

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	Environmental hazard. This material is toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment. Harmful compound, minimize exposure. Irritating to skin, eyes, and the respiratory system. CARCINOGEN. MINIMIZE EXPOSURE. TERATOGEN. MINIMIZE EXPOSURE.	   

Section I. Chemical Product and Company Identification

Chemical Name	3-Amino-1,2,4-triazole		
Catalog Number	A0432	Supplier	TCI America 9211 N. Harborage St. Portland OR 1-800-423-8616
Synonym	1H-1,2,4-Triazol-5-amine (CA INDEX NAME); 2-Amino-1,2,4-triazole; Amitrole		
Chemical Formula	C ₂ H ₄ N ₄		
CAS Number	61-82-5	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
3-Amino-1,2,4-triazole	61-82-5	Min. 98.0 (T)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 1100 mg/kg Rat LD ₅₀ (dermal) >10000 mg/kg Mouse LD ₅₀ (intraperitoneal) 200 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. Rat TD Oral 105 gm/kg for 60 weeks continuous TOXIC EFFECTS: Tumorigenic - Carcinogenic by RTECS criteria Endocrine - Thyroid tumors Rat TD Oral 3670 mg/kg for 2 years continuous TOXIC EFFECTS: Tumorigenic - Neoplastic by RTECS criteria Endocrine - Thyroid tumors Mouse TD Oral 366 gm/kg for 26 weeks continuous TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Liver - Tumors DEVELOPMENTAL TOXICITY: Reproductive effects. Rat TDLo Oral 700 ug/kg female 22 days of pregnancy TOXIC EFFECTS: Specific Developmental Abnormalities - Endocrine system Mouse TDLo Oral 1935 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Embryo or Fetus - Fetotoxicity Effects on Embryo or Fetus - Fetal death Mouse TDLo Subcutaneous 4176 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Litter size Effects on Embryo or Fetus - Fetotoxicity Effects on Embryo or Fetus - Fetal death 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.

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).		
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	Environmentally hazardous material. Harmful material. Irritating material. Carcinogenic material. Teratogenic material. Use a shovel to put the material into a convenient waste disposal container. Consult federal, state, and/or local authorities for assistance on disposal.
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Section VII. Handling and Storage

Handling and Storage Information	ENVIRONMENTAL HAZARD. HARMFUL. IRRITANT. CARCINOGEN. TERATOGEN. 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 ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. 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	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 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. (White crystalline powder.)	Solubility	Soluble in water, methanol, ethanol, chloroform. Slightly soluble in ethyl acetate. Insoluble in ether, acetone.
Specific Gravity	1.14 (water=1)		
Molecular Weight	84.08	Partition Coefficient	LOG P _{ow} : -0.65
Boiling Point	Not available.	Vapor Pressure	0.001 Pa (@ 20°C)
Melting Point	155°C (311°F)	Vapor Density	Not available.
Refractive Index	Not available.	Volatility	Not available.
Critical Temperature	Not available.	Odor	Odorless.
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 oxidizing agents, acids, copper, iron and iron salts.

Section XI. Toxicological Information

RTECS Number	XZ3850000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 1100 mg/kg Rat LD ₅₀ (dermal) >10000 mg/kg Mouse LD ₅₀ (intraperitoneal) 200 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Rat TD Oral 105 gm/kg for 60 weeks continuous TOXIC EFFECTS: Tumorigenic - Carcinogenic by RTECS criteria Endocrine - Thyroid tumors Rat TD Oral 3670 mg/kg for 2 years continuous TOXIC EFFECTS: Tumorigenic - Neoplastic by RTECS criteria Endocrine - Thyroid tumors Mouse TD Oral 366 gm/kg for 26 weeks continuous TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Liver - Tumors DEVELOPMENTAL TOXICITY : Reproductive effects. Rat TDLo Oral 700 ug/kg female 22 days of pregnancy TOXIC EFFECTS: Specific Developmental Abnormalities - Endocrine system Mouse TDLo Oral 1935 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Embryo or Fetus - Fetotoxicity Effects on Embryo or Fetus - Fetal death Mouse TDLo Subcutaneous 4176 mg/kg female 6-14 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Litter size Effects on Embryo or Fetus - Fetotoxicity Effects on Embryo or Fetus - Fetal death 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	2-Amino-1,3,4-triazole's production may result in its release to the environment through various waste streams; its use as a non-selective herbicide used on annual grasses and broadleaf weeds will result in its direct release to the environment. If released to air, a vapor pressure of 4.4X10 ⁻⁷ mm Hg at 25 deg C indicates 2-amino-1,3,4-triazole will exist in both the vapor and particulate phases in the ambient atmosphere. Vapor-phase 2-amino-1,3,4-triazole 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 3 days. Particulate-phase 2-amino-1,3,4-triazole will be removed from the atmosphere by wet and dry deposition. If released to soil, 2-amino-1,3,4-triazole is expected to have high to very high mobility based upon Koc values of 11.6, 29.7, 20.2, and 51.2 measured in silty clay, sandy loam, sand, and silt soils, respectively. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 2.2X10 ⁻¹³ atm-cu m/mole. Aerobic biodegradation studies conducted under laboratory conditions and field dissipation studies indicate that 2-amino-1,3,4-triazole biodegrades in soils with a half-life of approximately 3 weeks. If released into water, 2-amino-1,3,4-triazole is not expected to adsorb to suspended solids and sediment in the water column based upon the Koc data. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. The half-life of 2-amino-1,3,4-triazole was reported as 57-74 days in aerobic aquatic degradation studies. 2-Amino-1,3,4-triazole did not hydrolyze or undergo photolysis in laboratory studies at pH 5,7, and 9, indicating that hydrolysis and photolysis are not important environmental fate processes for this compound.

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.
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Section XIV. Transport Information

DOT Classification	DOT CLASS 9: Miscellaneous	
PIN Number	UN3077	RQ = 10 (4.54)
Proper Shipping Name	Environmentally hazardous substance, solid, n.o.s.	
Packing Group (PG)	III	
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 D-2B: Material causing other toxic effects (TOXIC). On DSL.
EINECS Number (EEC)	200-521-5
EEC Risk Statements	R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin. R45- May cause cancer. R51- Toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. 5-602

Section XVI. Other Information

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Notice to Reader

TCl 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.