

MATERIAL SAFETY DATA SHEET

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Version 1.6

Section 1 - Product and Company Information

Product Name P-TOLUIDINE, 99.7%
Product Number 236314
Brand ALDRICH

Company Sigma-Aldrich
Address 3050 Spruce Street
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832
Fax: 800-325-5052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
P-TOLUIDINE	106-49-0	No

Formula C7H9N
Synonyms 1-Amino-4-methylbenzene * 4-Amino-1-methylbenzene
* 4-Aminotoluen (Czech) * p-Aminotoluene *
4-Aminotoluene * Aniline, p-methyl- *
Benzenamine, 4-methyl- (9CI) * C.I. 37107 * C.I.
Azoic Coupling Component 107 * p-Methylaniline *
4-Methylaniline * p-Methylbenzenamine *
4-Methylbenzenamine * Naphtol AS-KG * Naphtol
AS-KGLL * RCRA waste number U353 * p-Toluidin
(Czech) * 4-Toluidine * p-Toluidine (ACGIH) *
p-Toluidyna (Polish) * Tolyamine * p-Tolyamine

RTECS Number: XU3150000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Toxic. Dangerous for the environment.

Toxic by inhalation, in contact with skin and if swallowed.

Irritating to eyes. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact. Very toxic to aquatic organisms.

Combustible. Readily absorbed through skin. Target organ(s):
Blood. Liver.

HMIS RATING

HEALTH: 3*

FLAMMABILITY: 2

REACTIVITY: 0

NFPA RATING

HEALTH: 3

FLAMMABILITY: 2

REACTIVITY: 0

*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

188.6 °F 87 °C Method: closed cup

EXPLOSION LIMITS

Lower: 1.1 % Upper: 6.6 %

AUTOIGNITION TEMP

482 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Combustible. 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.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

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

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	2 PPM

Remarks: Skin

New Zealand OEL

Remarks: check ACGIH TLV

USA	NIOSH		LOWEST FEASIBLE CONC. (SK)
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Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid
	Color: Faintly beige
	Form: Crystals

Property	Value	At Temperature or Pressure
Molecular Weight	107.16 AMU	
pH	7.8	Concentration: 7 g/l
BP/BP Range	200.0 - 201.0 °C	760 mmHg
MP/MP Range	42 °C	
Freezing Point	N/A	
Vapor Pressure	1 mmHg	42 °C
Vapor Density	3.9 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	0.973 g/cm ³	
Bulk Density	N/A	
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	
Surface Tension	N/A	

Partition Coefficient	Log Kow: 3.1	
Decomposition Temp.	N/A	
Flash Point	188.6 °F 87 °C	Method: closed cup
Explosion Limits	Lower: 1.1 %	
	Upper: 6.6 %	
Flammability	N/A	
Autoignition Temp	482 °C	
Refractive Index	1.5532	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Acids, Acid chlorides, Acid anhydrides, Chloroformates, Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: Readily absorbed through skin. Toxic if absorbed through skin.

Eye Contact: Causes eye irritation.

Inhalation: Toxic if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: Toxic if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Blood. 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. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

TOXICITY DATA

Oral

Rat

336 mg/kg

LD50

Remarks: Peripheral Nerve and Sensation: Spastic paralysis with or without sensory change. Behavioral: Convulsions or effect on seizure threshold. Behavioral: Somnolence (general depressed activity).

Inhalation
Rat
> 640 mg/m3
LC50

Oral
Mouse
330 mg/kg
LD50

Intraperitoneal
Mouse
50 MG/KG
LD50

Oral
Rabbit
270 mg/kg
LD50

Skin
Rabbit
890 mg/kg
LD50

Oral
Quail
237 mg/kg
LD50

Oral
Bird (wild)
42 mg/kg
LD50

IRRITATION DATA

Skin
Rabbit
24 H
Remarks: Mild irritation effect
Eyes
Rabbit
Remarks: Mild irritation effect

Skin
Rabbit
500 mg
24H
Remarks: Severe irritation effect

Skin
Rabbit
500 mg
24H
Remarks: Mild irritation effect

Eyes
Rabbit
100 mg
Remarks: Severe irritation effect

Eyes

Rabbit
20 mg
24H
Remarks: Moderate irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

ACGIH CARCINOGEN LIST

Rating: A3

CHRONIC EXPOSURE - MUTAGEN

Species: Rat
Dose: 100 UMOL/L
Cell Type: liver
Mutation test: Unscheduled DNA synthesis

Species: Mouse
Route: Intraperitoneal
Dose: 35 MG/KG
Mutation test: DNA damage

Species: Mouse
Route: Oral
Dose: 200 MG/KG
Mutation test: DNA inhibition

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: EC50 Algae
Species: *Selenastrum capricornutum* resp.
Time: 14 d
Value: 0.2 mg/l

Test Type: EC50 Daphnia
Species: *Daphnia magna*
Time: 48 h
Value: 0.1 - 0.160 mg/l

Test Type: LC50 Fish
Species: *Pimephales promelas* (Fathead minnow)
Time: 96 h
Value: 13.5 - 16.3 mg/l

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: Toluidines, solid

UN#: 3451
Class: 6.1
Packing Group: Packing Group II
Hazard Label: Toxic substances.
PIH: Not PIH

IATA

Proper Shipping Name: Toluidines, solid
IATA UN Number: 3451
Hazard Class: 6.1
Packing Group: II

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: T-N
Indication of Danger: Toxic. Dangerous for the environment.
R: 23/24/25-36-40-43-50
Risk Statements: Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact. Very toxic to aquatic organisms.
S: 28-36/37-45-61
Safety Statements: After contact with skin, wash immediately with plenty of water. 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. Dangerous for the environment.
Risk Statements: Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact. Very toxic to aquatic organisms.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. 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: Combustible. Readily absorbed through skin.
Target organ(s): Blood. Liver.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No
NOTES: This product is subject to SARA section 313 reporting requirements. 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. 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. 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 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.