

Material Safety Data Sheet

| HAZARD WARNINGS | RISK PHRASES | PROTECTIVE CLOTHING |
|---|---|---|
|  | Combustible material; avoid heat and sources of ignition. Harmful compound, minimize exposure. Hygroscopic -- keep container tightly sealed. Irritating to skin, eyes, and the respiratory system. POSSIBLE MUTAGEN. MINIMIZE EXPOSURE. |  |

Section I. Chemical Product and Company Identification

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| Chemical Name | N,N-Diethylhydroxylamine (ca.85% in water, ca. 8.6mol/L) | | |
| Catalog Number | D1178 | Supplier | TCI America 9211 N. Harborage St. Portland OR 1-800-423-8616 |
| Synonym | Not available. | | |
| Chemical Formula | C ₄ H ₁₁ NO | | |
| CAS Number | 3710-84-7 7732-18-5 (water) | In case of Emergency Call Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International) | |

Section II. Composition and Information on Ingredients

| Chemical Name | CAS Number | Percent (%) | TLV/PEL | Toxicology Data |
|--|-----------------------------------|-------------------------------------|---|---|
| N,N-Diethylhydroxylamine (ca.85% in water, ca. 8.6mol/L) | 3710-84-7 7732-18-5 (water) | ca. 85.0 % ca. 15.0 % (Water) | This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen. | Rat LD ₅₀ (oral) 2190 mg/kg Rabbit LD ₅₀ (dermal) 1300 mg/kg Guinea Pig LD ₅₀ (dermal) 100 uL/kg Rat LC ₅₀ (inhalation) 3140 ppm (water) Rat LD ₅₀ (oral) >90 mL/kg Mouse LD ₅₀ (intraperitoneal) 190 gm/kg Mouse LD ₅₀ (intravenous) 25 gm/kg |

Section III. Hazards Identification

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| Acute Health Effects | Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |
| Chronic Health Effects | CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Reproductive Effects. Rat TDLo Parenteral 180 mg/kg, male 1 day prior to mating TOXIC Effects: Effects on Fertility - Pre-implantation mortality Rat TDLo Parenteral 18 mg/kg, male 1 day prior to mating TOXIC Effects: Effects on Fertility - Post-implantation mortality |

Section IV. First Aid Measures

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| Eye Contact | Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention. |
| Skin Contact | In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention. |
| Inhalation | If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve. |
| Ingestion | INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. |

Section V. Fire and Explosion Data

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| Flammability | Combustible. | Auto-Ignition | Not available. |
| Flash Points | 45°C (113°F). | Flammable Limits | LOWER: 1.9% UPPER: 10% |
| Combustion Products | These products are toxic carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂). | | |
| Fire Hazards | Not available. | | |
| Explosion Hazards | Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. | | |
| Fire Fighting Media and Instructions | Combustible liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations. | | |

Section VI. Accidental Release Measures

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| Spill Cleanup Instructions | Combustible material. Harmful material. Irritating material. Hygroscopic material. Possible mutagenic material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal. |
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Section VII. Handling and Storage

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| Handling and Storage Information | COMBUSTIBLE. HARMFUL. IRRITANT. HYGROSCOPIC. POSSIBLE MUTAGEN. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray. Always store away from incompatible compounds such as oxidizing agents, acids. |
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Section VIII. Exposure Controls/Personal Protection

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| Engineering Controls | Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location. |
| Personal Protection | Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent. |
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| Exposure Limits | This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen. |

Section IX. Physical and Chemical Properties

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| Physical state @ 20°C | Liquid. (Clear, colorless.) | Solubility | Not available. |
| Specific Gravity | 0.87 (water=1) | | |
| Molecular Weight | C ₄ H ₁₁ NO=89.14 H ₂ O=18.02 (water) | Partition Coefficient | Not available. |
| Boiling Point | 125 to 130 °C (257 to 266 °F) 100 °C (212 °F) (water) | Vapor Pressure | 4 mmHg (@ 20 °C) |
| Melting Point | -26 to -25 °C (-14.8 to -13 °F) | Vapor Density | 3.07 (Air = 1) |
| Refractive Index | 1.42 | Volatility | Not available. |
| Critical Temperature | Not available. | Odor | Not available. |
| Viscosity | Not available. | Taste | Not available. |

Section X. Stability and Reactivity Data

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| Stability | This material is stable if stored under proper conditions. (See Section VII for instructions) |
| Conditions of Instability | Avoid excessive heat and light. |
| Incompatibilities | Reactive with strong oxidizing agents, strong acids. |

Section XI. Toxicological Information

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| RTECS Number | NC3500000 ZC0110000 (Water) |
| Routes of Exposure | Eye Contact. Ingestion. Inhalation. |
| Toxicity Data | Rat LD ₅₀ (oral) 2190 mg/kg Rabbit LD ₅₀ (dermal) 1300 mg/kg Guinea Pig LD ₅₀ (dermal) 100 uL/kg Rat LC ₅₀ (inhalation) 3140 ppm (water) Rat LD ₅₀ (oral) >90 mL/kg Mouse LD ₅₀ (intraperitoneal) 190 gm/kg Mouse LD ₅₀ (intravenous) 25 gm/kg |
| Chronic Toxic Effects | CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY : Reproductive Effects. Rat TDLo Parenteral 180 mg/kg, male 1 day prior to mating TOXIC Effects: Effects on Fertility - Pre-implantation mortality Rat TDLo Parenteral 18 mg/kg, male 1 day prior to mating TOXIC Effects: Effects on Fertility - Post-implantation mortality |
| Acute Toxic Effects | Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |

Section XII. Ecological Information

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| Ecotoxicity | Not available. |
| Environmental Fate | Not available. |

Section XIII. Disposal Considerations

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| Waste Disposal | Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance. |
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Section XIV. Transport Information

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| DOT Classification | DOT Class 3: Flammable liquid |
| PIN Number | UN1993 |
| Proper Shipping Name | Flammable liquid, n.o.s. |
| Packing Group (PG) | III |
| DOT Pictograms |  |

Section XV. Other Regulatory Information and Pictograms

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| TSCA Chemical Inventory (EPA) | This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list. |
| WHMIS Classification (Canada) | CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). On DSL |
| EINECS Number (EEC) | 223-055-4 231-791-2 (water) |
| EEC Risk Statements | R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin. |
| Japanese Regulatory Data | ENCS No. 2-190 |

Section XVI. Other Information**Version 1.0****Validated on 9/11/2007.****Printed 9/11/2007.****Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.

Printed 9/11/2007.