

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	Harmful compound, minimize exposure. Irritating to skin, eyes, and the respiratory system. POSSIBLE MUTAGEN. MINIMIZE EXPOSURE. CARCINOGEN. MINIMIZE EXPOSURE.	

Section I. Chemical Product and Company Identification

Chemical Name	Ethionamide		
Catalog Number	E0695	Supplier	TCI America 9211 N. Harbortgate St. Portland OR 1-800-423-8616
Synonym	4-Pyridinecarbothioamide, 2-ethyl- (CA INDEX NAME); 2-Ethylpyridine-4-carbothioamide; 2-Ethylthioisonicotinamide		
Chemical Formula	C ₈ H ₁₀ N ₂ S		
CAS Number	536-33-4	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
Ethionamide	536-33-4	Min. 98.0 (HPLC)	This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen. This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 1320 mg/kg Rat LD ₅₀ (intraperitoneal) 490 mg/kg Rat LD ₅₀ (subcutaneous) 1350 mg/kg

Section III. Hazards Identification

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 : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Mouse TDLo Oral 24 gm/kg for 50 weeks intermittent TOXIC EFFECTS: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Endocrine - Thyroid tumors DEVELOPMENTAL TOXICITY: Reproductive effects. Woman TDLo Unreported 600 mg/kg female 36-39 weeks of pregnancy TOXIC EFFECTS: Specific Developmental Abnormalities - Central nervous system Specific Developmental Abnormalities - Musculoskeletal system Specific Developmental Abnormalities - Cardiovascular (circulatory) system Rat TDLo Oral 1800 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Embryo or Fetus - Fetal death Mouse TDLo Oral 450 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Post-implantation mortality Effects on Fertility - Litter size Specific Developmental Abnormalities - Other developmental abnormalities Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

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	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.

Continued on Next Page

Emergency phone number (800) 424-9300

Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	Not available.	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂), sulfur oxides (SO _x).		
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	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Harmful material. Irritating material. Possibly mutagenic material. Carcinogenic material. Use a shovel to put the material into a convenient waste disposal container. Finish cleaning the spill by rinsing any contaminated surfaces with copious amounts of water. Consult federal, state, and/or local authorities for assistance on disposal.
----------------------------	---

Section VII. Handling and Storage

Handling and Storage Information	HARMFUL. IRRITANT. POSSIBLE MUTAGEN. CARCINOGEN. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. Do not breathe dust.
----------------------------------	---

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	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.		
Personal Protection	Splash goggles. Lab coat. Dust 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 compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen. This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.		

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Solid. (Yellow crystal ~ crystalline powder.)	Solubility	Very soluble in pyridine. Soluble in dichloroethane, hot acetone. Slightly soluble in ethanol, methanol, propylene glycol. Very slightly soluble in water, ether.
Specific Gravity	1.35 (water=1)		
Molecular Weight	166.24	Partition Coefficient	Not available.
Boiling Point	167°C (332.6°F) @ 1 mmHg	Vapor Pressure	Not applicable.
Melting Point	162°C (323.6°F)	Vapor Density	Not available.
Refractive Index	Not available.	Volatility	Not available.
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.
Incompatibilities	Reactive with strong oxidizing agents.

Section XI. Toxicological Information

RTECS Number	NS0350000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 1320 mg/kg Rat LD ₅₀ (intraperitoneal) 490 mg/kg Rat LD ₅₀ (subcutaneous) 1350 mg/kg

Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Mouse TDLo Oral 24 gm/kg for 50 weeks intermittent TOXIC EFFECTS: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Endocrine - Thyroid tumors DEVELOPMENTAL TOXICITY: Reproductive effects. Woman TDLo Unreported 600 mg/kg female 36-39 weeks of pregnancy TOXIC EFFECTS: Specific Developmental Abnormalities - Central nervous system Specific Developmental Abnormalities - Musculoskeletal system Specific Developmental Abnormalities - Cardiovascular (circulatory) system Rat TDLo Oral 1800 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Embryo or Fetus - Fetal death Mouse TDLo Oral 450 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Post-implantation mortality Effects on Fertility - Litter size Specific Developmental Abnormalities - Other developmental abnormalities Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.
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

Ecotoxicity	Not available.
Environmental Fate	Not available.

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	Not a DOT controlled material (United States).
PIN Number	Not applicable.
Proper Shipping Name	Not applicable.
Packing Group (PG)	Not applicable.
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This product is NOT on the EPA Toxic Substances Control Act (TSCA) inventory. The following notices are required by 40 CFR 720.36 (C) for those products not on the inventory list: (i) These products are supplied solely for use in research and development by or under the supervision of a technically qualified individual as defined in 40 CFR 720.0 et seq. (ii) The health risks of these products have not been fully determined. Any information that is or becomes available will be supplied on an MSDS sheet.
WHMIS Classification (Canada)	CLASS D-2B: Material causing other toxic effects (TOXIC).
EINECS Number (EEC)	208-628-9
EEC Risk Statements	20/21/22- Harmful by inhalation, in contact with skin and if swallowed. 36/37/38- Irritating to eyes, respiratory system and skin. 45- May cause cancer. 46- May cause heritable genetic damage. 47- May cause birth defects.
Japanese Regulatory Data	ENCS No. 9-215

Section XVI. Other Information**Version 1.0****Validated on 9/16/2008.****Printed 9/16/2008.****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 9/16/2008.