SAFETY DATA SHEET

Preparation Date: 03/05/2015
Revision Date: 03/05/2015
Revision Number: G1

Product identifier

Product code: M2721
Product Name: 4-METHYLMORPHOLINE N-OXIDE

Other means of identification
Synonyms: Morpholine, 4-methyl-, 4-oxide
CAS #: 7529-22-8
RTECS #: QE6237000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: No information available.
Uses advised against: No information available

Supplier:
Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA  90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number
Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

| Skin corrosion/iritation                  | Category 2 |
| Serious eye damage/eye irritation        | Category 2A |
| Specific target organ toxicity (single exposure) | Category 3 |

Label elements
Warning

Hazard statements
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation

Hazard statements
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation

Hazard statements
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear eye/face protection
Wear protective gloves

Precautionary Statements - Response
Specific treatment (see .? on this label)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

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

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide 7529-22-8</td>
<td>7529-22-8</td>
<td>100</td>
<td>*</td>
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</tbody>
</table>

4. FIRST AID MEASURES

First aid measures
General Advice:
Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Product code: M2721
Product name: 4-
METHYLMORPHOLINE N-OXIDE
4. FIRST AID MEASURES

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

| Symptoms | Causes eye irritation. Eye contact may result in redness or pain. Causes skin irritation. Skin contact may result in redness, pain, inflammation, itching, scaling. May cause irritation of respiratory tract. |

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon oxides, Nitrogen oxides

Specific hazards: May be combustible at high temperatures

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment 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: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. All equipment used when handling the product must be grounded. Keep away from incompatible materials.

Safe Handling Advice: Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Avoid dust formation. Do not ingest. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities


8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
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<tr>
<td>4-Methylmorpholine N-Oxide - 7529-22-8</td>
<td>None</td>
<td>None</td>
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</table>

Canada

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
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<tr>
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<td>None</td>
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Australia and Mexico

<table>
<thead>
<tr>
<th>Components</th>
<th>Australia</th>
<th>Mexico</th>
</tr>
</thead>
</table>

Product code: M2721  
Product name: 4-METHYLMORPHOLINE N-OXIDE
Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

- **Eye protection:** Safety glasses. Safety glasses with side-shields.
- **Skin and body protection:** Chemical resistant apron. Long sleeved clothing. Gloves.
- **Respiratory protection:** Effective dust mask. Wear respirator with dust filter.
- **Hygiene measures:** Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td><strong>Physical state:</strong></td>
<td>Solid</td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td>Crystalline powder.</td>
</tr>
<tr>
<td><strong>Color:</strong></td>
<td>Off-white. Tan.</td>
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<tr>
<td><strong>Odor:</strong></td>
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</tr>
<tr>
<td><strong>Taste:</strong></td>
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<tr>
<td><strong>Molecular/Formula weight:</strong></td>
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<tr>
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<tr>
<td><strong>Upper Explosion Limit (%):</strong></td>
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<tr>
<td><strong>Decomposition temperature(°C/°F):</strong></td>
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<tr>
<td><strong>Lower Explosion Limit (%):</strong></td>
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<td><strong>Vapor density:</strong></td>
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<tr>
<td><strong>Specific gravity:</strong></td>
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<tr>
<td><strong>Upper Explosion Limit (%):</strong></td>
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<td><strong>Evaporation rate:</strong></td>
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<tr>
<td><strong>Vapor pressure @ 20°C (kPa):</strong></td>
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<tr>
<td><strong>Solubility:</strong></td>
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<tr>
<td><strong>Partition coefficient</strong></td>
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<tr>
<td><strong>Miscibility:</strong></td>
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<td><strong>Odor threshold (ppm):</strong></td>
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<tr>
<td><strong>Viscosity:</strong></td>
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<td><strong>Taste:</strong></td>
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<td><strong>VOC content (g/L):</strong></td>
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</tr>
<tr>
<td><strong>Melting point/range(°C/°F):</strong></td>
<td>No information available</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

Reactivity

**Product code:** M2721 **Product name:** 4-

**METHYLMORPHOLINE N-OXIDE**
10. STABILITY AND REACTIVITY

Reactive with oxidizing agents

Chemical stability
Stability: Hygroscopic. Stable under recommended storage conditions.
Possibility of Hazardous Reactions: Hazardous polymerization does not occur
Hazardous decomposition products: Carbon oxides. Nitrogen oxides (NOx).

Other Information
Corrosivity: No information available
Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Principal Routes of Exposure: Ingestion. Inhalation.

Acute Toxicity

Component Information

4-Methylmorpholine N-Oxide - 7529-22-8
LD50/oral/rat = No information available
LD50/oral/mouse = No information available
LD50/dermal/rat = No information available
LD50/dermal/rabbit = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat = VALUE- Acute Tox Oral = No information available
LD50/oral/mouse = Value - Acute Tox Oral = No information available
LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available
LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available
LC50/inhalation/rat
VALUE-Vapor = No information available

Product code: M2721
Product name: 4-METHYLMORPHOLINE N-OXIDE
**VALUE-Gas** = No information available  
**VALUE-Dust/Mist** = No information available  

**LC50/Inhalation/mouse**  
**VALUE-Vapor** = No information available  
**VALUE - Gas** = No information available  
**VALUE - Dust/Mist** = No information available  

### Symptoms

**Skin Contact:** Causes skin irritation.  
**Eye Contact:** Causes serious eye irritation.  
**Inhalation:** May cause irritation of respiratory tract.  
**Ingestion:** May cause digestive (gastrointestinal) tract irritation.  
**Aspiration hazard:** No information available  

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Chronic Toxicity:** No information available  
**Sensitization:** No information available  
**Mutagenic Effects:** No information available  

**Carcinogenic effects:** Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH - Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
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<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide</td>
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<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**Reproductive toxicity** No data is available

**Reproductive Effects:** No information available  
**Developmental Effects:** No information available  
**Teratogenic Effects:** No information available  

### Specific Target Organ Toxicity

**STOT - single exposure** No information available  
**STOT - repeated exposure** No information available  
**Target Organs:** No information available  

#### 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Ecotoxicity effects:** No data available.  
**Persistence and degradability:** No information available

Product code: M2721  
Product name: 4-METHYLMORPHOLINE N-OXIDE
Bioaccumulative potential: No information available
Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide</td>
<td>None</td>
<td>None</td>
<td>None</td>
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</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: None
ERG No: No information available
Marine Pollutant: No data available
DOT RQ (lbs): No information available

TDG (Canada)
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

ADR
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available

Product code: M2721
Product name: 4-METHYLMORPHOLINE N-OXIDE
14. TRANSPORT INFORMATION

| Packing Group: | No information available |
| Description:   | No information available |
| IMDG Page:     | No information available |
| Marine Pollutant: | No information available |
| MFA:           | No information available |
| Maximum Quantity: | No information available |

RID

| UN-No:                  | Not Regulated               |
| Proper Shipping Name:  | No information available    |
| Hazard Class:          | No information available    |
| Subsidiary Risk:       | No information available    |
| Packing Group:         | No information available    |
| Classification Code:   | No information available    |
| Description:           | No information available    |

ICAO

| UN-No:                  | Not Regulated               |
| Proper Shipping Name:  | No information available    |
| Hazard Class:          | No information available    |
| Subsidiary Risk:       | No information available    |
| Packing Group:         | No information available    |
| Description:           | No information available    |

IATA

| UN-No:                  | Not Regulated               |
| Proper Shipping Name:  | No information available    |
| Hazard Class:          | No information available    |
| Subsidiary Risk:       | No information available    |
| Packing Group:         | No information available    |
| Description:           | No information available    |

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
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</thead>
<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide</td>
<td>Present</td>
<td>Present 97-3-137</td>
<td>Present</td>
<td>Not present</td>
<td>Present</td>
<td>Present 231-391-8</td>
</tr>
</tbody>
</table>

U.S. Regulations


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
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<tbody>
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<td>Not Listed</td>
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</table>

CERCLA/SARA

Product code: M2721  
Product name: 4-METHYLMORPHOLINE N-OXIDE
<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide</td>
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<td>None</td>
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### U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
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<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide</td>
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<td>Not Applicable</td>
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### Canada

**WHMIS hazard class:**
Non-controlled

**Canada Controlled Products Regulation:**
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

### Inventory

<table>
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<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
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<tbody>
<tr>
<td>4-Methylmorpholine N-Oxide</td>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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<tr>
<td>4-Methylmorpholine N-Oxide</td>
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<td>Not listed</td>
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</table>

### EU Classification

**R-phrase(s)**
not determined (not applicable)

**S -phrase(s)**
S24 - Avoid contact with skin.
S25 - Avoid contact with eyes.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
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<tr>
<td>4-Methylmorpholine N-Oxide</td>
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</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

**Indication of danger:**
None.
16. OTHER INFORMATION

Preparation Date: 03/05/2015
Revision Date: 03/05/2015
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet