish : LC50 (Oryzias latipes (Japanese medaka)): 240 ppm
Exposure time: 48 h

LC50 (Oryzias latipes (Japanese medaka)): > 100 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 45 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 51 mg/l
Exposure time: 72 h

Ecotoxicology Assessment

Acute aquatic toxicity : Harmful to aquatic life.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Persistence and degradability

No data available

Bioaccumulative potential**Components:****Morpholine:**

Partition coefficient: n-octanol/water : -0.86

Mobility in soil**Components:****Morpholine:**

Distribution among environmental compartments : Koc: 8

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Disposal in accordance with local and national regulations. Take precautions against ignition or explode. Entrust disposal to a licensed waste disposal company.

Contaminated packaging : Disposal in accordance with local and national regulations. Before disposal of used container, remove contents completely.

14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 2054
Proper shipping name : Morpholine
Class : 8
Subsidiary risk : 3
Packing group : I

IMDG-Code

UN number : UN 2054
Proper shipping name : MORPHOLINE
Class : 8
Subsidiary risk : 3
Packing group : I
EmS Code : F-E, S-C

Domestic regulation**GB 6944/12268**

UN number : UN 2054
Proper shipping name : MORPHOLINE
Class : 8
Subsidiary risk : 3
Packing group : I

15. REGULATORY INFORMATION**Regulations on Safety Management of Hazardous Chemicals**

Catalogue of Hazardous Chemicals : Listed

The ingredients of this product are reported in the following inventories:

CH BAGREG	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory
AIIC	: On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
ENCS	: On the inventory, or in compliance with the inventory
ISHL	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory

16. OTHER INFORMATION

Revision Date : 2024/10/05
Date format : yyyy/mm/dd

Disclaimer

This SDS was prepared sincerely based on the information obtained, however, any warranty shall not be given regarding the data contained and the assessment of hazards and toxicity. Prior to use, please investigate not only the hazards and toxicity information but also the laws and regulations of the organization, area and country where the products are to be used, which shall be given the first priority. The products are supposed to be used promptly after purchase in consideration of safety. Some new information or amendments may be added afterwards. If the products are to be used far behind the expected time of use or you have any questions, please feel free to contact us. The stated cautions are for normal handling only. In case of special handling operations, sufficient care should be taken, in addition to the safety measures suitable for the given situation. All chemical products should be treated with the recognition of "having unknown hazards and toxicity", which differ greatly depending on the conditions and handling when in use and/or the conditions and duration of storage. The products must be handled only by those who are familiar with specialized knowledge and have experience or under the guidance of those specialists throughout use from opening to storage and disposal. Safe usage conditions shall be set up on each user's own responsibility.