

# SAFETY DATA SHEET

according to the OSHA  
Hazard Communication Standard

Version 6.15  
Revision Date 04/20/2026  
Print Date 04/21/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : Morpholine

Product Number : 252360  
Brand : Sigma-Aldrich  
Index-No. : 613-028-00-9  
CAS-No. : 110-91-8

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

Identified uses : Laboratory chemicals, Synthesis of substances

### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

### 1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

## SECTION 2. HAZARDS IDENTIFICATION

### GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

#### Hazards for the product as supplied

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 3

Acute toxicity (Dermal) : Category 3  
Skin corrosion : Sub-category 1B  
Serious eye damage : Category 1  
Reproductive toxicity : Category 2

#### Other hazards

None known.

#### GHS label elements

Hazard pictograms : 

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.  
H302 Harmful if swallowed.  
H311 + H331 Toxic in contact with skin or if inhaled.  
H314 Causes severe skin burns and eye damage.  
H361 Suspected of damaging fertility or the unborn child.

Precautionary statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P240 Ground and bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.  
P242 Use non-sparking tools.  
P243 Take action to prevent static discharges.  
P261 Avoid breathing mist or vapours.  
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.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

#### Response:

P301 + P330 + P331 + P310 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a

POISON CENTER/ doctor.  
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 + P313 IF exposed or concerned: Get medical advice/ attention.  
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.

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

CAS-No. : 110-91-8

#### Components

| Chemical name             | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|---------------------------|-------------------|-----------------------|--------------|
| Tetrahydro-2H-1,4-oxazine | 110-91-8*         | >= 80 - <= 100        | TSC          |

\* Indicates that the identifier is a CAS No.

TSC- the actual concentration or concentration range is withheld as a trade secret

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### SECTION 4. FIRST AID MEASURES

General advice : First aiders need to protect themselves.  
Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Immediately call in

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physician.

If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

- In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
- In case of eye contact : After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.
- If swallowed : After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.
- Most important symptoms and effects, both acute and delayed : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
- Protection of first-aiders : For personal protection see section 8.
- Notes to physician : No data available

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## SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water  
Foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry powder
- Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.
- Specific hazards during fire fighting : Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

|                                                |                                                                                                                                                                                                                                |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hazardous combustion products                  | : Carbon oxides<br><br>Nitrogen oxides (NOx)                                                                                                                                                                                   |
| Specific extinguishing methods                 | : No data available                                                                                                                                                                                                            |
| Further information                            | : Remove container from danger zone and cool with water.<br>Suppress (knock down) gases/vapours/mists with a water spray jet.<br>Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Special protective equipment for fire-fighters | : Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.                                                                |

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

|                                                                     |                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | : Advice for non-emergency personnel:<br>Do not breathe vapours, aerosols.<br>Avoid substance contact.<br>Ensure adequate ventilation.<br>Keep away from heat and sources of ignition.<br>Evacuate the danger area, observe emergency procedures, consult an expert.<br>Advice for emergency responders:<br>For personal protection see section 8. |
| Environmental precautions                                           | : Do not let product enter drains.<br>Risk of explosion.                                                                                                                                                                                                                                                                                           |
| Methods and materials for containment and cleaning up               | : Cover drains. Collect, bind, and pump off spills.<br>Observe possible material restrictions (see sections 7 and 10).<br>Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.                                                                                                         |

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## SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

|                                                 |                                                                                                                                                                                                         |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advice on protection against fire and explosion | : Keep away from open flames, hot surfaces and sources of ignition.<br>Take precautionary measures against static discharge.                                                                            |
| Advice on safe handling                         | : Work under hood. Do not inhale substance/mixture.<br>Avoid generation of vapours/aerosols.                                                                                                            |
| Further information on storage conditions       | : Keep container tightly closed in a dry and well-ventilated place.<br>Keep away from heat and sources of ignition.<br>Keep locked up or in an area accessible only to qualified or authorised persons. |
| Storage class                                   | : 3, Flammable liquids                                                                                                                                                                                  |
| Recommended storage temperature                 | : Recommended storage temperature see product label.                                                                                                                                                    |
| Further information on storage stability        | : Hygroscopic.                                                                                                                                                                                          |
| Packaging material                              | : Suitable material: Amber Glass Bottle/Jar                                                                                                                                                             |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

| Components                | CAS-No.  | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis     |
|---------------------------|----------|-------------------------------|------------------------------------------------|-----------|
| Tetrahydro-2H-1,4-oxazine | 110-91-8 | TWA                           | 20 ppm                                         | ACGIH     |
|                           |          | TWA                           | 20 ppm<br>70 mg/m <sup>3</sup>                 | NIOSH REL |
|                           |          | ST                            | 30 ppm<br>105 mg/m <sup>3</sup>                | NIOSH REL |
|                           |          | TWA                           | 20 ppm<br>70 mg/m <sup>3</sup>                 | OSHA Z-1  |
|                           |          | TWA                           | 2 ppm                                          | US WEEL   |
|                           |          | STEL                          | 5 ppm                                          | US WEEL   |

**Engineering measures** : No data available

### Personal protective equipment

Respiratory protection : required when vapours/aerosols are generated.  
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : butyl-rubber  
Break through time : 480 min  
Glove thickness : 0.7 mm  
Protective index : Full contact  
Manufacturer : Butoject® (KCL 898)

Material : Viton®  
Break through time : 60 min  
Glove thickness : 0.7 mm  
Protective index : Splash contact  
Manufacturer : Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Eye protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).  
Tightly fitting safety goggles

Skin and body protection : Flame retardant antistatic protective clothing.

Hygiene measures : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid (68 °F / 20 °C, 1,013 hPa)

Color : colourless

|                                                     |                                                           |
|-----------------------------------------------------|-----------------------------------------------------------|
| Odor                                                | : ammoniacal                                              |
|                                                     | unpleasant                                                |
| Odor Threshold                                      | : No data available                                       |
| pH                                                  | : 10.6 (68 °F / 20 °C)<br>Concentration: 5 g/l            |
| Melting point/ range                                | : 19 - 23 °F / -7 - -5 °C<br>Method: lit.                 |
| Boiling point/boiling range                         | : 258.8 - 266.0 °F / 126.0 - 130.0 °C                     |
| Flash point                                         | : 88 °F / 31 °C<br>Method: closed cup                     |
| Evaporation rate                                    | : No data available                                       |
| Flammability (solid, gas)                           | : No data available                                       |
| Flammability (liquids)                              | : No data available                                       |
| Burning rate                                        | : No data available                                       |
| Self-ignition                                       | : 491 °F / 255 °C<br>1,013 hPa<br>Method: DIN 51794       |
| Upper explosion limit /<br>Upper flammability limit | : 10.8 %(V)                                               |
| Lower explosion limit /<br>Lower flammability limit | : 1.8 %(V)                                                |
| Vapor pressure                                      | : 9.33 hPa (68 °F / 20 °C)<br>41.32 hPa (100 °F / 38 °C)  |
| Relative vapour density                             | : 3.01<br>(Air = 1.0)                                     |
| Relative density                                    | : 1.001 (68 °F / 20 °C)                                   |
| Density                                             | : 0.996 g/cm <sup>3</sup> (77 °F / 25 °C)<br>Method: lit. |

#### Solubility(ies)

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|                                        |                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Water solubility                       | : completely miscible                                                                                            |
| Partition coefficient: n-octanol/water | : log Pow: -2.55 (77 °F / 25 °C)<br>pH: 7<br>Method: OECD Test Guideline 107<br>Bioaccumulation is not expected. |
| Autoignition temperature               | : 590 °F / 310 °C                                                                                                |
| Decomposition temperature              | : > 626 °F / > 330 °C                                                                                            |
| Viscosity                              |                                                                                                                  |
| Viscosity, dynamic                     | : 2.23 mPa.s (68 °F / 20 °C)                                                                                     |
| Viscosity, kinematic                   | : 2.2 mm <sup>2</sup> /s (68 °F / 20 °C)                                                                         |
| Flow time                              | : No data available                                                                                              |
| Explosive properties                   | : Not classified as explosive.                                                                                   |
| Oxidizing properties                   | : none                                                                                                           |
| Molecular weight                       | : 87.12 g/mol                                                                                                    |
| Particle characteristics               |                                                                                                                  |
| Particle size                          | : No data available                                                                                              |

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## SECTION 10. STABILITY AND REACTIVITY

|                                    |                                                                                                                                                                                  |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : Vapour/air-mixtures are explosive at intense warming.                                                                                                                          |
| Chemical stability                 | : The product is chemically stable under standard ambient conditions (room temperature) .                                                                                        |
| Possibility of hazardous reactions | : Exothermic reaction with:<br>Strong oxidizing agents<br>Nitriles<br>acids<br>Caution! In contact with nitrites, nitrates, nitrous acid<br>possible liberation of nitrosamines! |
| Conditions to avoid                | : Heating.                                                                                                                                                                       |
| Incompatible materials             | : Aluminium<br>nonferrous metals                                                                                                                                                 |
| Hazardous decomposition products   | : In the event of fire: see section 5                                                                                                                                            |

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## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male and female - 1,900 mg/kg  
(OECD Test Guideline 401)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapour

(Expert judgement)

LD50 Dermal - Rabbit - male - 500 mg/kg  
(OECD Test Guideline 402)

No data available

#### Skin corrosion/irritation

Skin - Rabbit

Result: Causes burns. - 3 min

(OECD Test Guideline 404)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage.

(OECD Test Guideline 405)

Remarks: Causes serious eye damage.

#### Respiratory or skin sensitization

Buehler Test - Guinea pig

Result: negative

Remarks: (IUCLID)

#### Germ cell mutagenicity

Test Type: Ames test

Test system: Escherichia coli/Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Result: Positive results were obtained in some in vitro tests.

Remarks: (ECHA)

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Metabolic activation: Metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: sister chromatid exchange assay

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 479

Result: negative

Test Type: unscheduled DNA synthesis assay

Test system: rat hepatocytes

Metabolic activation: without metabolic activation

Method: OECD Test Guideline 482

Result: negative

Test Type: Micronucleus test  
Species: Hamster

Application Route: Oral

Result: negative  
Remarks: (ECHA)

### **Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

### **Reproductive toxicity**

Suspected of damaging the unborn child.

Suspected of damaging fertility.

### **Specific target organ toxicity - single exposure**

No data available

### **Specific target organ toxicity - repeated exposure**

No data available

### **Aspiration hazard**

No data available

## **11.2 Additional Information**

RTECS: QD6475000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption:

Toxic effect on:

Liver

Kidney

Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

##### **Tetrahydro-2H-1,4-oxazine:**

|                                                                        |                                                                                                                                                                                                           |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                                       | : LC50 (Oncorhynchus mykiss (rainbow trout)): 180 mg/l<br>End point: mortality<br>Exposure time: 96 h<br>Test Type: static test<br>Analytical monitoring: yes<br>Remarks: (in soft water) (Lit.)          |
| Toxicity to daphnia and other aquatic invertebrates                    | : EC50 (Daphnia magna (Water flea)): 44.5 mg/l<br>End point: Immobilization<br>Exposure time: 48 h<br>Test Type: static test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 202<br>GLP: yes |
| Toxicity to algae/aquatic plants                                       | : ErC50 (Skeletonema costatum): 9 mg/l<br>Exposure time: 72 h<br>Test Type: static test<br>Method: ISO 10253                                                                                              |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : NOEC (Daphnia magna (Water flea)): 5 mg/l<br>End point: reproduction rate<br>Exposure time: 21 d<br>Test Type: semi-static test<br>Analytical monitoring: yes<br>Method: OECD Test Guideline 211        |
| Toxicity to microorganisms                                             | : EC20 (activated sludge): > 1,000 mg/l<br>Exposure time: 30 min<br>Test Type: static test<br>Method: OECD Test Guideline 209                                                                             |

### Persistence and degradability

#### Components:

##### **Tetrahydro-2H-1,4-oxazine:**

|                  |                                     |
|------------------|-------------------------------------|
| Biodegradability | : aerobic<br>Concentration: 21 mg/l |
|------------------|-------------------------------------|

Result: Readily biodegradable.  
Biodegradation: 93 %  
Exposure time: 25 d  
Method: OECD Test Guideline 301E

### **Bioaccumulative potential**

#### **Components:**

##### **Tetrahydro-2H-1,4-oxazine:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): < 2.8  
Exposure time: 42 d  
Temperature: 77 °F / 25 °C  
Concentration: 0.5 mg/l  
Method: OECD Test Guideline 305C

Partition coefficient: n-octanol/water : log Pow: -2.55 (77 °F / 25 °C)  
pH: 7  
Method: OECD Test Guideline 107  
Remarks: Bioaccumulation is not expected.

### **Mobility in soil**

No data available

### **Other adverse effects**

#### **Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

#### **Components:**

##### **Tetrahydro-2H-1,4-oxazine:**

Results of PBT and vPvB assessment : Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

Additional ecological information : Forms corrosive mixtures with water even if diluted.

Discharge into the environment must be avoided.

### **Endocrine disrupting properties**

No data available

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

UN/ID No. : UN 2054  
Proper shipping name : Morpholine  
Class : 8  
Subsidiary risk : 3  
Packing group : I  
Labels : Class 8 - Corrosive substances, Class 3 - Flammable liquids  
Packing instruction (cargo aircraft) : 854  
Packing instruction (passenger aircraft) : 850

#### IMDG-Code

UN number : UN 2054  
Proper shipping name : MORPHOLINE  
  
Class : 8  
Subsidiary risk : 3  
Packing group : I  
Labels : 8 (3)  
EmS Code : F-E, S-C  
Marine pollutant : no

### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

### National Regulations

#### 49 CFR

UN/ID/NA number : UN 2054  
Proper shipping name : Morpholine  
  
Class : 8  
  
Subsidiary risk : 3  
Packing group : I  
Labels : Class 8 - Corrosive substances, Class 3 - Flammable liquids

ERG Code : 132  
Marine pollutant : no  
Poison Inhalation Hazard : No

### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Fire Hazard  
Acute Health Hazard  
Chronic Health Hazard

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

|                           |          |                  |
|---------------------------|----------|------------------|
| Tetrahydro-2H-1,4-oxazine | 110-91-8 | >= 90 - <= 100 % |
|---------------------------|----------|------------------|

### Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. Clean Water Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. Clean Water Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

## US State Regulations

### Massachusetts Right To Know

Tetrahydro-2H-1,4-oxazine 110-91-8

### Pennsylvania Right To Know

Tetrahydro-2H-1,4-oxazine 110-91-8

### Maine Chemicals of High Concern

Product does not contain any listed chemicals

### Vermont Chemicals of High Concern

Product does not contain any listed chemicals

### Washington Chemicals of High Concern

Product does not contain any listed chemicals

### The components of this product are reported in the following inventories:

US TSCA : All substances listed as active on the TSCA inventory

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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## SECTION 16. OTHER INFORMATION

### Full text of other abbreviations

|                 |                                                                                             |
|-----------------|---------------------------------------------------------------------------------------------|
| ACGIH           | : USA. ACGIH Threshold Limit Values (TLV)                                                   |
| NIOSH REL       | : USA. NIOSH Recommended Exposure Limits                                                    |
| OSHA Z-1        | : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants          |
| US WEEL         | : USA. Workplace Environmental Exposure Levels (WEEL)                                       |
| ACGIH / TWA     | : 8-hour, time-weighted average                                                             |
| NIOSH REL / TWA | : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek |
| NIOSH REL / ST  | : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday    |
| OSHA Z-1 / TWA  | : 8-hour time weighted average                                                              |
| US WEEL / TWA   | : 8-hr TWA                                                                                  |
| US WEEL / STEL  | : Short-Term TWA                                                                            |

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide;

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GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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