

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	Toxic compound, do not ingest or inhale. Avoid all contact with this material. POSSIBLE CARCINOGEN. MINIMIZE EXPOSURE. MUTAGEN. MINIMIZE EXPOSURE. Readily absorbed through skin. Irritating to skin, eyes, and the respiratory system. Harmful to aquatic organisms. Moisture sensitive material.	   

Section I. Chemical Product and Company Identification

Chemical Name	4-Nitroaniline		
Catalog Number	N0119	Supplier	TCl America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	CI 37035; Benzenamine, 4-Nitro- (9 CI)		
Chemical Formula	NO ₂ C ₆ H ₄ NH ₂		
CAS Number	100-01-6	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
4-Nitroaniline	100-01-6	Min. 99.0(T)	This chemical is classified as a possible carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.	Rat LD ₅₀ (oral) 750mg/kg Mouse LD ₅₀ (oral) 810mg/kg Guinea Pig LD ₅₀ (dermal) >500mg/kg

Section III. Hazards Identification

Acute Health Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Readily absorbed through skin. Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours. 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 : TUMORIGENIC EFFECTS: Mouse TDLo (oral) 51500mg/kg, 103 Weeks, intermittent. Toxic Effects: Tumorigenic- Equivocal tumorigenic agent by RTECS criteria. Liver- Angiosarcoma. Blood- Normocytic anemia. Mouse TDLo (oral) 51500mg/kg, 2 Years intermittent. Toxic Effects: Tumorigenic- Equivocal tumorigenic agent by RTECS criteria. Vascular- Tumors. DEVELOPMENTAL TOXICITY : REPRODUCTIVE EFFECTS: Rat TDLo (oral) 1764mg/kg, male, 14 Weeks prior to mating. Toxic Effects: Effects on Fertility- Female fertility index. Mouse TDLo (oral) 9600mg/kg, female 6-13 Days of pregnancy. Toxic Effects: Effects on Fertility- Litter size. Effects on Newborn- Live birth index. Effects on Newborn- Growth statistics. 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	165°C (329°F).	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	Toxic material. Possible carcinogenic material. Mutagenic material. Readily absorbed through skin. Irritating material. Harmful to aquatic organisms. Moisture sensitive material. Use a shovel to put the material into a convenient waste disposal container. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.
----------------------------	---

Section VII. Handling and Storage

Handling and Storage Information	TOXIC. POSSIBLE CARCINOGEN. MUTAGEN. READILY ABSORBED THROUGH SKIN. IRRITANT. HARMFUL TO AQUATIC ORGANISMS. MOISTURE SENSITIVE. 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, reducing agents, acids.
----------------------------------	---

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 possible carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Solid. (Yellow crystalline powder.)	Solubility	1g/1250ml water, 1g/45ml boiling water, 1g/25ml alcohol, 1g/30ml ether. Soluble in acetone, chloroform, benzene. Very soluble in methyl alcohol.
Specific Gravity	1.424 (water=1) @ 20°C	Partition Coefficient	K _{ow} = 1.39
Molecular Weight	138.12	Vapor Pressure	0.004mmHg @ 25°C
Boiling Point	332°C (629.6°F)	Vapor Density	4.77
Melting Point	148°C (298.4°F)	Volatility	Not available.
Refractive Index	Not available.	Odor	Ammonia-like.
Critical Temperature	Not available.	Taste	Burning sweet taste.
Viscosity	Not available.		

Continued on Next Page

Emergency phone number (800) 424-9300

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Moisture sensitive. Avoid excessive heat and light.
Incompatibilities	Reactive with strong oxidizing agents, strong reducing agents, strong acids, plastics, rubber. This product generates heat as it absorbs moisture or water.

Section XI. Toxicological Information

RTECS Number	BY7000000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (oral) 750mg/kg Mouse LD ₅₀ (oral) 810mg/kg Guinea Pig LD ₅₀ (dermal) >500mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : TUMORIGENIC EFFECTS: Mouse TDLo (oral) 51500mg/kg, 103 Weeks, intermittent. Toxic Effects: Tumorigenic- Equivocal tumorigenic agent by RTECS criteria. Liver- Angiosarcoma. Blood- Normocytic anemia. Mouse TDLo (oral) 51500mg/kg, 2 Years intermittent. Toxic Effects: Tumorigenic- Equivocal tumorigenic agent by RTECS criteria. Vascular- Tumors. DEVELOPMENTAL TOXICITY : REPRODUCTIVE EFFECTS: Rat TDLo (oral) 1764mg/kg, male, 14 Weeks prior to mating. Toxic Effects: Effects on Fertility- Female fertility index. Mouse TDLo (oral) 9600mg/kg, female 6-13 Days of pregnancy. Toxic Effects: Effects on Fertility- Litter size. Effects on Newborn- Live birth index. Effects on Newborn- Growth statistics. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Readily absorbed through skin. Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours. 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	Harmful to aquatic organisms.
Environmental Fate	4-Nitroaniline may be released to the environment from process and waste emissions involved in its production or use as a chemical intermediate and through stack emissions from hazardous waste incineration. 4-Nitroaniline has been detected in various samples of Rhine River water, wastewater effluent, incinerator stack effluent, and in waste landfill leachate. If released to soil, 4-nitroaniline will undergo a covalent chemical bonding with humic materials which can result in its chemical alteration to a latent form and prevent leaching. However, based on experimental and estimated Koc values, 4-nitroaniline has high to very high soil mobility. Photodegradation may occur on soil surfaces exposed to sunlight. Based on its Henry's Law constant and its vapor pressure, 4-nitroaniline is not expected to volatilize from moist or dry soils. If released to water, 4-nitroaniline will covalently bind with humic materials in the water column and sediments. Photodegradation in the aquatic environment may be possible. Aquatic hydrolysis, volatilization, and bioconcentration are not environmentally important. Various biological screening tests suggest that 4-nitroaniline is generally resistant to biodegradation. If released to the atmosphere, 4-nitroaniline will react rapidly (estimated half-life of 1.2 days) with sunlight-produced hydroxyl radicals. Humans will be primarily exposed to 4-nitroaniline by dermal contact or inhalation in occupational settings. (HSDB)

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	CLASS 6.1: Toxic material.
PIN Number	UN1661
Proper Shipping Name	Nitroanilines
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 D-1B: Material causing immediate and serious toxic effects (TOXIC).
EINECS Number (EEC)	202-810-1
EEC Risk Statements	R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin. 33- Danger of cumulative effects. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects. R52- Harmful to aquatic organisms.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

Version 1.0
Validated on 4/12/2004.
Printed 2/26/2005.

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.