Section 1: Identification of the Substance / Preparation and of the Company / Undertaking

Product Name: GAS/SPEC* CS-2020* Solvent
Product Code: 72642
Manufacturer: INEOS Oxide
A division of INEOS Americas LLC
2925 Briarpark, Suite 870
Houston TX, 77042
Phone Number: (866) 865-4767
24-hour Emergency: CHEMTREC: (800) 424-9300

* or ® Indicates a Trademark of INEOS Oxide.

Section 2: Composition / Information on Ingredients

Hazardous/Dangerous Ingredients:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>EINECS / ELINCS</th>
<th>Wt.%</th>
<th>Symbol</th>
<th>R Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDEA-Methyldiethanolamine</td>
<td>2,2'-(methylimino)di-ethanol</td>
<td>105-59-9</td>
<td>203-312-7</td>
<td>30-60</td>
<td>Xi</td>
<td>R36</td>
</tr>
<tr>
<td>Trade Secret Alkanolamine</td>
<td>Proprietary</td>
<td></td>
<td>HMIRC RN 5398**</td>
<td>Listed in European Inventory</td>
<td>15-40</td>
<td>Xn,C</td>
</tr>
</tbody>
</table>

Non-Hazardous/Non-Dangerous Ingredients:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>EINECS / ELINCS</th>
<th>Wt.%</th>
<th>Symbol</th>
<th>R Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>5-10</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Notes: **HMIRC (Canada - Hazardous Materials Information Review Commission) January 7, 2005
See Section 8 of this MSDS for exposure limit data for these ingredients.
See Section 16 for the full text of the R-phrases above.
### Section 3: Hazards Identification

<table>
<thead>
<tr>
<th>Preparation Hazards and Classification:</th>
<th>Harmful if swallowed. Causes burns.</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA: This product is a hazardous material as defined by 29 CFR1910.1200, OSHA Hazard Communication Evaluation.</td>
<td></td>
</tr>
<tr>
<td>Canada: This is a controlled product under WHMIS.</td>
<td></td>
</tr>
<tr>
<td>This preparation is classified as dangerous according to Directive 1999/45/EC and its amendments. Preparation Classification: Harmful, Corrosive.</td>
<td></td>
</tr>
</tbody>
</table>

| Appearance, Color and Odor: | Pale yellow liquid, amine odor. |

| Primary Route(s) of Exposure: | Inhalation, Ingestion, Eye contact, Skin contact |

<table>
<thead>
<tr>
<th>Potential Health Effects:</th>
<th>ACUTE (short term): see Section 8 for exposure controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation:</td>
<td>At room temperature, exposures to vapors are minimal due to the physical properties. When heated, vapor concentrations may be generated that may cause adverse effects. Vapors or mists may cause severe irritation to the respiratory tract. Symptoms of exposure may include coughing, wheezing, shortness of breath, difficult breathing, headache, nausea, vomiting and chest pain. High concentrations of vapor or mist may cause burns to the respiratory tract.</td>
</tr>
<tr>
<td>Ingestion:</td>
<td>Low oral toxicity, but swallowing large amounts can cause severe irritation and burns of the digestive tract with abdominal and chest pain, nausea, vomiting and diarrhea. Due to the corrosive nature of the alkanolamine, any aspiration during ingestion or vomiting could result in lung injury.</td>
</tr>
<tr>
<td>Skin:</td>
<td>Direct contact with the product causes severe irritation with local discomfort or pain, severe excess redness and swelling with chemical burns, blister formation and possible tissue destruction. Prolonged skin contact may result in the absorption of potentially harmful amounts.</td>
</tr>
<tr>
<td>Eyes:</td>
<td>Direct contact with the product will cause severe eye irritation or chemical burns. Serious damage, even blindness, may result if treatment is delayed.</td>
</tr>
</tbody>
</table>

**CHRONIC (long term): see Section 11 for additional toxicological data**

| Inhalation: | Prolonged or repeated overexposure to mists or vapors may result in damage to the respiratory tract. |
| Skin: | Prolonged or repeated contact may cause severe skin irritation and burns. May cause sensitization by repeated skin contact, resulting in an allergic dermatitis. |

**Medical Conditions Aggravated by Exposure:**

Not available
Section 4: First Aid Measures

Inhalation: Remove from exposure to fresh air immediately. Keep victim at rest. If breathing is difficult, trained personnel may administer oxygen. Do not allow victim to move about unnecessarily. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure. Quickly transport victim to an emergency care facility.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm flowing water for at least 60 minutes while holding the eyelids open. Neutral saline rinsing solution may be used as soon as it is available. Do not interrupt flushing. Take care not to rinse contaminated water into the unaffected eye or the face. Quickly transport victim to an emergency care facility.

Skin Contact: Immediately flush the affected areas with plenty of flowing water or a safety shower for at least 20 minutes. Remove contaminated clothing and shoes while flushing. Do not interrupt flushing. If necessary, and it can be done safely, continue flushing during transport to emergency care facility.

Ingestion: DO NOT INDUCE VOMITING. Get immediate medical attention. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration; rinse the mouth. Quickly transport the victim to an emergency care facility. Never give anything by mouth if victim is unconscious, rapidly losing consciousness or convulsing.

Section 5: Fire-Fighting Measures

Flash Point and Method (°C): 104°C (220°F) Calculated by Unifax Method

Flammability Limits (%): LFL: Not available
UFL: Not available

Auto Ignition Temperature (°C): Not available

Extinguishing Media: Water fog or fine spray, carbon dioxide, alcohol-resistant foam or dry chemical. Use water spray to cool fire-exposed containers.

Do not use a direct water stream; violent steam generation or eruption may occur upon application of direct water stream.

Unusual Fire and Explosion Hazards: Sensitivity to mechanical impact: Not applicable
Sensitivity to static discharge: Not applicable

Spills of these organic liquids on hot fibrous insulations may lead to lowering of the auto-ignition temperature possibly resulting in spontaneous combustion.

Fire Fighting Instructions: Evacuate the area and fight fire from a safe distance or a protected location. Approach the fire from upwind to avoid hazardous vapors. Burning liquids may be extinguished by dilution with water. Do not use direct water stream, it may spread fire. Water spray may be used to flush spills away from ignition sources.

Avoid all contact with this material during fire fighting operations. Wear chemical resistant clothing (chemical splash suit) and positive-pressure self-contained breathing apparatus.

Contain water run-off if possible.

Hazardous Combustion Products: During a fire smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to: nitrogen oxides, carbon monoxide, carbon dioxide.

Other Flammability Information: This material can burn if strongly heated.
Section 6: Accidental Release Measures

Personal Precautions: Wear adequate personal protective equipment.

Air Release: Evacuate the area. Ventilate the area. Extinguish or remove all ignition sources. Wear adequate personal protective equipment. Notify occupational and environmental authorities.

Land Spill: Isolate the area; keep people away. Do not touch spilled material. Clean up should be conducted by trained personnel only. Wear adequate personal protective equipment. Ventilate the area. Extinguish or remove all ignition sources. Prevent the material from entering sewers, groundwater or surface water. Contain the spill with earth, sand or suitable absorbent. Put material in suitable, covered, labeled containers. Contaminated absorbent may pose the same hazards as the spilled product. Flush the area with water. Notify occupational and environmental authorities.

Water Spill: Contain spills to prevent contamination of surface water and ground water. Notify occupational and environmental authorities.

Section 7: Handling and Storage

Storage Temperature: Store in a cool, dry, well-ventilated area away from sunlight, heat and ignition sources.

Storage Pressure: Not available

General: Handling: Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Ensure that engineering controls are operating and that protective equipment requirements are being followed. Avoid generating vapors and mists.

Inspect containers for leaks before handling. Prevent damage to containers. Keep containers closed when not in use. Assume that empty containers contain residues which are hazardous.

Do not use with incompatible materials (see Section 10).

Discard all contaminated leather items such as watchbands, shoes and belts.

Storage: Keep storage area away from work areas. Store away from incompatible materials (see Section 10). Do not store in aluminum, copper, brass or other copper alloy containers.
## Section 8: Exposure Controls and Personal Protection

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>ACGIH TLV (8-hr. TWA) (mg/m³)</th>
<th>U.S. OSHA PEL (8-hr. TWA) (mg/m³)</th>
<th>Ontario (Canada) TWAEV (mg/m³)</th>
<th>UK OEL (8-hr. TWA) (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDEA</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Trade Secret Alkanolamine</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>

**Engineering Controls:** Good general ventilation is normally sufficient. In places where vapors or mists of this material are created, local exhaust ventilation is recommended. Ventilation system should be made of corrosion-resistant material.

**Hygiene Measures:** Remove contaminated clothing promptly. Keep contaminated clothing in closed containers; discard or launder before rewearig. Do not eat, drink or smoke in work areas. Wash hands thoroughly and promptly after handling this material.

**Personal Protection**

**Respiratory Protection:** Respiratory protection should not be necessary unless the product is heated to release vapors or a mist is created. If airborne vapor or mist exposure is likely wear a NIOSH/MSHA approved full-face mask, self-contained breathing apparatus.

**Skin Protection:** Wear chemical protective gloves made of butyl rubber, neoprene, nitrile rubber or Viton™. Wear clean, body-covering coveralls. Where prolonged or frequently repeated contact could occur, wear impervious body-covering clothing and chemical protective boots.

**Eye Protection:** Wear chemical safety goggles. If splashing is possible wear a face shield. If mists or vapors are present, wear a NIOSH/MSHA approved full-face mask, self-contained breathing apparatus.

**Other:** Have a safety shower and eye-wash fountain readily available in the immediate work area.

## Section 9: Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Vapor Pressure: (mm Hg @ 20°C)</th>
<th>&lt;1 mmHg @ 25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Appearance:** Colorless to pale yellow, viscous

**Vapor Density: (Air = 1)** >1

**pH:** 13.2

**Solubility in Water:** Complete

**Specific Gravity:** 1.001 @ 25°C

**Water / Oil distribution coefficient:** Not available

**Boiling Point:** 98.3°C (209°F)

**Odor Type:** Amine odor

**Freezing Point:** Not available

**Evaporation Rate:** (n-Butyl Acetate = 1) Not available

**Viscosity:** Not available
Section 10: Stability and Reactivity

**Stability:** Stable under normal temperature and pressure.

**Incompatible Materials and Conditions to Avoid:**
- Product can decompose at elevated temperatures.
- Avoid direct sunlight.
- Avoid contact with nitriles, strong acids, strong oxidizing agents and halogenated hydrocarbons.
- Do not store in containers made of aluminum, copper, brass or other copper alloys.

**Hazardous Decomposition Products:** Decomposition products may include nitrogen oxides, ammonia, irritating aldehydes and ketones. Hazardous decomposition products depend upon temperature, air supply and the presence of other materials.

**Hazardous Polymerization:** Mixing with nitrite containing materials may cause nitrosamine formation.

**Other Reactivity Concerns:** Contact with nitrosating agents, under acidic conditions such as nitrous acid, nitrite or nitrogen oxides, can form nitrosamines some of which are potent carcinogens.

Heating above 60°C in aluminum can result in corrosion and generation of flammable hydrogen gas.

Section 11: Toxicological Information

**Carcinogenicity:** The table below indicates whether or not each agency has listed each ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDEA</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Trade Secret Alkanolamine</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**Carcinogenicity Designations:**
- ACGIH: American Conference of Governmental Industrial Hygienists
- IARC: International Agency for Research on Cancer
- NTP: National Toxicity Program
- OSHA: Occupational Safety and Health Administration

**Acute Toxicity Data:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>LD&lt;sub&gt;50&lt;/sub&gt; Oral (mg/kg)</th>
<th>LD&lt;sub&gt;50&lt;/sub&gt; Dermal (mg/kg)</th>
<th>LC&lt;sub&gt;50&lt;/sub&gt; Inhalation (mg/m³, 4 hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDEA</td>
<td>1,945 (rat)</td>
<td>5,990 (rabbit)</td>
<td>Not available</td>
</tr>
<tr>
<td>Trade Secret Alkanolamine</td>
<td>&gt; 500 (rat, mouse)</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>
Irritation: Severely irritating to eyes, skin and mucous membranes.

Sensitization: Not available

Neurological Effects: Not available

Teratogenicity: Not available

Reproductive Toxicity: Not available

Mutagenicity (Genetic Effects): Not mutagenic to bacteria in a Bacterial Reverse Mutation Assay, on the trade secret substance.

Toxicologically Synergistic Materials: Alkanolamine ingredients in this product may react with nitrites, under acid conditions to form nitrosamines some of which are potent carcinogens.

Section 12: Ecological Information

Ecotoxicity: Toxicity to aquatic organisms is reported to be low. MDEA: 96 hour LC₅₀ for *Salmo giardneri* >700 mg/L. Trade Secret Ingredient: 96 hour LC₅₀ for a freshwater fish >250mg/L

Mobility: Potential for mobility in soil is high (0< Koc <50)

Persistence and degradability: Product is expected to biodegrade readily under aerobic conditions.

Bioaccumulative potential: Bioconcentration potential is low (BCF <100; and log Pₒₕ <3)

Germany; Water Hazard Classes: MDEA is in Hazard class 1, low hazard to waters.

Other: For detailed Ecological data, write to the address in Section 1 or call INEOS Oxide’s Customer Information Center at (866) 865-4767.

Section 13: Disposal Considerations

Waste Disposal Method: DO NOT dump into any sewers, on the ground or into any body of water. Store material for disposal as indicated in Section 7 Handling and Storage. For unused, uncontaminated product, the preferred options include sending to a licensed, permitted recycler, reclamer, incinerator or other thermal destruction device.

USA: Dispose of in accordance with local, state and federal laws and regulations. RCRA: None listed

Canada: Dispose of in accordance with local, provincial and federal laws and regulations.

Europe: Waste must be disposed of in accordance with relevant EU Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

Other: Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. INEOS Oxide HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2.

As a service to its customers, INEOS Oxide can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone INEOS Oxide’s Customer Information Center at (866) 865-4767.
Section 14: Transport Information


DOT Proper Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S. (Alkanolamine)

DOT Hazard Classification:
- Primary: 8
- Secondary:

Product Identification Number: UN2735

Packing Group: II

Reportable Quantity for US Shipments: None

DOT Special Provisions: None

DOT Packaging Exceptions: None

DOT Non-bulk Packaging: None

DOT Bulk Packaging: None

Canadian Transportation of Dangerous Goods (TDG)

TDG Proper Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S. (Alkanolamine)

TDG Hazard Classification: 8

Product Identification Number: UN2735

Packing Group: II

ADR/RID:

AMINES, LIQUID, CORROSIVE, N.O.S. (Alkanolamine), 8, UN2735, PGII

IMDG:

AMINES, LIQUID, CORROSIVE, N.O.S. (Alkanolamine), 8, UN2735, PGII

Marine Pollutants: None

ICAO/IATA:

AMINES, LIQUID, CORROSIVE, N.O.S. (Alkanolamine), 8, UN2735, PGII

IATA Packing Instructions:

- Passenger/Cargo: 808
- Cargo Only: 812
- Limited Quantity: Y808

Maximum Net Quantity per Package:

- Passenger/Cargo: 1L
- Cargo Only: 30 L
- Limited Quantity: 0.5 L

Other: For regulatory information regarding transportation, if required, consult product shipping papers, or your INEOS Oxide representative.
Section 15: Regulatory Information

HMIS and NFPA Hazard Rating:

<table>
<thead>
<tr>
<th>Category</th>
<th>HMIS</th>
<th>NFPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

USA

TSCA Status: All ingredients in this product are listed on the TSCA inventory.

SARA Title III:
- Sec. 302/304: None of the chemicals in this product have a TPQ.
- Sec. 311/312: Immediate Health Hazard; Delayed Health Hazard.
- Sec. 313: None
- CERCLA: None

Right to Know: None of the ingredients in this product are found on any state right to know lists.

Clean Air Act: None

Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances, Priority Pollutants or Toxic Pollutants under the CWA.

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification: D2B – Material Causing Other Toxic Effects (toxic) – due to eye, respiratory and skin irritation. E – Corrosive

NSNR Status (New Substance Notification Regulations):
All ingredients are listed on Canada’s Domestic Substances List (DSL).

NPRI Substances (National Pollutant Release Inventory):
There are no NPRI reportable substances in this product.

EU Classification:

Symbol:

\[\text{Harmful} \quad \text{Corrosive}\]


Safety Phrases: S24/25: Avoid contact with skin and eyes. S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
Section 16: Other Information

| Full Text of R-phrases appearing in Section 2: | R22: Harmful if swallowed.  
| Text of classifications appearing in Section 2: | R34: Causes burns.  
| Xi – Irritant | 
| Xn – Harmful | 
| C - Corrosive | 

Preparation Information:

Prepared by: LEHDER Environmental Services Limited  
704 Mara Street, Suite 210  
Pt. Edward, ON  
N7V 1X4  
www.lehder.com

Phone: (519) 336-4101

Preparation date: January 7, 2005

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