SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0
Creation Date: July 15, 2019
Revision Date: July 15, 2019

SECTION 1: Identification

1.1 GHS Product identifier

Product name 4-nitroaniline

1.2 Other means of identification

Product number -
Other names 1-amino-4-nitrobenzene; 4-nitro-benzenamine; PNA

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.
Uses advised against no data available

1.4 Supplier's details

Company Shanghai Yien Chemical Technology Co., Ltd
Address Building 6, 28 Yingong Road, Fengxian District, Shanghai Chemical Industry Zone, Shanghai, 201400, China
Telephone +86-400-133-2688

1.5 Emergency phone number

Emergency phone number +86-400-133-2688
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
4-nitroaniline	4-nitroaniline	100-01-6	202-810-1	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, drowsiness, shortness of breath, nausea, methemoglobinemia, and unconsciousness; fingernails, lips, and ears become bluish; prolonged and excessive exposures may also cause liver damage. Contact with eyes causes

irritation and possible corneal damage. Contact with 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

This chemical is a combustible solid. Use dry chemical, carbon dioxide, water spray, or alcohol foam extinguishers. Poisonous gases including sulfur dioxide and nitrogen oxides are produced in fire. If material 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 in OSHA 1910.156.

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic oxides of nitrogen may form in fire. Behavior in Fire: Melts and burns (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. Wash away remainder with plenty of water.

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. Wash away remainder with plenty of water.

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. Dry.Store in a cool, dry, well-ventilated location. Separate from acids, oxidizing materials, & reducing agents.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 3 mg/m3, as TWA; (skin); A4 (not classifiable as a human carcinogen); BEI issued.MAK: skin absorption (H); carcinogen category: 3A

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	Brown.
Odour	Faint ammonia; slightly pungent
Melting point/freezing point	158 °C. Atm. press.:975 hPa. Remarks:Other details not available.
Boiling point or initial boiling point and boiling range	> 800 °C. Atm. press.:975 hPa. Remarks:Other details not available.
Flammability	Combustible Solid
Lower and upper explosion limit/flammability limit	no data available
Flash point	100.8 °C. Atm. press.:975 hPa.
Auto-ignition temperature	Atm. press.:975 hPa. Remarks:4-nitroaniline did not catch fire on being exposed to air at room temperature of 30 degC.
Decomposition temperature	no data available
pH	7.45. Remarks:Neutral.
Kinematic viscosity	no data available
Solubility	Insoluble in water
Partition coefficient n-octanol/water	log Pow = 1.2. Temperature:30 °C.
Vapour pressure	3 Pa. Temperature:100 °C. Remarks:At 20 oC, 3 Pascal is equivalent to 0.6 Pa.
Density and/or relative	0.951 g/cm³. Temperature:30 °C.

density
Relative vapour density 4.77 (NTP, 1992) (Relative to Air)
Particle characteristics no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

May explode on heating. 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

Combustible when exposed to heat or flame.Dust explosion possible if in powder or granular form, mixed with air.P-NITROANILINE may react vigorously with sulfuric acid above 392° F. It may also react with sodium hydroxide at 266° F. Under pressure, it may produce an explosive compound. It is incompatible with strong oxidizers and strong reducing agents. It is capable of explosive decomposition with strong initiators. It will attack some forms of plastics, rubber and coatings. (NTP, 1992)

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

An ammonical soln of 4-nitroaniline containing ammonium chloride was being treated with 50% sodium hydroxide soln to displace ammonia. In error, double the amt required to give usual 10% of free alkali was added, & during subsequent degassing operation (heating to 130 deg C under pressure, followed by depressuring to vent ammonia), complete conversion to sodium 4-nitrophenoxide occurred. ... /When/ separated by centrifuging, it was then heated to dry ... when it decomposed violently & was ejected through the vessel opening. ... Some of the tautomeric aci-nitroquinonoid salt may have been produced during the drying operation.

10.6 Hazardous decomposition products

Explosive decomposition may occur under fire conditions.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - Bird - wild bird species - 75 mg/kg bw.
- Inhalation: LC50 - rat (male) - 47.485 ppm.
- Dermal: LD50 - guinea pig - > 500 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

A4; Not classifiable as a human carcinogen.

Reproductive toxicity

no data available

STOT-single exposure

The substance is mildly irritating to the eyes. 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

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C , on spraying or dispersing much faster.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - 87.6 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: LC50 - Daphnia magna - 24 mg/L - 24 h.
- Toxicity to algae: EC50 - Chlorococcales - 68 mg/L - 24 h.
- Toxicity to microorganisms: IC50 - Tetrahymena pyriformis - 10.14 mg/L - 60 h.

12.2 Persistence and degradability

P-nitroaniline at concn 250-1000 mg/l was degraded by a mixt of pseudomonas fluorescens & bacillus valinovorus.

12.3 Bioaccumulative potential

In a 6-week bioconcentration test, the BCF of 4-nitroaniline was 2.9-3.6 at a concentration of 0.5 mg/L and <10 at a concentration of 0.05 mg/L(1). In a bioconcentration study using zebrafish and a 4-nitroaniline concentration of 0.21 umol/L, the BCF was measured to be 4.4(2). According to a classification scheme(3), these experimental BCF values suggest bioconcentration in aquatic organisms is low (SRC).

12.4 Mobility in soil

4-Nitroaniline has measured log Koc values of 1.78(1) and 1.88(2) and log Kom values of 1.49(3) and 1.64(4). These values correspond to Koc values of 60, 76, 54 and 75, respectively. 4-Nitroaniline has also been observed to have a Koc of 87(5). According to a classification scheme(6), these Koc values suggest that 4-nitroaniline is expected to have high mobility in soil. 4-Nitroaniline was found to have a Kd value of 13.5 L/kg in homoionic K+ Montmorillonite type soil(7). However, anilines are expected to bind strongly to humus or organic matter in soils due to the high reactivity of the aromatic amino group(8,9), suggesting that mobility may be much lower in some soils(SRC). 4-Nitroaniline had small and scattered amounts of irreversible binding over a 20 hour experiment(10).

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
4-nitroaniline	4-nitroaniline	100-01-6	202-810-1
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, 2019
Revision Date	July 15, 2019

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 0307.

Any questions regarding this SDS, Please send your inquiry to sds@xixisys.com

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