

SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.2
Creation Date: July 15, 2019
Revision Date: August 08, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name 2-Amino-4-Nitrotoluene

1.2 Other means of identification

Product number CWLT600029

Other names Benzenamine, 2-methyl-5-nitro-; 2-methyl-5-nitrophenylamine; 2-Methyl-5-nitrobenzolamin

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.

Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.

Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou

Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175

Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Acute toxicity - Category 3, Oral

Acute toxicity - Category 3, Dermal

Acute toxicity - Category 3, Inhalation

Carcinogenicity, Category 2

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 3

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H301 Toxic if swallowed

H311 Toxic in contact with skin

H331 Toxic if inhaled

H351 Suspected of causing cancer

H412 Harmful to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P203 Obtain, read and follow all safety instructions before use.

P273 Avoid release to the environment.

Response	P301+P316 IF SWALLOWED: Get emergency medical help immediately. P321 Specific treatment (see ... on this label). P330 Rinse mouth. P302+P352 IF ON SKIN: Wash with plenty of water/... P316 Get emergency medical help immediately. P361+P364 Take off immediately all contaminated clothing and wash it before reuse. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P318 IF exposed or concerned, get medical advice.
Storage	P405 Store locked up. P403+P233 Store in a well-ventilated place. Keep container tightly closed.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
2-Amino-4-Nitrotoluene	5-nitro-o-toluidine	99-55-8	202-765-8	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

4.2 Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this chemical include methemoglobinemia and respiratory distress. **ACUTE/CHRONIC HAZARDS:** This compound is an irritant and an experimental carcinogen. It may be absorbed through the skin. When heated to decomposition this compound emits toxic fumes of carbon monoxide, carbon dioxide and nitrogen oxides. (NTP, 1992)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Aromatic hydrocarbons and related compounds

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

This chemical may burn but does not easily ignite. Use dry chemical, carbon dioxide, water spray, or alcohol or polymer foam extinguishers. Poisonous gases including nitrogen oxides are produced in fire. If materials or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors, or shows any signs of deforming), withdraw immediately to a secure position. If employees are expected to fight fires, they must be trained and equipped.

5.2 Specific hazards arising from the chemical

Flash point data for this chemical are not available; however, it is probably combustible. (NTP, 1992)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Evacuate persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Use HEPA vacuum or wet method to reduce dust during clean-up. Do not dry sweep. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area of spill or leak after clean-up is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations. If employees are required to clean-up spills, they must be properly trained and equipped.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Prior to working with this chemical you should be trained on its proper handling and storage. Store in tightly closed containers in a cool, well ventilated area away from oxidizers, strong acids, acid chlorides, acid anhydrides, chloroformates. Where possible, automatically pump liquid from drums or other storage containers to process containers. Sources of ignition such as smoking and open flames are prohibited where this chemical is handled, used, or stored. Metal containers involving the transfer of 5 gallons or more of this chemical should be grounded and bonded. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters. Use only non-sparking tools and equipment, especially when opening and closing containers of this chemical. Wherever this chemical is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Component	5-nitro-o-toluidine			
CAS No.	99-55-8			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Austria		0,5		2
Belgium		1		
Canada - Ontario		1 (1)		
Switzerland	0,08	0,5		
Remarks				
Austria	TRK value (based on technical feasibility)			
Canada - Ontario	(1) Inhalable aerosol			

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	PHYSICAL DESCRIPTION: Bright yellow powder. (NTP, 1992)
Colour	Yellow monoclinic prisms
Odour	no data available
Melting point/freezing point	> 107 - < 108 °C.
Boiling point or initial boiling point and boiling range	120°C/11mmHg(lit.)
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	157 °C.
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	13.5 [ug/mL]
Partition coefficient n-octanol/water	log Pow = 1.87. Remarks:Other details not available.
Vapour pressure	0.001 mm Hg. Temperature:25 °C.
Density and/or relative density	1 g/cm ³ . Temperature:20 °C.
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Insoluble in water. This compound is sensitive to moisture, light, or prolonged exposure to air.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

5-NITRO-O-TOLUIDINE is incompatible with strong oxidizing agents, acids, acid chlorides, acid anhydrides and chloroformates. (NTP, 1992)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Oxidizers, strong acids, acid chlorides, acid anhydrides, chloroformates.

10.6 Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 574 mg/kg
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is limited evidence for the carcinogenicity of 5-nitro-ortho-toluidine in experimental animals. No data were available from studies in humans on the carcinogenicity of 5-nitro-ortho-toluidine. Overall evaluation: 5-Nitro-ortho-toluidine is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50; Species: Pimephales promelas (Fathead minnow, juvenile, length 2.4 cm, weight 0.28 g); Conditions: freshwater, static, 20.3 deg C (19.5-22.0 deg C), pH 7.6 (6.0-9.2), hardness 29.6 mg/L CaCO₃ (12.0-43.0 mg/L), alkalinity 31.0 mg/L CaCO₃ (15.0-60.0 mg/L), dissolved oxygen 7.2 mg/L (2.8-9.4 mg/L); Concentration: 68800 ug/L for 96 hr (95% confidence interval: 64200-74200 ug/L) /95-99% purity
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea, first instar larvae); Conditions: freshwater, static, 20 deg C, pH 7.2-8.6, hardness 26 mg/L CaCO₃, alkalinity 45 mg/L CaCO₃, dissolved oxygen 8.7 mg/L (8.6-8.8 mg/L); Concentration: 22500 ug/L for 48 hr; Effect: intoxication, immobilization /formulated product
- Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green algae, log growth phase); Conditions: freshwater, static, 25 deg C, pH 6.0-7.5; Concentration: 101.5 uM for 96 hr (95% confidence interval: 59.4-175.5 uM); Effect: decreased population abundance /formulated product
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: 5-Nitro-o-toluidine was readily consumed in enrichment cultures using an inoculum from a munitions wastewater treatment plant(1). 5-Nitro-o-toluidine was reported to degrade 100% after 104 days in studies using activated sludge from a wastewater treatment plant with no previous exposure to nitroaromatic compounds, as well as in studies using inoculum from a plant that routinely treats dinitrotoluene-contaminated wastewater(2). Degradation products identified were 2,4-diaminotoluene, 4-nitrotoluene, and 6-nitroindazole(2).

12.3 Bioaccumulative potential

An estimated BCF of 5.5 was calculated in fish for 5-nitro-o-toluidine(SRC), using a log Kow of 1.87(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Koc values of 690 and 810 were reported for 5-nitro-o-toluidine in sewage sludge(1). According to a classification scheme(2), these Koc values suggest that 5-nitro-o-toluidine is expected to have low mobility in soil.

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: no data available

IMDG: no data available

IATA: no data available

14.2 UN Proper Shipping Name

ADR/RID: no data available

IMDG: no data available

IATA: no data available

14.3 Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: III (For reference only, please check.)

IMDG: III (For reference only, please check.)

IATA: III (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
5-nitro-o-toluidine	5-nitro-o-toluidine	99-55-8	202-765-8
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Not Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date August 08, 2025

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

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