

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p>Flammable material; avoid heat and sources of ignition. Corrosive to eyes and skin on contact. Harmful compound, minimize exposure. Lachrymator. Environmental hazard. This material is toxic to aquatic organisms. POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE. Air sensitive material. May develop pressure. Store under argon. Refrigerate.</p>	

Section I. Chemical Product and Company Identification

Chemical Name	Dimethylamine (ca. 11% in Ethanol, ca. 2.0mol/L)		
Catalog Number	D3936	Supplier	TCI America 9211 N. Harborage St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	C ₂ H ₇ N		
CAS Number	124-40-3 (Dimethylamine) 64-17-5 (Ethanol)	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
Dimethylamine (ca. 11% in Ethanol, ca. 2.0mol/L)	124-40-3 (Dimethylamine) 64-17-5 (Ethanol)	ca. 11.0 ca. 89.0	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.	(Dimethylamine) Rat LD ₅₀ (oral) 698 mg/kg Mouse LD ₅₀ (oral) 316 mg/kg Rat LD ₅₀ (inhalation) 3 gm/m ³ /2H (Ethanol) Rat LD ₅₀ (oral) 7060 mg/kg Mouse LD ₅₀ (oral) 3450 mg/kg Rat LD ₅₀ (inhalation) 20000 ppm/10H

Section III. Hazards Identification

Acute Health Effects	<p>Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. (Ethanol) Mouse TD Oral 400 gm/kg for 57 weeks intermittent TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Gastrointestinal - Tumors Mouse TDLo Oral 320 mg/kg for 50 weeks intermittent TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Liver - Tumors Blood - Lymphomas including Hodgkin's disease Mouse TDLo Rectal 120 gm/kg for 18 weeks intermittent TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Gastrointestinal - Tumors Liver - Tumors DEVELOPMENTAL TOXICITY: Reproductive effects. (Ethanol) Rat TDLo Intraperitoneal 600 mg/kg, female 8-15 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Post-implantation mortality Effects on Embryo or Fetus - Extra embryonic structures Effects on Embryo or Fetus - Fetotoxicity Rat TDLo Oral 135 gm/kg, female 1 day of pregnancy to 7 days after birth TOXIC EFFECTS: Effects on Newborn - Behavioral Effects on Newborn - Physical Rat TDLo Oral 47 mg/kg, female 1-21 days of pregnancy TOXIC EFFECTS:</p>

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(ca. 11% in Ethanol, ca. 2.0mol/L)

Specific Developmental Abnormalities - Endocrine system
 Effects on Newborn - Delayed effects
 Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section IV. First Aid Measures

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	DO NOT INDUCE VOMITING. 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

Flammability	Flammable.	Auto-Ignition	401 °C (753.8 °F) (Dimethylamine) 363 °C (685.4 °F) (Ethanol)
Flash Points	-6.7°C (19.9°F) (Dimethylamine) 14°C (57.2°F) (Ethanol)	Flammable Limits	LOWER: 2.8% UPPER: 14.4% (Dimethylamine) LOWER: 3.3% UPPER: 19% (Ethanol)
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	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Consult with local fire authorities before attempting large scale fire-fighting operations.		


Section VI. Accidental Release Measures

Spill Cleanup Instructions	Flammable material. Corrosive material. Harmful material. Lachrymatory material. Environmentally hazardous material. Possibly carcinogenic material. Air sensitive 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 get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. 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

Handling and Storage Information	FLAMMABLE. CORROSIVE. HARMFUL. LACHRYMATOR. ENVIRONMENTAL HAZARD. POSSIBLE CARCINOGEN. AIR SENSITIVE. MAY DEVELOP PRESSURE. STORE UNDER ARGON. REFRIGERATE. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids.
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Section VIII. Exposure Controls/Personal Protection

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	Face shield. 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.
Exposure Limits	 This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Not available.
Specific Gravity	0.68 (water=1) (Dimethylamine) 0.79 (water=1) (Ethanol)		
Molecular Weight	C ₂ H ₇ N = 45.08 (Dimethylamine) C ₂ H ₆ O = 46.07 (Ethanol)	Partition Coefficient	LOG P _{ow} : -0.2 (Dimethylamine) LOG P _{ow} : -0.32 (Ethanol)
Boiling Point	7°C (44.6°F) (Dimethylamine) 78°C (172.4°F) (Ethanol)	Vapor Pressure	170.2 kPa (@ 20°C) (Dimethylamine) 5.8 kPa (@ 20°C) (Ethanol)
Melting Point	-93°C (-135.4°F) (Dimethylamine)	Vapor Density	1.55 (Air = 1) (Dimethylamine) 1.6 (Air = 1) (Ethanol)
Refractive Index	Not available.	Volatility	Not available.

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Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

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

Section XI. Toxicological Information

RTECS Number	IP8750000 (Dimethylamine) KQ6300000 (Ethanol)		
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.		
Toxicity Data	(Dimethylamine) Rat LD ₅₀ (oral) 698 mg/kg Mouse LD ₅₀ (oral) 316 mg/kg Rat LD ₅₀ (inhalation) 3 gm/m ³ /2H (Ethanol) Rat LD ₅₀ (oral) 7060 mg/kg Mouse LD ₅₀ (oral) 3450 mg/kg Rat LD ₅₀ (inhalation) 20000 ppm/10H		
Chronic Toxic Effects	<p>CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. (Ethanol) Mouse TD Oral 400 gm/kg for 57 weeks intermittent TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Gastrointestinal - Tumors Mouse TDLo Oral 320 mg/kg for 50 weeks intermittent TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Liver - Tumors Blood - Lymphomas including Hodgkin's disease Mouse TDLo Rectal 120 gm/kg for 18 weeks intermittent TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Gastrointestinal - Tumors Liver - Tumors DEVELOPMENTAL TOXICITY: Reproductive effects. (Ethanol) Rat TDLo Intraperitoneal 600 mg/kg, female 8-15 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Post-implantation mortality Effects on Embryo or Fetus - Extra embryonic structures Effects on Embryo or Fetus - Fetotoxicity Rat TDLo Oral 135 gm/kg, female 1 day of pregnancy to 7 days after birth TOXIC EFFECTS: Effects on Newborn - Behavioral Effects on Newborn - Physical Rat TDLo Oral 47 mg/kg, female 1-21 days of pregnancy TOXIC EFFECTS: Specific Developmental Abnormalities - Endocrine system Effects on Newborn - Delayed effects Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.</p>		
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.		

Section XII. Ecological Information

Ecotoxicity	Not available.		
Environmental Fate	Dimethylamine's production and use in water treatment, as a solvent in the production of dimethylformamide and dimethylacetamide, and an acid gas absorbent and gasoline stabilizer, may result in its release to the environment through various waste streams. Dimethylamine occurs naturally in many foods and plants and is a volatile component of cigarette smoke and animal waste. If released to air, a vapor pressure of 1,520 mm Hg at 25 deg C indicates dimethylamine will exist solely as a gas in the atmosphere. Gas-phase dimethylamine will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 6 hours. Dimethylamine does not contain chromophores that absorb at wavelengths 290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight. If released to soil, dimethylamine is expected to have moderate mobility based upon an average Koc value of 434.9 calculated from data of 5 soils. The pKa of dimethylamine is 10.73, indicating that this compound will exist almost entirely in the cation form in the environment ; volatilization from moist soil surfaces is not expected to be an important fate process based upon its cationic state. Dimethylamine may volatilize from dry soil surfaces based upon its vapor pressure. Dimethylamine was biodegraded 69-89% in three Saskatchewan soils during a 7 day incubation period. If released into water, dimethylamine is expected to adsorb to suspended solids and sediment based upon the Koc of 508 in lake sediment. Dimethylamine is expected to biodegrade in water surfaces based on a half-life of 1.6 days in Vistula River water (Warsaw,		

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Poland) following a 0.3 day lag period. A pKa of 10.73 indicates dimethylamine will exist almost entirely in the cation form at pH values of 5 to 9 and therefore volatilization from water surfaces is not expected to be an important fate process. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to dimethylamine may occur through inhalation and dermal contact with this compound at workplaces where dimethylamine is produced or used. Monitoring data indicate that the general population may be exposed to dimethylamine via inhalation of ambient air, ingestion of food, use of tobacco products, and dermal contact with this compound and other products containing dimethylamine.

Ethanol's production and use in alcoholic beverages, as a solvent, fuel additive, in the manufacture of denatured alcohol, pharmaceuticals (rubbing compounds, tonics, lotions, colognes), in perfumery, and organic synthesis may result in its release to the environment through various waste streams; its use as a fungicide and plant regulator will result in its direct release to the environment. Ethanol has been identified as a natural emission product from various plants, fermentation product and as a biological decomposition product of wastes and sewage. If released to the atmosphere, an extrapolated vapor pressure of 59.3 mm Hg at 25 deg C indicates that ethanol will exist solely in the vapor phase. Vapor phase ethanol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 5 days. If released to soil, ethanol is expected to have very high mobility based upon an estimated Koc of 1. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 5X10⁻⁶ atm-cu m/mole. Ethanol may also volatilize from dry soils based upon its vapor pressure. Biodegradation is expected to occur rapidly in the environment based on numerous screening tests using different types of inocula and incubation periods. Ethanol was degraded with half-lives on the order of a few days using microcosms constructed with a low organic sandy soil and groundwater, indicating it is unlikely to be persistent in the environment. If released into water, ethanol is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 3 and 39 days, respectively. An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis of ethanol and photolysis in sunlit surface waters are not expected since ethanol lacks functional groups that are susceptible to hydrolysis or photolysis under environmental conditions. Occupational exposure to ethanol may occur through inhalation and dermal contact with this compound at workplaces where ethanol is produced or used. The general population is directly exposed to ethanol through the consumption of alcoholic beverages and other products that contain ethanol. Monitoring data also indicate that the general population may be exposed to ethanol via inhalation of ambient air.

Section XIII. Disposal Considerations

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.

Section XIV. Transport Information

DOT Classification DOT CLASS 3: Flammable liquid
DOT CLASS 8: Corrosive material

PIN Number UN2924

Proper Shipping Name Flammable liquid, corrosive, n.o.s.

Packing Group (PG) II

DOT Pictograms



Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
CLASS E: Corrosive liquid.
On DSL.

EINECS Number (EEC) 204-697-4 (Dimethylamine)
200-578-6 (Ethanol)

EEC Risk Statements R11- Highly flammable.
R18- In use, may form flammable/explosive vapor-air mixture.
R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
R34- Causes burns.
R45- May cause cancer.
R51- Toxic to aquatic organisms.

Japanese Regulatory Data ENCS No. 2-134 (Dimethylamine)
ENCS No. 2-202 (Ethanol)

Section XVI. Other Information

Version 1.0
Validated on 1/24/2011.
Printed 1/24/2011.

Notice to Reader

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