

SAFETY DATA SHEET

Issue Date 25-Nov-2025
Revision Number 2.07

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

Product identifier

Product Name Morpholine

Other means of identification

Product Code(s) 138-07056, 136-07052

Recommended use of the chemical and restrictions on use

Recommended Use For research use only.

Uses advised against Seek expert judgment when using for purposes other than those recommended.

Details of the supplier of the safety data sheetManufacturer Address

FUJIFILM Wako Pure Chemical Corporation
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2. HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture

| | |
|---|------------|
| Flammable liquids | Category 3 |
| Acute toxicity - Oral | Category 4 |
| Acute toxicity - Dermal | Category 3 |
| Acute toxicity - Inhalation (Vapors) | Category 3 |
| Skin corrosion/irritation | Category 1 |
| Serious eye damage/eye irritation | Category 1 |
| Specific target organ toxicity (single exposure) Category 1 respiratory system | Category 1 |
| Specific target organ toxicity (repeated exposure) Category 1 respiratory system | Category 1 |
| Acute aquatic toxicity | Category 3 |

Pictograms



Signal word

Danger

Hazard statements

- H226 - Flammable liquid and vapour
- H314 - Causes severe skin burns and eye damage
- H318 - Causes serious eye damage
- H302 - Harmful if swallowed
- H311 - Toxic in contact with skin
- H331 - Toxic if inhaled
- H402 - Harmful to aquatic life
- H370 - Causes damage to the following organs: respiratory system

H372 - Causes damage to the following organs through prolonged or repeated exposure: respiratory system

Precautionary statements-(Prevention)

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

Precautionary statements-(Response)

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 or doctor/physician Call a POISON CENTER or doctor/physician if you feel unwell Wash contaminated clothing before reuse IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell Rinse mouth Do NOT induce vomiting In case of fire: Use suitable extinguishing media for extinction

Precautionary statements-(Storage)

Store locked up Store in a well-ventilated place. Keep container tightly closed

Precautionary statements-(Disposal)

Dispose of contents/container to an approved waste disposal plant

Others

Other hazards Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture Substance

Formula C4H9NO

| Chemical Name | Molecular weight | CAS RN | Weight-% |
|---------------|------------------|----------|----------|
| Morpholine | 87.12 | 110-91-8 | 98.0 |

Impurities and/or Additives: Not applicable

4. FIRST AID MEASURES

First aid measures

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash skin with soap and water.

Inhalation Remove to fresh air.

Ingestion Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing media

Carbon dioxide (CO₂). Foam. Extinguishing powder. Sand.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors. Vapors may form explosive mixtures with air.

Explosion data

Sensitivity to Mechanical Impact none.

Impact

Sensitivity to Static Discharge none.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal precautions, protective equipment and emergency procedures Ensure adequate ventilation, especially in confined areas.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods and material for containment and cleaning up Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE**Precautions for safe handling**

Technical measures Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use with local exhaust ventilation.

Protective measures Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage conditions Keep container protect from light, store in well-ventilated place at room temperature (preferably cool). Keep container tightly closed. Store locked up.

Packaging materials Glass.

Incompatible materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Engineering controls**

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

Exposure limits Not applicable

| Chemical Name | ACGIH | OSHA PEL | NIOSH IDLH |
|------------------------|---------------------|---|---|
| Morpholine 110-91-8 | TWA: 20 ppm Skin | TWA: 20 ppm TWA: 70 mg/m ³ (vacated) TWA: 20 ppm (vacated) TWA: 70 mg/m ³ (vacated) STEL: 30 ppm (vacated) STEL: 105 mg/m ³ (vacated) S* S* | IDLH: 1400 ppm TWA: 20 ppm TWA: 70 mg/m ³ STEL: 30 ppm STEL: 105 mg/m ³ |

Personal protective equipment**Respiratory protection**

gas mask for organic gas (JIS T 8152)

Hand protection

chemical protective gloves (JIS T 8116)

Eye protection

protective eyeglasses or chemical safety goggles (JIS T 8147)

Skin and body protection

Long-sleeved work clothes

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES**Form****Color**

Colorless - slightly yellow

Turbidity

clear

Appearance

liquid

Odor

characteristic odor

pH

no data available

Melting point/freezing point

-4.9 °C

Boiling point, initial boiling point and boiling range

129 °C

Flash point

33 °C

Evaporation rate:

no data available

Flammability (solid, gas):

no data available

Upper/lower flammability or explosive limits**Upper:**

11.2 vol%

Lower:

1.4 vol%

Vapour pressure

no data available

Vapour density

no data available

Specific Gravity / Relative density

0.998 - 1.004 g/mL

Solubilities

water , Ethanol and acetone : Very soluble.

n-Octanol/water partition coefficient:(log Pow)

-0.86

Auto-ignition temperature:

no data available

Decomposition temperature:

no data available

Viscosity (coefficient of viscosity)

no data available

Dynamic viscosity

no data available

Particle characteristics

no data available

10. STABILITY AND REACTIVITY**Stability****Chemical stability**

May be altered by light.

Reactivity

no data available

Hazardous reactions

None under normal processing

Conditions to avoid

Extremes of temperature and direct sunlight, Heat, flames and sparks, static electricity, spark

Incompatible materials

Strong oxidizing agents

Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NO_x)

11. TOXICOLOGICAL INFORMATION

Acute toxicity

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---------------|---------------------|-------------------|---------------------|
| Morpholine | 1,050 mg/kg (Rat) | 310 mg/kg (Rat) | 7.8 mg/L (Rat) 4h |

| Chemical Name | Acute toxicity -oral- source information | Acute toxicity -dermal- source information | Acute toxicity -inhalation gas-source information |
|---------------|---|---|---|
| Morpholine | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. |

| Chemical Name | Acute toxicity -inhalation vapor- source information | Acute toxicity -inhalation dust- source information | Acute toxicity -inhalation mist- source information |
|---------------|--|---|---|
| Morpholine | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. |

Skin irritation/corrosion

| Chemical Name | Skin corrosion/irritation source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

Serious eye damage/ irritation

| Chemical Name | Serious eye damage/irritation source information |
|---------------|--|
| Morpholine | Based on the NITE GHS classification results. |

Respiratory or skin sensitization

| Chemical Name | Respiratory or Skin sensitization source information |
|---------------|--|
| Morpholine | Based on the NITE GHS classification results. |

Reproductive cell mutagenicity

| Chemical Name | germ cell mutagenicity source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

Carcinogenicity

| Chemical Name | Carcinogenicity source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

| Chemical Name | NTP | IARC | ACGIH | JSOH |
|------------------------|-----|---------|-------|------|
| Morpholine 110-91-8 | N/A | Group 3 | N/A | N/A |

Reproductive toxicity

| Chemical Name | Reproductive toxicity source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

STOT-single exposure

| Chemical Name | STOT -single exposure- source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

STOT-repeated exposure

| Chemical Name | STOT -repeated exposure- source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

Aspiration hazard

| Chemical Name | Aspiration Hazard source information |
|---------------|---|
| Morpholine | Based on the NITE GHS classification results. |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Algae/aquatic plants | Fish | Toxicity to microorganisms | Crustacea |
|---------------|----------------------------|---------------------|----------------------------|----------------------|
| Morpholine | EC50 : Pseudokirchneriella | LC50 : Oncorhynchus | N/A | EC50 : Daphnia magna |

| | | | | |
|----------|-----------------------------|---------------------------|--|--------------|
| 110-91-8 | subcapitata 28 mg/L 96 h | mykiss - 460 mg/L 96 h | | 45 mg/L 48 h |
|----------|-----------------------------|---------------------------|--|--------------|

Persistence and degradability

No information available

Bioaccumulative potential

No information available

Mobility

no data available

| Chemical Name | Partition coefficient |
|------------------------|-----------------------|
| Morpholine 110-91-8 | -0.84 |

Mobility in soil

No information available

Other Data

No information available

13. DISPOSAL CONSIDERATIONS**Waste treatment methods**

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Precautionary including method of disposing contaminated packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION**DOT**

| | |
|-------------------------|----------------|
| UN/ID No | UN2054 |
| Proper shipping name: | Morpholine |
| UN classification | 8 |
| Subsidiary hazard class | 3 |
| Packing group | I |
| Marine pollutant | Not applicable |

IATA

| | |
|-------------------------------------|----------------|
| UN/ID No | UN2054 |
| Proper shipping name: | Morpholine |
| UN classification | 8 |
| Subsidiary hazard class | 3 |
| Packing group | I |
| Environmentally Hazardous Substance | Not applicable |

IMDG

| | |
|-------------------------|----------------|
| UN/ID No | UN2054 |
| Proper shipping name: | Morpholine |
| UN classification | 8 |
| Subsidiary hazard class | 3 |
| Packing group | I |
| Marine pollutant (Sea) | Not applicable |

15. REGULATORY INFORMATION**US Federal Regulations**

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS RN | Weight-% | SARA 313 - Threshold Values % |
|-----------------------|----------|----------|-------------------------------|
| Morpholine - 110-91-8 | 110-91-8 | 98.0 | N/A |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|----|
| Acute health hazard | No |
| Chronic Health Hazard | No |
| Fire hazard | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard | No |

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations**California Proposition 65**

This product does not contain any chemicals regulated by Proposition 65

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations

| Chemical Name | New Jersey | Massachusetts | Pennsylvania |
|------------------------|------------|---------------|--------------|
| Morpholine 110-91-8 | X | X | X |

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

Issue Date 25-Nov-2025

Revision Note

No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet