

Chemical Safety Technical Data Sheet

Product Name:Morphine

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Developed in accordance with GB/T 16483 and GB/T 17519

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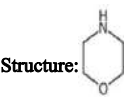
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Part 1: Identification of Chemicals and Enterprises

Chinese name of the chemical:Morpholine; 1,4-Oxazacyclohexane

Chemical name in English:morpholine; diethylene oximide

Molecular formula:C₄H₉ NO **Relative molecular mass:**87.1



Recommended and restricted uses of the chemical:As an analytical reagent, and as a solvent for resins, waxes, shellac, etc.

Part II Overview of Hazards

Emergency Overview:Flammable liquid and vapor; harmful if ingested, contacted by skin, or inhaled; causes severe skin burns and eye injuries.**GHS Hazard Category:**

Flammable liquids:Category 3

Acute toxicity – Oral:Category 4

Acute toxicity – transdermal:Category 4

Acute toxicity – Inhalation:
Category 4 **Skin corrosion/irritation:**Category 1B **Severe eye injury/eye irritation:**Cat-egory 1

Hazard to aquatic environment – Acute hazard:Category 3

Tag Elements:
figurative graph :



Warning phrase:Hazard

Hazard Description:Flammable liquid and vapor; harmful if swallowed, contacted by skin, or inhaled; causes severe skin burns and eye injuries; hazardous to aquatic organisms.**Prevention Measures:**

【 preventive measure 】

- Keep away from heat sources, sparks, open flames, and hot surfaces. Smoking is prohibited. Maintain the container sealed and ensure both the container and receiving equipment are grounded.
- Use explosion-proof electrical appliances, ventilation systems, and lighting equipment; only tools that do not produce sparks may be employed. Implement measures to prevent static electricity generation.
- Avoid contact with eyes and skin; thoroughly wash after handling. No eating, drinking, or smoking is permitted in the workplace.
- Avoid exposure to vapors or mist. Operate only outdoors or in well-ventilated areas.
- Wear protective gloves, protective clothing, protective goggles, and a face shield.
- Do not discharge into the environment.

[Accident Response]

- During a fire, use fire-extinguishing agents such as flame-retardant foam, dry powder, carbon dioxide, or sand.
- For inhalation: Transfer the patient to an area with fresh air, have them rest, and maintain a position that facilitates breathing.
- Skin contact: Immediately remove all contaminated clothing. Wash the affected area thoroughly with plenty of soap and water. If discomfort occurs, contact the poison control center or seek medical attention. Contaminated clothing must be washed before reuse.
- Eye contact: Rinse carefully with water for several minutes. If contact lenses are worn and can be easily removed, remove them and continue rinsing.
- Administration: Rinse the mouth; do not induce vomiting. If discomfort occurs, immediately contact the poison control center or seek medical attention.

【 safe storage 】

- Store in a well-ventilated area. Maintain low temperature. Keep locked for storage.

[Disposal of Waste]

- This product, its contents, and the container shall be disposed of in accordance with national and local regulations.

Physical and chemical hazards:Flammable; its vapor, when mixed with air, can form explosive mixtures.

Health Hazards:Inhalation of this substance's vapor or mist strongly irritates the respiratory mucosa, potentially causing bronchitis, pneumonia, or pulmonary edema. High concentrations can be fatal. The vapor, mist, or liquid is highly irritating to the eyes and may lead to blindness in severe cases. Skin contact can cause burns; ingestion of the liquid may damage the digestive tract, and large amounts can be lethal.

Environmental hazards:Harmful to aquatic organisms.

Part III: Composition/Composition Information

√matter		Mixture
Component	Concentration	CAS No.
Morphon	≥98.5%	110-91-8

Part IV Emergency Management Measures

Inhalation:Immediately remove the individual from the area to fresh air. Keep the airway clear. If breathing is difficult, administer oxygen. In case of respiratory or cardiac arrest, perform cardiopulmonary resuscitation (CPR) immediately. Seek medical attention.

Skin contact:Immediately remove contaminated clothing and rinse thoroughly with plenty of running water for at least 15 minutes. Seek medical attention.

Eye contact:Immediately open the eyelids and rinse thoroughly with running water or saline solution for 5–10 minutes. Seek medical attention.

Ingestion:Rinse the mouth with water; do not induce vomiting. Administer milk or egg white. Seek medical attention.

Advice for rescuers:Use personal protective equipment as needed.

Special note for physicians:Provide symptomatic treatment.

Part V Fire Safety Measures

Fire extinguishing agents:Use fire-resistant foam, dry powder, carbon dioxide, or sand to extinguish fires.

Special hazard:Thermal decomposition releases toxic fumes; combustion produces harmful carbon monoxide and nitrogen oxides.

Fire Extinguishing Precautions and Protective Measures:Firefighters must wear gas masks and full-body firefighting suits, and approach the fire from upwind. Move the container to an open area whenever possible. Spray water to keep the container cool until the fire is fully extinguished. If the container suddenly emits abnormal sounds or shows unusual behavior, evacuate immediately.

Part VI: Emergency Response to Leaks

Protective measures, protective equipment, and emergency response procedures for personnel:Eliminate all ignition sources. Establish a containment zone based on the affected areas of liquid flow and vapor dispersion; unauthorized personnel should evacuate from downwind or upwind directions to a safe area. Emergency responders are advised to wear positive-pressure self-contained breathing apparatus, anti-static and corrosion-resistant protective clothing, and oil-resistant rubber gloves. All equipment used during operations must be grounded. Contact with or crossing of leaked materials is strictly prohibited.

Environmental protection measures:Eliminate the source of leakage as much as possible. Prevent leaked substances from entering water bodies, sewers, basements, or confined spaces.

Methods for containment and removal of leaked chemicals, as well as the disposal materials used:

Minor leakage: Absorb with sand or other non-flammable materials. Use a clean, spark-free tool to collect the absorbed material.

Massive leakage: Construct a dike or excavate a pit for containment. Use sand, inert materials, or vermiculite to absorb large volumes of liquid. Apply anti-soluble foam to reduce evaporation. Water spraying can decrease evaporation but does not mitigate the flammability of the leaked substance in confined spaces. Transfer the liquid using explosion-proof and corrosion-resistant pumps into tankers or specialized collection containers, and spray water to disperse vapors and dilute the leaked liquid.

Part VII: Handling, Storage and Disposal

Operating Precautions:Perform operations in a sealed environment with local exhaust ventilation. Operators must receive specialized training and strictly adhere to operating procedures. It is recommended that operators wear self-priming filtered gas masks (full-face respirators), protective clothing resistant to chemical penetration, and oil-resistant rubber gloves. Keep away from sources of ignition and heat; smoking is strictly prohibited in the workplace. Use explosion-proof ventilation systems and equipment. Prevent vapor leakage into the workplace air. Avoid contact with oxidizers and acids. Control filling rates to prevent static electricity accumulation. Handle containers gently during transportation to avoid damage to packaging or containers. Equip with appropriate types and quantities of fire extinguishers and leak response equipment. Empty containers may contain residual hazardous substances.

Storage Precautions:Store in a cool, well-ventilated warehouse. Keep away from sources of ignition and heat. The storage temperature should not exceed 37°C; maintain container seals. Store separately from oxidizers, acids, and other hazardous substances—mixing is strictly prohibited. Avoid large-scale or long-term storage. Use explosion-proof lighting and ventilation systems. Do not employ machinery or tools that may generate sparks. The storage area must be equipped with leak response equipment and appropriate containment materials.

Part VIII Contact Control/Personal Protection

Occupational exposure limits:China PC-TWA: 60 mg/m³[per m³].
United States (ACGIH) TLV-TWA: 20 ppm [parts per million].

Biological contact limit:No standard established.

Monitoring methods:Methods for determining toxic substances in the air: No standards have been established. Methods for biological monitoring tests: No standards have been established.

Process Control:Hermetic operation with local exhaust ventilation. Safe shower and eye-wash facilities provided.

Personal Protective Equipment:

Respiratory protection:When air concentrations exceed safe limits, wear a filtered gas mask (full-face type). During emergency rescue or evacuation operations, use an air respirator is recommended.

Eye protection:Already provided under respiratory system protection.

Skin and body protection:Wear protective clothing resistant to toxic substance penetration.

Hand protection:Wear rubber oil-resistant gloves.

Part IX: Physical and Chemical Properties

Appearance and properties:A colorless, oily, hygroscopic liquid with an ammonia odor.

pH: No data	Melting point (°C): -5
Boiling point (°C): 128.9	Relative Density (water = 1): 1.00
Relative vapor density (air = 1): 3.0	Saturation vapor pressure (kPa): 1.06 (20°C)
Combustion heat (kJ/mol): No data	Critical temperature (°C): 344
Critical pressure (MPa): 5.302	Octanol/water partition coefficient: -0.86
Flash point (°C): 38(°C)	Self-ignition temperature (°C): 310
Lower explosive limit (%): 1.4	Explosion limit (%): 11.2
Decomposition temperature (°C): No data	Viscosity (mPa·s): 2.23 (20°C)

Dissolution:Mixable with water and soluble in most organic solvents.

Part 10: Stability and Reactivity

Stability:Stable.

Hazard Response:Contact with incompatible substances such as strong oxidizers poses a risk of fire and explosion.

Conditions for avoiding contact:No information available.

Contraindicated with:acids, acyl chlorides, anhydrides, strong oxidizing agents.

Hazardous decomposition products:No data available.

Part XI Toxicological Information

Acute toxicity:LD₅₀:1450 mg/kg (oral administration in rats); 525 mg/kg (oral administration in mice); 500 μL (500 mg)/kg (dermal administration in rabbits).

LC ₅₀ :	8000 ppm (inhaled by rats over 8 hours).
Skin irritation or corrosion:	In rabbits via dermal route: 995 mg (over 24 hours), causing severe irritation.
Eye irritation or corrosion:	In rabbits via the eye: 2 mg, causes severe irritation.
Respiratory or skin allergy:	non-avaible ◦
Mutability of germ cells:	non-avaible ◦

Carcinogenicity:No data available.

Reproductive toxicity:No data available.

Specific target organ system toxicity – single exposure:No data available.

Specific target organ system toxicity – repeated exposure:In rats, inhalation of 6.4 g/m³(repeated inhalation) caused irritation to the eyes and respiratory tract, as well as lesions in the lungs, liver, and kidneys.

Inhalation hazards:No data available.

Part XII: Ecological Information

Ecotoxicity:LC₅₀:350–400 mg/L (96 h) (fish).

EC₅₀:45 mg/L (48 h) (water flea).

Durability and Degradability:

Biodegradability: Rapidly biodegrades easily.

Non-biodegradability: No data available.

Potential bioaccumulation:Based on the K_{ow} value, the bioaccumulation potential of this substance is likely to be weak.

Migration in soil:Based on the K_{oc} value, this substance is likely to migrate readily.

Part 13: Waste Disposal

Waste chemicals:Disposal using controlled incineration. Nitrogen oxides emitted from the incinerator are removed via a scrubber.

Contaminated packaging:Return the container to the manufacturer or dispose of it in accordance with national and local regulations.

Disposal precautions:Refer to relevant national and local regulations before disposal.

Part 14: Transportation Information

United Nations Dangerous Goods Number (UN number):2054

United Nations Transport Name:Morphine

UN Hazard Classification:8,3

Packaging category:Class I packaging



packing mark :

Marine pollutants:No

Transportation Precautions:Transport vehicles must be equipped with appropriate types and quantities of firefighting equipment and leakage emergency response devices. It is advisable to transport during early morning or evening hours in summer. Tankers used for transportation should have grounding chains, and perforated partitions may be installed inside tanks to reduce static electricity generation caused by vibrations. Mixing with oxidizers, acids, edible chemicals, or similar substances is strictly prohibited. During transit, protect the cargo from direct sunlight, rain, and high temperatures. When stopping en route, keep away from fire sources, heat sources, and high-temperature areas. Vehicle exhaust systems must be fitted with flame arrest devices; the use of machinery or tools that may produce sparks during loading/unloading is forbidden. For road transport, follow designated routes and avoid stops in residential or densely populated areas. Rail transport prohibits free rolling of goods. Bulk transportation using wooden or concrete vessels is strictly prohibited.

Part 15: Regulatory Information

The following laws, regulations, rules, and standards contain corresponding provisions for the management of this chemical substance.

Law of the People's Republic of China on the Prevention and Treatment of Occupational Diseases:Classification and catalog of occupational diseases: Not listed.

Regulations on the Safety Management of Hazardous Chemicals:List of hazardous chemicals: Included. List of explosive-prone hazardous chemicals: Not included. List of key hazardous chemicals under supervision:Not included. GB18218-2018 "Identification of Major Hazard Sources for Hazardous Chemicals" (Table 1):Not included.

Regulations on Labor Protection in Workplaces Where Toxic Substances Are Used:List of highly toxic substances: Not included.

Regulations on the Management of Chemicals Susceptible to Drug Manufacturing:Classification and list of types of chemicals susceptible to drug manufacturing: Not included.

International Conventions:Stockholm Convention: Not included; Rotterdam Convention: Not included; Montreal Protocol: Not included.

Part 16: Other Information**Writing and Revision Information:**

Changes in this version:Compared to the previous version, new sections on molecular formulas, relative molecular masses, and structural formulas have been added; corresponding content has been incorporated in accordance with the "Comprehensive Book of Safety Technology for Hazardous Chemicals"; and the order of certain sections has been adjusted.

Revision notes:Updated every 5 years or when new relevant national laws and regulations are enacted.

References:Safety Culture Network

Disclaimer:The information in this SDS applies solely to the specified product. Unless otherwise stated, it does not apply to mixtures of this product with other substances. This SDS provides safety information only for properly trained users of the product. Users must independently assess the suitability of this SDS under specific usage conditions. The authors of this SDS shall not be liable for any injuries resulting from its use in exceptional circumstances.