

SAFETY DATA SHEETS

According to the UN GHS revision 10

Version: 1.1
Creation Date: July 15, 2024
Revision Date: March 23, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name 3-Nitroaniline

1.2 Other means of identification

Product number CCHM702147
Other names -

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
Specific target organ toxicity – repeated exposure, 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
H373 May cause damage to organs through prolonged or repeated exposure
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.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
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. P319 Get medical help if you feel unwell.
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
3-Nitroaniline	3-nitroaniline	99-09-2	202-729-1	≈ 99%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

4.2 Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound may include cyanosis and liver damage. When inhaled or ingested, this compound may cause headache, flushing of the face, difficult breathing, nausea, vomiting, weakness, drowsiness, irritability and dermatitis. Structurally similar chemicals may cause methemoglobinemia. **ACUTE/CHRONIC HAZARDS:** This chemical is a highly toxic irritant. It may be fatal if inhaled or swallowed. It causes eye and skin irritation. When heated to decomposition this compound emits toxic fumes of carbon monoxide, carbon dioxide and oxides of nitrogen. (NTP, 1992)

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

INHALATION: Fresh air, rest. Artificial respiration if indicated. Refer for medical attention. **SKIN:** Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention. **EYES:** First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position. Powder, water spray, foam, carbon dioxide.

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

Use water spray, powder, foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder.

6.2 Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder.

6.3 Methods and materials for containment and cleaning up

1. Ventilate area of spill. 2. For small quantities, sweep onto paper or other suitable material, place in an appropriate container & burn in a safe place (such as a fume hood). Large quantities may be reclaimed; however, if this is not practical, dissolve in a flammable solvent (such as alcohol) & atomize in a suitable combustion chamber equipped with an appropriate effluent gas cleaning device. Nitroaniline

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. NO contact with combustible substances. Closed system, dust explosion-proof electrical equipment and lighting. Prevent deposition of dust. 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

Separated from strong acids, strong oxidants, combustible substances, reducing agents and food and feedstuffs. Dry. Protect against physical damage to containers and prevent from moisture contacts.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

Component	3-nitroaniline			
CAS No.	99-09-2			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Finland	1	5,7	3 (1)	17 (1)
Latvia		0,1		
	Remarks			
Finland	(1) 15 minutes average value			

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 face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	PHYSICAL DESCRIPTION: Yellow needles or yellow powder. (NTP, 1992)
Colour	Yellow crystals from water
Odour	Burning sweet odor
Melting point/freezing point	114 °C
Boiling point or initial boiling point and boiling range	306 (broken down)
Flammability	Combustible. Many reactions may cause fire or explosion.
Lower and upper explosion limit/flammability limit	no data available
Flash point	196 °C
Auto-ignition temperature	no data available

Decomposition temperature	306°C
pH	no data available
Kinematic viscosity	no data available
Solubility	Insoluble in water
Partition coefficient n-octanol/water	log Kow = 1.37
Vapour pressure	1 mm Hg (119 °C)
Density and/or relative density	1.4
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

On combustion, forms toxic fumes of nitrogen oxides. Reacts with strong acids, strong oxidants and strong reducing agents. Reacts with organic materials in the presence of moisture. This generates fire hazard.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

Dust explosion possible if in powder or granular form, mixed with air. Thermal stability of this compound is reduced by various impurities. This compound may be sensitive to prolonged exposure to light. This compound may react explosively with ethylene oxide at 266° F. It is incompatible with acids (nitric, sulfuric), acid chlorides, acid anhydrides, chloroformates and strong oxidizing agents. (NTP, 1992). Unstable when heated.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Possibly explosive reaction with ethylene oxide at 130 deg C.

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral, SD strain (M), 540 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

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance may cause effects on the blood. This may result in the formation of methaemoglobin. Medical observation is indicated. The effects may be delayed. See Notes.

STOT-repeated exposure

The substance may have effects on the blood. This may result in the formation of methaemoglobin. See Notes.

Aspiration hazard

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50; Species: Danio rerio (Zebra danio, age 3 months, weight 200-350 mg); Conditions: freshwater, renewal, 26.5 deg C, pH 8.6, dissolved oxygen 85%; Concentration: 594 umol/L for 96 hr
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea, 24 hr); Conditions: freshwater, static, 18-20 deg C, pH 8.0-8.3, dissolved oxygen 8.1-9.7 mg/L; Concentration: 6770 ug/L for 24 hr (95% confidence interval: 3990-11000 ug/L); Effect: intoxication, immobilization />98% purity
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: The mono-nitroanilines were found to be markedly more resistant to biological degradation, as compared to aniline, using Warburg respirometer procedures(1). 3-Nitroaniline was determined to be non-biodegradable using the Japanese MITI protocol(2). No biodegradation of 3-nitroaniline (100 ppm) was observed in a 2-week period in the standard biodegradability test of the Japanese Ministry International Trade and Industry (MITI), a BOD test utilizing a mixed inoculum of activated sludge, sewage and surface water(3). No biodegradation of 3-nitroaniline was observed at concn of 25-30 ppm upon incubation with adapted activated sludge for 20 days(4). No degradation of 3-nitroaniline in a mineral salts solution, with a soil inoculum, occurred in 64 days(5). No biodegradation occurred over a 240 hr period in a respirometer study(6). Only limited biooxidation of 3-nitroaniline was observed in respirometric tests utilizing phenol-adapted bacteria(7). In a 60-day respirometer test using sewage seed, no biodegradation of 3-nitroaniline (5 ppm) occurred(8). However partial degradation was observed when the test solution was cross-seeded with microorganisms acclimated to 4-nitroaniline(8). Using the Zahn-Wellens test procedure, 3-nitroaniline was difficult to degrade as elimination was less than 20% over the 28 day incubation period(9). In another Zahn-Wellens test, no DOC removal occurred in 23 days of incubation(10). 3-Nitroaniline had a biodegradation rate of 0.026/h in river water giving a half-life of 27 hours, which was classified as poor degradation(11). A 5 day BOD at 20 deg C in Songhua river water was 6% for 3-nitroaniline(12).

12.3 Bioaccumulative potential

A 6-week bioconcentration study in carp obtained BCF values of 1.1-3.0 and <10 for concentrations of 3-nitroaniline of 0.5 and 0.05 mg/L, respectively(1). An aquarium study using carp fish found 3-nitroaniline to have a low bioaccumulation potential(2). A study using zebrafish experimentally determined the BCF for 3-nitroaniline to be 8.3(3). According to a classification scheme(4), these BCF values suggest bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Soil adsorption studies using four silt loam soils and a 2-hour adsorption period determined a mean log K_{om} of 1.70 which corresponds to a K_{oc} of 87 for 3-nitroaniline(1). 3-Nitroaniline had a measured log K_{oc} of 1.64 which corresponds to a K_{oc} value of 44(2). According to a classification scheme(3), these K_{oc} values suggest that 3-nitroaniline is expected to have very high to high mobility in soil(SRC). 3-Nitroaniline was found to have a K_d value of 3.5 L/kg in homoionic K⁺ Montmorillonite type soil(4). However, anilines are expected to bind strongly to humus or organic matter in soils due to the high reactivity of the aromatic amino group(5,6), suggesting that mobility may be much lower in some soils(SRC).

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: UN1661 (For reference only, please check.)	IMDG: UN1661 (For reference only, please check.)	IATA: UN1661 (For reference only, please check.)
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14.2 UN Proper Shipping Name

ADR/RID: NITROANILINES (o-, m-, p-) (For reference only, please check.)	IMDG: NITROANILINES (o-, m-, p-) (For reference only, please check.)	IATA: NITROANILINES (o-, m-, p-) (For reference only, please check.)
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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.)
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14.4 Packing group, if applicable

ADR/RID: II (For reference only, please check.) IMDG: II (For reference only, please check.) IATA: II (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
3-nitroaniline	3-nitroaniline	99-09-2	202-729-1
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			Listed.
New Zealand Inventory of Chemicals (NZIoC)			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, 2024
Revision Date March 23, 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/>

Other Information

Depending on the degree of exposure, periodic medical examination is indicated. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. See ICSCs 0306 and 0308.

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

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.