

## Chemical Safety Data Sheet MSDS / SDS

## p-toluidine SDS

Revision Date:2024-04-25 Revision Number:1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name: p-toluidine  
CAS: 106-49-0

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.  
Uses advised against: none

**Company Identification**

Company: Chemicalbook.in  
Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090  
Telephone: +91 9550333722

**SECTION 2: Hazards identification****Classification of the substance or mixture**

Acute toxicity - Category 3, Oral  
Acute toxicity - Category 3, Dermal

Eye irritation, Category 2  
Skin sensitization, Category 1  
Acute toxicity - Category 3, Inhalation  
Carcinogenicity, Category 2  
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H301 Toxic if swallowed  
H311 Toxic in contact with skin  
H319 Causes serious eye irritation  
H317 May cause an allergic skin reaction  
H331 Toxic if inhaled  
H351 Suspected of causing cancer  
H400 Very toxic to aquatic life

### 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.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P271 Use only outdoors or in a well-ventilated area.  
P203 Obtain, read and follow all safety instructions before use.  
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.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P333+P317 If skin irritation or rash occurs: Get medical help.  
P362+P364 Take off contaminated clothing and wash it before reuse.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P318 IF exposed or concerned, get medical advice.  
P391 Collect spillage.

#### **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.

#### **Other hazards which do not result in classification**

no data available

### **SECTION 3: Composition/information on ingredients**

#### **Substance**

Chemical name:	p-toluidine
Common names and synonyms:	p-toluidine
CAS number:	106-49-0
EC number:	203-403-1
Concentration:	100%

### **SECTION 4: First aid measures**

Description of necessary first-aid measures

**If inhaled**

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

**Following skin contact**

Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer immediately for medical attention.

**Following eye contact**

Rinse with plenty of water (remove contact lenses if easily possible). Refer immediately for medical attention.

**Following ingestion**

Rinse mouth. Refer immediately for medical attention.

**Most important symptoms/effects, acute and delayed**

Absorption of toxic quantities by any route causes cyanosis (blue discoloration of lips, nails, skin); nausea, vomiting, and coma may follow. Repeated inhalation of low concentrations may cause pallor, low-grade secondary anemia, fatigability, and loss of appetite. Contact with eyes causes irritation. (USCG, 1999)

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

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Aniline and related compounds

**SECTION 5: Firefighting measures****Suitable extinguishing media**

Use fine spray or fog to control fire by preventing its spread and absorbing some of its heat. Use water spray, dry chemical, foam, or carbon dioxide. Use water spray to keep fire-exposed containers cool.

**Specific hazards arising from the chemical**

Special Hazards of Combustion Products: Toxic and flammable vapors may form in fire. (USCG, 1999)

### **Special protective actions for fire-fighters**

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

## **SECTION 6: Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

### **Environmental precautions**

Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

### **Methods and materials for containment and cleaning up**

Approach release from upwind. Stop or control the leak, if this can be done without undue risk. Use water spray to cool and disperse vapors and protect personnel. Control runoff and isolate discharged material for proper disposal.

## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

NO open flames. Above 87°C use a closed system and ventilation. 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.

### **Conditions for safe storage, including any incompatibilities**

Provision to contain effluent from fire extinguishing. Separated from strong oxidants, strong acids and food and feedstuffs. Well closed. Ventilation along the floor. Keep in the dark. Store in an area without drain or sewer access. Store in cool, dry, well-ventilated location. Store away from heat, oxidizers, and sunlight.

## **SECTION 8: Exposure controls/personal protection**

### Control parameters

### Occupational Exposure limit values

TLV: 2 ppm as TWA; (skin); A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued.MAK: skin absorption (H); sensitization of skin (SH); carcinogen category: 3B

### Biological limit values

no data available

### 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.

### Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear safety goggles.

#### Skin protection

Protective gloves. Protective clothing.

#### Respiratory protection

Use ventilation, local exhaust or breathing protection.

#### Thermal hazards

no data available

## SECTION 9: Physical and chemical properties and safety characteristics

**Physical state:** P-toluidine is a colorless solid. Melting point 44°C (111°F). Specific gravity 1.046. Vapor heavier than air. Produces toxic oxides of nitrogen during combustion. May be absorbed through the skin. Used in dyes, and in organic chemical manufacturing.

**Colour:** Lustrous plates or leaflets

**Odour:** Aromatic, wine-like odor

Melting point/freezing point:	206°C(lit.)
Boiling point or initial boiling point and boiling range:	130°C/2mmHg(lit.)
Flammability:	Combustible Solid
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	140°C(lit.)
Auto-ignition temperature:	899° F (USCG, 1999)
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	0.7 % (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 1.39
Vapour pressure:	0.26 mm Hg ( 25 °C)
Density and/or relative density:	0.962
Relative vapour density:	3.9 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### **Reactivity**

NIOSH considers p-toluidine to be a potential occupational carcinogen. Decomposes on heating and on burning. This produces toxic fumes including nitrogen oxides. Reacts with strong oxidants and strong acids. Attacks some forms of plastic.

### **Chemical stability**

no data available

### **Possibility of hazardous reactions**

Flammable when exposed to heat, flame, or oxidizers. As a result of flow, agitation, etc., electrostatic charges can be generated. P-TOLUIDINE neutralizes acids to form salts plus water in exothermic reactions. May be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen is generated in combination with strong reducing agents, such as hydrides. Can react vigorously with oxidizing reagents. Emits very toxic fumes of oxides of nitrogen when heated to decomposition. Hypergolic reaction with red fuming nitric acid [Kit and Evered, 1960, p. 239, 242].

### **Conditions to avoid**

no data available

### **Incompatible materials**

Can react vigorously on contact with oxidizing materials.

### **Hazardous decomposition products**

When heated to decomposition it emits highly toxic fumes of /nitroxides/.

## **SECTION 11: Toxicological information**

### **Acute toxicity**

Oral: LD50 Rat oral 656 mg/kg

Inhalation: LC50 Rat inhalation > 0.64 mg/L for 1 hr

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**

A3; Confirmed animal carcinogen with unknown relevance to humans.

**Reproductive toxicity**

no data available

**STOT-single exposure**

The substance is 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**

Repeated or prolonged contact may cause skin sensitization. Tumours have been detected in experimental animals but may not be relevant to humans.

**Aspiration hazard**

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed, especially if powdered.

## SECTION 12: Ecological information

### Toxicity

Toxicity to fish: LC50; Species: *Brachydanio rerio* (zebrafish); Conditions: static, 21.2-22.8 deg C, pH 7.8-8.3, oxygen content 7.5-8.5 mg/L, 12 hr daily illumination; Concentration: 115 mg/L for 96 hr

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (water flea); Conditions: semi-static, pH 7.8 +/- 0.1, hardness 250 +/- 25 mg/L CaCO<sub>3</sub>; Concentration: 0.12 mg/L for 48 hr; Effect: immobilization

Toxicity to algae: EC50; Species: *Scenedesmus subspicatus* (algae); Conditions: static Concentration: 22.5 mg/l for 7 days; Effect: growth rate

Toxicity to microorganisms: no data available

### Persistence and degradability

AEROBIC: 4-Aminotoluene, present at 100 mg/L, reached 0% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1), suggesting this compound is not expected to biodegrade rapidly. However, other screening studies(2-8) give contradictory results and show 4-aminotoluene to be readily biodegradable in the environment. Some test results are: 64% of theoretical BOD used in 5 days with a sewage seed(2); 64% of theoretical BOD in 8 days using an activated sludge inoculum acclimated to aniline(3); and 97.7% removal in 5 days with activated sludge(4). When 4-aminotoluene was incubated with sewage, 90 and 100% degradation occurred after 10 and 14 days, respectively(5). Complete degradation was obtained in 4 days with a soil inoculum(6). 500 ppm of 4-aminotoluene completely degraded after 9 days in a Chernozem soil, leaving degradation products that persisted for over 90 days(7). 4-Aminotoluene, present at 2 mg/L, reached 46% of its theoretical BOD in 5 days using water from the Songhua River in China as an inoculum(8).

### Bioaccumulative potential

A BCF of <1.3 was measured for 4-aminotoluene, using orange-red killifish (*Oryzias latipes*) which were exposed over an 8-week period(1). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

### Mobility in soil

The mean Koc of 4-aminotoluene to 4 silt loam soils was 79 at a pH range of 6.1 to 7.5 where 4-aminotoluene is predominantly un-ionized(1). At lower pH, electrostatic forces should play a larger role. Three other soils had Koc values of 323, 496, and 508 where the pH was 4.0, 4.3, and 5.9, respectively(2). In this case appreciable concentrations of 4-aminotoluene would be present in both the neutral and protonated forms. The isotherms were linear and the adsorption constant was highly correlated with the clay content of the soil(2). The mean Koc of 4-aminotoluene in 3 soils (silt, silt loam, loam) was 141 over a pH range of 5.2 to 7.4(3). According to a classification scheme(4), these Koc values suggest that 4-aminotoluene is expected to have high to moderate mobility in soil. The pKa of 4-aminotoluene is 5.10(5), indicating that this compound will partially exist in cation form in the

environment and cations generally adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(6). Aromatic amines are expected to bind strongly to humus or organic matter in soils due to the high reactivity of the aromatic amino group(7,8), suggesting that mobility may be much lower in some soils(SRC).

#### **Other adverse effects**

no data available

### **SECTION 13: Disposal considerations**

#### **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**

#### **UN Number**

ADR/RID: UN3451 (For reference only, please check.)

IMDG: UN3451 (For reference only, please check.)

IATA: UN3451 (For reference only, please check.)

#### **UN Proper Shipping Name**

ADR/RID: TOLUIDINES, SOLID (For reference only, please check.)

IMDG: TOLUIDINES, SOLID (For reference only, please check.)

IATA: TOLUIDINES, SOLID (For reference only, please check.)

#### **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.)

**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.)

**Environmental hazards**

ADR/RID: Yes  
IMDG: Yes  
IATA: Yes

**Special precautions for user**

no data available

**Transport in bulk according to IMO instruments**

no data available

**SECTION 15: Regulatory information**

**Safety, health and environmental regulations specific for the product in question**

**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.

#### **(PICCS)**

Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC)**

Listed.

#### **Korea Existing Chemicals List (KECL)**

Listed.

### **SECTION 16: Other information**

#### **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](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 suggested. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT take working clothes home. See ICSCs 0341 and 0342.

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