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| Metro Welding Supply Corp. logo | Safety Data Sheet  Ethylene Oxide |
|  |

# Section 1: Product and Company Identification

**Metro Welding Supply Corp.**

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Detroit, MI 48223
  
(313) 834-1660 [phone]
  
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http://www.metrowelding.com/

Product Code: Ethylene Oxide

# Section 2: Hazards Identification



**Danger**

## Hazard Classification:

Acute Gas Inhale Toxicity (Category 3)

Acute Oral Toxicity (Category 3)

Aspiration Hazard (Category 1)

Carcinogenicity (Category 1.B)

Eye Effects (Category 1)

Flammable (Category 1)

Flammable Aerosol (Category 1)

Gases Under Pressure

Skin Corrosion (Category 2)

## Hazard Statements:

Causes serious eye damage

Causes skin irritation

Contains gas under pressure; may explode if heated

Extremely flammable aerosol

Extremely flammable gas

May be fatal if swallowed and enters airways

May cause cancer

Toxic if inhaled

Toxic if swallowed

## Precautionary Statements

**Prevention:**

Wash thoroughly after handling.

Avoid breathing dust/fume/gas/mist/ vapors/spray.

Do not eat, drink or smoke when using this product.

[In case of inadequate ventilation] wear respiratory protection.

Do not handle until all safety precautions have been read and understood.

Use only outdoors or in a well-ventilated area.

Wear protective gloves, protective clothing, eye protection and face protection.

Obtain special instructions before use.

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Pressurized container: Do not pierce or burn, even after use.

Do not spray on an open flame or other ignition source.

**Response:**

Eliminate all ignition sources if safe to do so.

If on skin: Wash with plenty of water.

Immediately call a poison center or doctor.

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Do NOT induce vomiting.

If swallowed: Rinse mouth. Do NOT induce vomiting.

Take off contaminated clothing and wash it before reuse.

If exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

**Storage:**

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

Protect from sunlight.

Store locked up.

Do not expose to temperatures exceeding 50C/122F.

**Disposal:**

Dispose of contents and/or container in accordance with applicable regulations.

# Section 3: Composition/Information on Ingredients

| CAS # |
| --- |
| 75-21-8 |

| Chemical Substance | Chemical Family | Trade Names |
| --- | --- | --- |
| ETHYLENE OXIDE | Organic oxide / cyclic ether / aliphatic oxirane / aliphatic epoxide | OXIRANE; DIHYROOXIRENE; DIMETHYLENE OXIDE; EPOXYETHANE; 1,2-EPOXYETHANE; ETHENE OXIDE; ETO; EO; OXACYCLOPROPANE; OXANE; OXIDOETHANE; ALPHA,BETA-OXIDOETHANE; OXIRAN; RCRA U115; STCC 4906610; UN 1040; C2H4O |

# Section 4: First Aid Measures

| Skin Contact | Eye Contact | Ingestion | Inhalation | Note to Physicians |
| --- | --- | --- | --- | --- |
| If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately. | Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Avoid mouth-to-mouth contact by using mouth guards or shields. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. For ingestion, consider gastric lavage and activated charcoal slurry. |

# Section 5: Fire Fighting Measures

| Suitable Extinguishing Media | Products of Combustion | Protection of Firefighters |
| --- | --- | --- |
| Carbon dioxide, regular dry chemical, water Large fires: Use alcohol-resistant foam or flood with fine water spray. | Carbon monoxide, carbon dioxide and toxic and irritating fumes, carbon, acetaldehyde | * Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Full body chemical protective suit. * Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Full body chemical protective suit. |

# Section 6: Accidental Release Measures

| Personal Precautions | Environmental Precautions | Methods for Containment |
| --- | --- | --- |
| Keep unnecessary people away, isolate hazard area and deny entry. | Avoid heat, flames, sparks and other sources of ignition. Keep out of water supplies and sewers. | Stop leak if possible without personal risk. Reduce vapors with water spray. Do not get water inside container. Remove sources of ignition. |

| Methods for Cleanup | Other Information |
| --- | --- |
| Small spills: Flood with water. Large spills: Dike for later disposal. | Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA). Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). |

# Section 7: Handling and Storage

| Handling | Storage |
| --- | --- |
| Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Store below 30 C. Store outside or in a detached building. Avoid contact with light. Store in a cool, dry place. Use diking sufficient to contain total contents plus 10%. Store with flammable liquids. Keep separated from incompatible substances. Grounding and bonding required. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). | Keep separated from incompatible substances. Protect from physical damage. |

# Section 8: Exposure Controls/Personal Protection

| Exposure Guidelines |
| --- |
| ETHYLENE OXIDE: 1 ppm OSHA TWA 5 ppm OSHA excursion limit 15 minute(s) 0.5 ppm OSHA action level 1 ppm ACGIH TWA 0.1 ppm (0.18 mg/m3) NIOSH recommended TWA 10 hour(s) (not to exceed) 5 ppm (9 mg/m3) NIOSH recommended ceiling 10 minute(s) |

## Engineering Controls

Handle only in fully enclosed systems.

| Eye Protection | Skin Protection | Respiratory Protection |
| --- | --- | --- |
| Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing. Wear appropriate chemical resistant clothing. | Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Full body chemical protective suit. |

## General Hygiene considerations

* Avoid breathing vapor or mist
* Avoid contact with eyes and skin
* Wash thoroughly after handling and before eating or drinking

# Section 9: Physical and Chemical Properties

| Physical State | Appearance | Color | Change in Appearance | Physical Form | Odor | Taste |
| --- | --- | --- | --- | --- | --- | --- |
| Gas | Colorless | Colorless | N/A | Liquid | Sweet odor | N/A |

| Flash Point | Flammability | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
| --- | --- | --- | --- | --- | --- |
| -4 F (-20 C) (CC) (pure ethylene oxide) | Not available | Not available | 804 F (429 C) | 1 | 0.03 |

| Boiling Point | Freezing Point | Vapor Pressure | Vapor Density | Specific Gravity | Water Solubility | pH | Odor Threshold | Evaporation Rate | Viscosity |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50.7 F (10.4 C) (pure ethylene oxide) | -168 F (-111 C) | 1095 mmHg @ 20 C | 1.5 (Air=1) | 0.8824 @ 10 C | Soluble | Not applicable | 500 ppm | Not applicable | 0.0095 cP @ 20 C |

| Molecular Weight | Molecular Formula | Density | Weight per Gallon | Volatility by Volume | Volatility | Solvent Solubility |
| --- | --- | --- | --- | --- | --- | --- |
| 44.06 | (C-H2)2-O | Not available | Not available | 100% | 1 | Soluble: Alcohol, ether, acetone, benzene, carbon tetrachloride, organic solvents |

# Section 10: Stability and Reactivity

| Stability | Conditions to Avoid | Incompatible Materials |
| --- | --- | --- |
| May decompose explosively when heated above 427 C. Normally stable in the absence of catalysts. | May decompose explosively when heated above 427 C. Normally stable in the absence of catalysts. | Acids, combustible materials, bases, metal salts, metal oxides, amines, halo carbons, metals, cyanides, oxidizing materials, porous refractory insulation, alcohols |

| Hazardous Decomposition Products | Possibility of Hazardous Reactions |
| --- | --- |
| Oxides of carbon | May polymerize violently or explosively. May polymerize when heated. Avoid contact with incompatible materials. |

# Section 11: Toxicology Information

## Acute Effects

| Oral LD50 | Dermal LD50 | Inhalation |
| --- | --- | --- |
| 72 mg/kg oral-rat LD50 | Not available | Irritation, lack of sense of smell, tearing, nausea, vomiting, diarrhea, difficulty breathing, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, disorientation, bluish skin color, lung congestion, lung damage, kidney damage, paralysis, reproductive effects, convulsions |

| Eye Irritation | Skin Irritation | Sensitization |
| --- | --- | --- |
| Irritation (possibly severe), frostbite, tearing | Irritation (possibly severe), allergic reactions, blisters | Harmful if inhaled or swallowed, skin burns, eye burns, respiratory tract irritation, central nervous system depression, allergic reactions, cancer hazard (in humans), possible reproductive hazard, mutagen |

## Chronic Effects

| Carcinogenicity | Mutagenicity | Reproductive Effects | Developmental Effects |
| --- | --- | --- | --- |
| OSHA: Carcinogen; NTP: Known Human Carcinogen; IARC: Human Limited Evidence, Animal Sufficient Evidence, Group 1; ACGIH: A2 -Suspected Human Carcinogen | Available. | Available. | No data |

# Section 12: Ecological Information

## Fate and Transport

|  |  |  |  |
| --- | --- | --- | --- |
| Eco toxicity | Persistence / Degradability | Bioaccumulation / Accumulation | Mobility in Environment |
| Fish toxicity: Acute LC50 84000 to 96000 ug/L Fresh water Fish - Fathead minnow - Pimephales promelas 96 hours  Invertibrate toxicity: 490000 ug/L 48 hour(s) LC50 (Mortality) Brine shrimp (Artemia sp)  Algal toxicity: Not available  Phyto toxicity: Not available  Other toxicity: Not available | Not available | Not available | Not available |

# Section 13: Disposal Considerations

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| --- |
| Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U115. Dispose in accordance with all applicable regulations. |

# Section 14: Transportation Information

## U.S. DOT 49 CFR 172.101

| Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ETHYLENE OXIDE; or ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 degrees C | UN1040 | 2.3 | Not applicable | 2.3; 2.1 | Forbidden | Forbidden | Toxic-Inhalation Hazard Zone D |

## Canadian Transportation of Dangerous Goods

|  |  |  |  |
| --- | --- | --- | --- |
| Shipping Name | UN Number | Class | Packing Group / Risk Group |
| ETHYLENE OXIDE; or ETHYLENE OXIDE WITH NITROGEN up to a total pressure of 1 MPa (10 bar) at 50 degrees C | UN1040 | 2.3; 2.1 | Not applicable |

# Section 15: Regulatory Information

## U.S. Regulations

|  |  |  |
| --- | --- | --- |
| CERCLA Sections | SARA 355.30 | SARA 355.40 |
| ETHYLENE OXIDE: 10 LBS RQ Acetaldehyde: 1000 LBS RQ ACETIC ACID: 5000 LBS RQ | 1000 LBS TPQ | 10 LBS RQ |

## SARA 370.21

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Acute | Chronic | Fire | Reactive | Sudden Release |
| Yes | Yes | Yes | Yes | Yes |

## SARA 372.65

|  |
| --- |
| ETHYLENE OXIDE |

## OSHA Process Safety

|  |
| --- |
| ETHYLENE OXIDE: 5000 LBS TQ Acetaldehyde: 2500 LBS TQ |

## State Regulations

|  |
| --- |
| CA Proposition 65 |
| Known to the state of California to cause the following: ETHYLENE OXIDE Cancer (Jul 01, 1987) Female reproductive toxicity (Feb 27, 1987) Acetaldehyde Cancer (Apr 01, 1988) |

## Canadian Regulations

|  |
| --- |
| WHMIS Classification |
| A, B1, D1A, D2A, E, F |

## National Inventory Status

|  |  |  |
| --- | --- | --- |
| US Inventory (TSCA) | TSCA 12b Export Notification | Canada Inventory (DSL/NDSL) |
| Listed on inventory. | Not listed. | Not determined. |

# Section 16: Other Information

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| NFPA Rating |
| HEALTH=3 FIRE=4 REACTIVITY=3 |

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard