

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-Nitroaniline

1.2 Other means of identification

Product number CCHM702146

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
2-Nitroaniline	2-nitroaniline	88-74-4	201-855-4	100%

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

Inhalation or ingestion causes headache, nausea, methemo- globinemia, vomiting, weakness, and stupor; cyanosis caused by contact usually develops in 4-6 hrs.; prolonged and excessive exposure may also cause liver damage. Contact with eyes or skin causes irritation; continued exposure may cause same symptoms as inhalation or ingestion. (USCG, 1999)

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

Extinguish with water, dry chemicals, foam or carbon dioxide.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic oxides of nitrogen may form in fire. (USCG, 1999)

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.

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. 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	2-nitroaniline			
CAS No.	88-74-4			
	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		0,5		
	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	Solid. Powder.
Colour	Orange.
Odour	Musty
Melting point/freezing point	Ca. 74 °C.
Boiling point or initial boiling point and boiling range	284 °C
Flammability	Combustible. Many reactions may cause fire or explosion.
Lower and upper explosion limit/flammability limit	no data available
Flash point	167 °C.
Auto-ignition temperature	970° F (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available

Solubility	Insoluble in water
Partition coefficient n-octanol/water	log Pow = 1.85. Remarks:Experimental data.
Vapour pressure	0.003 mm Hg. Temperature:25 °C. Remarks:=0.369 Pa; Experimental data.
Density and/or relative density	0.901 g/cm³. Temperature:25 °C.
Relative vapour density	4.77 (NTP, 1992) (Relative to Air)
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

SLIGHT, WHEN EXPOSED TO HEAT OR FLAME.Dust explosion possible if in powder or granular form, mixed with air.O-NITROANILINE may be sensitive to prolonged exposure to light. Mixtures of this chemical with magnesium are hypergolic on contact with nitric acid. It forms extremely explosive addition compounds with hexanitroethane. It has a vigorous reaction with sulfuric acid above 392° F. It is incompatible with acids, acid chlorides, acid anhydrides, chloroformates and strong oxidizers. (NTP, 1992)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Forms extremely explosive addition compounds with hexanitroethane. Vigorous reaction with sulfuric acid above 200 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 (female) - 1 838 mg/kg bw.
- Inhalation: LC50 - rat (male/female) - > 2.529 mg/L air (analytical).
- Dermal: LD50 - rabbit (female) - > 20 000 mg/kg bw.

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. The effects may be delayed. Medical observation is indicated. 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 - *Oryzias latipes* - 17 mg/L - 48 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - *Daphnia magna* - 10.1 mg/L - 48 h.
- Toxicity to algae: EC50 - *Scenedesmus obliquus* - 64.6 mg/L - 96 h.
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: In a 2 week closed bottle biodegradation test, using 100 mg/L substrate and 30 mg/L sludge, 2-nitroaniline had a theoretical BOD of 0%(1). Degradation in a soil mineral salts suspension took greater than 64 days as determined by 100% loss of UV absorbance(2). A 16% BOD threshold was measured with a Warburg respirometer using aniline-acclimated activated sludge(3). A 0% removal (based on chemical oxygen demand) was measured in a batch system using activated sludge and a 5-day incubation period(4). Biological degradation in an electrolytic respirometer using activated sludge was in excess of 10 days(5). 2-Nitroaniline was not biodegradable in an electrolytic respirometer study, although 4-nitroaniline was found to be biodegradable using the same test conditions(6). Aerobic incubation of 2-nitroaniline in a rotary shaker using sewage inocula for 52 days resulted in a maximum loss of 15% as measured by UV absorbance loss(7). A 20-day study using uniformly ring-labeled 2-nitroaniline had a 14-carbon dioxide evolution of 1.9%, measured from laboratory flask system containing a silt loam soil media(8); 14-carbon dioxide evolution was less than 0.3% from the same soil system which had been sterilized with sodium azide(8). 2-Nitroaniline had a biodegradation rate of 0.023/hr in river water giving a half-life of 31 hours, which was classified as poor degradation(9). A 5 day BOD at 20 deg C in Songhua river water was -5% for 2-nitroaniline(10).

12.3 Bioaccumulative potential

A 6 week bioconcentration study obtained BCF values of 2.1-4.9 and <10 for concentrations of 2-nitroaniline of 0.5 and 0.05 mg/L, respectively(1). An aquarium study using carp fish found 2-nitroaniline to have a low bioaccumulation potential(2). A study using zebrafish experimentally determined the BCF for 2-nitroaniline to be 8.1(3). According to a classification scheme(4), these BCF values suggest bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

The log K_{oc} of 2-nitroaniline was measured as 1.77 giving a K_{oc} of 59(1). According to a classification scheme(2), this K_{oc} value suggests that 2-nitroaniline is expected to have high mobility in soil. 2-Nitroaniline was found to have a K_d value of 8.4 L/kg in homoionic K⁺ Montmorillonite type soil(3). However, anilines are expected to bind strongly to humus or organic matter in soils due to high reactivity of the aromatic amine group(4,5), 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.)

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.)

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: 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
2-nitroaniline	2-nitroaniline	88-74-4	201-855-4
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, 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/>

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 0307 and 0308.

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

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