



SIGMA-ALDRICH

Material Safety Data Sheet

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Version 1.20

Section 1 - Product and Company Information

Product Name 4-NITROANILINE, 98%
Product Number N9853
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 314 771 5765
Fax: 800 325 5052

Emergency Phone: 414 273 3850 Ext. 5996

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
4-NITROANILINE	100-01-6	Yes

Formula C6H6N2O2
Synonyms p-Aminonitrobenzene, 1-Amino-4-nitrobenzene, Aniline, 4-nitro-, Azoamine Red ZH, Azotic Diazo Component 37, Benzenamine, 4-nitro- (9CI), C.I. 37035, C.I. Azotic Diazo Component 37, C.I. Developer 17, Developer P, Devol Red GG, Diazo Fast Red GG, Fast Red Base GG, Fast Red Base 2J, Fast Red 2G Base, Fast Red GG Base, Fast Red MP Base, Fast Red P Base, Naphtoelan Red GG Base, NCI-C60786, p-Nitraniline, 4-Nitraniline, Nitrazol CF Extra, p-Nitroaniline (Polish), p-Nitroaniline (ACGIH:OSHA), 4-Nitroaniline, 4-Nitrobenzenamine, p-Nitrophenylamine, PNA, RCRA waste number P077, Red 2G Base, Shinnippon Fast Red GG Base

Section 3 - Hazards Identification

Emergency Overview
Toxic.
Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Irritating to eyes, respiratory system and skin. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Target organ(s): Blood. Causes cyanosis. Readily absorbed through skin.

HMIS Rating
Health: 2* Flammability: 0 Reactivity: 1

NFPA Rating
Health: 2 Flammability: 0 Reactivity: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Flash Point: 415.4 °F 213 °C

Autoignition Temp: 180 °C

Firefighting

Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s)

Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed In Case of Leak or Spill

Evacuate area.

Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling

User Exposure

Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Storage

Suitable

Keep tightly closed.

Special Requirements

Moisture sensitive.

Section 8 - Exposure Controls / PPE

Engineering Controls

Use only in a chemical fume hood. Safety shower and eye bath.

Personal Protective Equipment

Respiratory

Government approved respirator.

Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

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General Hygiene Measures

Wash contaminated clothing before reuse. Wash thoroughly after handling.

Exposure Limits

Country	Type	Value
Poland	NDS	3 MG/M3
Poland	NDSCh	10 MG/M3
Poland	NDSP	-

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	3 MG/M3
USA	Remarks: Skin		
USA	MSHA Standard-air	TWA	1 PPM (6 MG/M3) (SKIN)
USA	OSHA	PEL	8H TWA 1 PPM (6 MG/M3) (SKIN)
New Zealand	OEL		
USA	Remarks: check ACGIH TLV		
USA	NIOSH	TWA	3 MG/M3 (SK)

Section 9 - Physical/Chemical Properties

Appearance	Color	Form	Odor
	Yellow	Fine crystals	Ammonia odor
Molecular Weight:	138.13 AMU		
Property	Value	At Temperature or Pressure	
pH	6.7		
BP/BP Range	260 °C	100 mmHg	
MP/MP Range	146 °C		
Freezing Point	N/A		
Vapor Pressure	0.004 mmHg	25 °C	
Vapor Density	4.77 g/l		
Saturated Vapor Conc.	N/A		
SG/Density	1.44 g/cm ³		
Bulk Density	630 kg/l		
Odor Threshold	N/A		
Volatile%	N/A		
VOC Content	N/A		
Water Content	N/A		
Solvent Content	N/A		
Evaporation Rate	N/A		
Viscosity	N/A		
Partition Coefficient	Log Kow: 1.39		
Decomposition Temp.	N/A		
Flash Point °F	415.4 °F		Method: closed cup
Flash Point °C	213 °C		Method: closed cup
Explosion Limits	N/A		
Flammability	N/A		
Autoignition Temp	180 °C		

Solubility

Solubility in Water: Slightly.

N/A = not available

Section 10 - Stability and Reactivity

Stability

Stable

Stable.

Conditions to Avoid

Sensitive to moisture. This product generates heat as it absorbs moisture or water.

Materials to Avoid

Strong acids, Strong oxidizing agents, Strong reducing agents, Plastics, Rubber.

Hazardous Decomposition Products

Hazardous Decomposition Products

Thermal decomposition may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

Hazardous Polymerization

Hazardous Polymerization

Will not occur.

Section 11 - Toxicological Information

Route of Exposure

Skin Contact

Causes skin irritation.

Skin Absorption

Toxic if absorbed through skin. Readily absorbed through skin.

Eye Contact

Causes eye irritation.

Inhalation

Toxic if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion

Toxic if swallowed.

Target Organ(s) or System(s)

Blood: Heart. Lungs. Liver.

Signs and Symptoms of Exposure

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. Exposure to and/or consumption of alcohol may increase toxic effects. Exposure can cause: Headache. Unconsciousness. Coughing, chest pains, difficulty in breathing. Drowsiness. Nausea. Cyanosis. Ataxia. Diarrhea. Vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. p-Nitroaniline is readily absorbed by inhalation, ingestion, or skin absorption. It is a strong methemoglobin former. Cyanosis is the first manifestation of toxicity.

RTECS Number: BY7000000

Toxicity Data

Oral - Rat: 750 mg/kg (LD50)

Oral - Mouse: 810 mg/kg (LD50)

Intraperitoneal - Mouse: 250 MG/KG (LD50)

Intramuscular - Mouse: 800 MG/KG (LD50)

Oral - Guinea pig: 450 mg/kg (LD50)

Remarks: Behavioral: Somnolence (general depressed activity).

Behavioral: Convulsions or effect on seizure threshold.

Skin - Guinea pig: > 500 mg/kg (LD50)

Oral - Quail: 1,000 mg/kg (LD50)
Oral - Bird (wild): 75 mg/kg (LD50)

Chronic Exposure Carcinogen

Mouse - Oral: 51500 MG/KG 2Y 1
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Vascular: Tumors.

NTP Carcinogen List

Rating	Species	Route
Equivocal evidence.	Mouse	Gavage

ACGIH Carcinogen List

Rating
A4

Chronic Exposure - Mutagen

Species	Dose	Cell Type	Mutation test
Hamster	173 MG/L	ovary	Cytogenetic analysis
Hamster	1600 MG/L	ovary	Sister chromatid exchange

Chronic Exposure - Reproductive Hazard

Species	Dose	Route of Application	Exposure Time
Rat	1764 MG/KG	Oral	(14W MALE/14W PRE)
Mouse	9600 MG/KG	Oral	(6-13D PREG)

Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated).

Result: Effects on Fertility: Litter size (e.g., # fetuses per litter; measured before birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type	Value:
EC50 Algae	24.0 h
Time:	68 mg/l
Test Type	Value:
EC50 Daphnia	48.0 h
Time:	17 mg/l
Species	Value:
Daphnia magna	96.0 h
Time:	85.7 - 142 mg/l
Test Type	Value:
LC50 Fish	48.0 h
Time:	35 mg/l
Species	
Pimephales promelas (Fathead minnow)	
Species	
Leuciscus idus	
Species	
Brachydanio rerio	

Time:	Value:
96.0 h	87.6 mg/l

Additional Results/Data from Relevant Scientific Experiments
Avoid contamination of the environment

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Nitroanilines [(o-; m-; p-)]
UN#: 1661
Class: 6.1
Packing Group: Packing Group II
Hazard Label: Poison inhalation hazard
PIH: Not PIH

IATA

Proper Shipping Name: Nitroanilines
IATA UN Number: 1661
Hazard Class: 6.1
Packing Group: II

Section 15 - Regulatory Information

EU Directives Classification

Symbol of Danger: T T

Indication of Danger

Toxic. Toxic.

Risk Statements R: 23/24/25 33 52/53 23/24/25

Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements S: 28 36/37 45 61

After contact with skin, wash immediately with plenty of soap-suds. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text

Indication of Danger

Toxic.

Risk Statements

Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Irritating to eyes, respiratory system and skin. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements

After contact with skin, wash immediately with plenty of soap-suds. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US Statements

Target organ(s): Blood. Causes cyanosis. Readily absorbed through skin.

United States Regulatory Information

SARA Listed: Yes

Demimms: 1 %

Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

Canada Regulatory Information

WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

Disclaimer

For R&D use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2003 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.