

8130105



SIGMA-ALDRICH

Material Safety Data Sheet

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Version 1.40

Section 1 - Product and Company Information

Product Name p-Phenylenediamine
Product Number P6001
Brand Sigma 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	EC no	Annex I Index Number
1,4-PHENYLENEDIAMINE	106-50-3	Yes	203-404-7	612-028-00-6

Formula C₆H₈N₂
Synonyms p-Aminoaniline, 4-Aminoaniline, BASF ursol D, p-Benzenediamine, 1,4-Benzenediamine (9CI), Benzofur D, C.I. 76060, C.I. Developer 13, C.I. Oxidation Base 10, Developer 13, Developer PF, p-Diaminobenzene, 1,4-Diaminobenzene, Durafur Black R, p-Fenylenediamin (Czech), Fenyleneodwuamina (Polish), Fouramine D, Fournine D, Fournine 1, Fur Black 41867, FUR Brown 41866, Furro D, Fur Yellow, Futramine D, Nako H, Orsin, Oxidation Base 10, Paraphenylenediamine, Pelagol D, Pelagol DR, Pelagol Grey D, Peltol D, 1,4-Phenylenediamine, p-Phenylenediamine (ACGIH:OSHA), 6PPD, Renal PF, Rodol D, Santoflex IC, Tertral D, Ursol D, USAF EK-394, Zoba Black D

Section 3 - Hazards Identification

Emergency Overview

Toxic. Dangerous for the environment.
Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Target organ(s): Liver. Kidneys.

HMS Rating
Health: 3* Flammability: 1 Reactivity: 0

NFPA Rating
Health: 3 Flammability: 1 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: 230 °F 110 °C

Explosion Limits: Lower: 1.5 %

Autoignition Temp: 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)

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

Government approved respirator.

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Hand

Compatible chemical-resistant gloves.

Eye

Chemical safety goggles.

General Hygiene Measures

Wash contaminated clothing before reuse. Wash thoroughly after handling.

Exposure Limits

Country	Type	Value
Poland	NDS	0.1 MG/M3
Poland	NDSch	0.3 MG/M3
Poland	NDSP	-

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	0.1 MG/M3
USA	MSHA Standard-air	TWA	0.1 MG/M3 (SKIN)
USA	OSHA.	PEL	8H TWA 0.1 MG/M3 (SKIN)
New Zealand	OEL		
USA	NIOSH	TWA	0.1 MG/M3 (SK)

Remarks: check ACGIH TLV**Section 9 - Physical/Chemical Properties****Appearance****Physical State**
Solid**Molecular Weight:** 108.14 AMU

Property	Value	At Temperature or Pressure	Other
pH	9	20 °C	Concentration: 50 g/l
BP/BP Range	267 °C	760 mmHg	
MP/MP Range	141 °C		
Freezing Point	N/A		
Vapor Pressure	1.08 mmHg	100 °C	
Vapor Density	3.7 g/l		
Saturated Vapor Conc.	N/A		
SG/Density	N/A		
Bulk Density	600 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: -0.25		
Decomposition Temp.	N/A		
Flash Point °F	230 °F		Method: closed cup
Flash Point °C	110 °C		Method: closed cup
Explosion Limits	Lower: 1.5 %		
Flammability	N/A		
Autoignition Temp	N/A		

Solubility**Solubility in Water:** 10 mg/ml H₂O, 20°C**Other Solvents:** ALCOHOL, CHLOROFORM, ETHER.

N/A = not available

Section 10 - Stability and Reactivity**Stability****Stable**

Stable.

Conditions of Instability

May darken on storage

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

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.

Sensitization**Skin**

May cause allergic skin reaction.

Target Organ(s) or System(s)

Liver, Kidneys.

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.

RTECS Number: SS8050000**Toxicity Data**

Oral - Rat: 80 mg/kg (LD50)

Inhalation - Rat: 920 mg/m³ (LC50)

Remarks: Behavioral:General anesthetic.

Gastrointestinal:Nausea or vomiting.

Kidney, Ureter, Bladder:Hematuria.

Intraperitoneal - Rat: 37 MG/KG (LD50)

Intraperitoneal - Mouse: 50 MG/KG (LD50)

Oral - Guinea pig: 145 mg/kg (LD50)

Oral - Quail: 100 mg/kg (LD50)
Oral - Bird (wild): 100 mg/kg (LD50)

Irritation Data

Skin - Human: 250 mg 24H
Remarks: Mild irritation effect

Skin - Mouse: 250 mg 24H
Remarks: Mild irritation effect

Skin - Dog: 250 mg 24H
Remarks: Mild irritation effect

Skin - Rabbit: 12.5 mg 24H
Remarks: Mild irritation effect

Skin - Rabbit: 250 mg 24H
Remarks: Moderate irritation effect

Skin - Pig: 250 mg 24H
Remarks: Mild irritation effect

Skin - Guinea pig: 250 mg 24H
Remarks: Mild irritation effect

Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Rat - Subcutaneous: 2625 MG/KG 30W C
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Tumorigenic: Tumors at site or application.

IARC Carcinogen List

Rating
Group 3

ACGIH Carcinogen List

Rating
A4

Chronic Exposure - Mutagen

<u>Species</u>	<u>Dose</u>	<u>Cell Type</u>	<u>Mutation test</u>
Rat	1850 NG/PLATE	Embryo	Morphological transformation.
Mouse	200 MG/KG		DNA inhibition
Hamster	15 MG/L	ovary	Cytogenetic analysis

Section 12 - Ecological Information

Acute Ecotoxicity Tests

Test Type
EC50 Daphnia
Species
Daphnia magna
Time: 48.0 h
Value: 0.26 mg/l

Test Type
LC50 Fish
Species
Pimephales promelas (Fathead minnow)
Time: 96.0 h
Value: 0.06 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: Phenylenediamines [(o-; m-; p-)]
UN#: 1673
Class: 6.1
Packing Group: Packing Group III
Hazard Label: Keep away from food
PIH: Not PIH

IATA

Proper Shipping Name: PHENYLENEDIAMINES
IATA UN Number: 1673
Hazard Class: 6.1
Packing Group: III

Section 15 - Regulatory Information

EU Directives Classification

Symbol of Danger: T N

Indication of Danger

Toxic. Dangerous for the environment.

Risk Statements R: 23/24/25 36 43 50/53

Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements S: 26 36/37 45 60 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). This material and its container must be disposed of as hazardous waste. 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. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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 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). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Statements

Target organ(s): Liver. Kidneys.

United States Regulatory Information

SARA Listed: Yes

Deminimis: 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. 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 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.