

Material Safety Data Sheet

Date Printed: 10/OCT/2005

Date Updated: 10/FEB/2005

Version 1.5

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

1 - Product and Company Information

Product Name 1,2-PHENYLENEDIAMINE, FLAKES, 99.5%
Product Number P23938

Company Sigma-Aldrich Pty. Ltd.
12 Anella Avenue
Castle Hill NSW 2154
Australia

Technical Phone # +61 2 9841 0555 (1800 800 097)

Fax +61 2 9841 0500 (1800 800 096)

Emergency Phone # +44 8701906777 (1800 448 465)

2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
1,2-PHENYLENEDIAMINE	95-54-5	202-430-6	612-145-00-2

Formula C₆H₈N₂

Molecular Weight 108.14 AMU

Synonyms 2-Aminoaniline * o-Benzenediamine *
1,2-Benzenediamine (9CI) * C.I. 76010 * C.I.
Oxidation Base 16 * o-Diaminobenzene * EK 1700 *
o-Fenylendiamin (Czech) * 1,2-Fenylendiamin
(Czech) * IK 3 * NSC 5354 * Orthamine *
o-Phenylenediamine (ACGIH) *
1,2-Phenylenediamine * SQ 15500

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Harmful by inhalation and in contact with skin. Toxic if
swallowed. Irritating to eyes. Limited evidence of a carcinogenic
effect. May cause sensitization by skin contact. Very toxic to
aquatic organisms, may cause long-term adverse effects in the
aquatic environment. Possible risk of irreversible effects.
Carc. Cat.3 Muta. Cat.3

4 - First Aid Measures

AFTER INHALATION

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

AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious
amounts of water.

AFTER EYE CONTACT

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately. If person is conscious after ingestion of material, immediately give 4 to 8 ounces of milk or water.

5 - Fire Fighting Measures

EXTINGUISHING MEDIA

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

SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

Explosion Hazards: Forms explosive mixtures in air.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

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

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES 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.

7 - Handling and Storage

HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep tightly closed.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS

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

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS

Country	Source	Type	Value
	ACGIH	TLV	0.1 mg/m3

EXPOSURE LIMITS - DENMARK

Source	Type	Value
--------	------	-------

OEL	TWA	0.1 mg/m3
-----	-----	-----------

EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	0.1 mg/m3

Remarks: 4
Remarks: H,7,29,32,TRGS 901-76

EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	0.1 mg/m3

Remarks: AHK

EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	0.1 mg/m3

Remarks: E S

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.
Hand Protection: Compatible chemical-resistant gloves.
Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

Appearance	Physical State: Solid Color: Faintly brown Form: Fine crystals	
Property	Value	At Temperature or Pressure
pH	8.7	
BP/BP Range	256.0 - 258.0 °C	760 mmHg
MP/MP Range	99 °C	
Flash Point	136 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 1.5 %	
Vapor Pressure	0.01 mmHg	25 °C
SG/Density	1.03 g/cm3	
Partition Coefficient	Log Kow: 0.15	
Viscosity	N/A	
Vapor Density	3.7 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	< 1	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Soluble.	

10 - Stability and Reactivity

STABILITY

Stable: Stable.
Conditions of Instability: May darken on storage
Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

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

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: SS7875000

ACUTE TOXICITY

LC50

Inhalation

Rat

3.6 ppm

4 HR.

Skin

Rabbit

1,500 mg/kg

LD50

Oral

Rat

1,070 mg/kg

LD50

Oral

Rat

510 mg/kg

Remarks: Autonomic Nervous System:Other (direct) parasympathomimetic. Behavioral:Convulsions or effect on seizure threshold. Behavioral:Muscle weakness.

LC50

Inhalation

Rat

1,873 mg/m3

Remarks: Behavioral:Convulsions or effect on seizure threshold. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Olfaction:Other changes. Peripheral Nerve and Sensation:Flaccid paralysis without anesthesia (usually neuromuscular blockage).

LD50

Skin

Rat

> 5000 mg/kg

LD50

Intraperitoneal

Rat

516 MG/KG

LD50

Oral

Mouse

366 mg/kg

LC50

Inhalation

Mouse

> 91 mg/m3

4H

LD50

Intraperitoneal

Mouse

245 MG/KG

LD50

Subcutaneous

Mouse

450 MG/KG

LD50

Oral

Guinea pig

360 mg/kg

LD50

Oral

Bird (wild)

133 mg/kg

SENSITIZATION

Skin: May cause allergic skin reaction.

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: Harmful if absorbed through skin.

Eye Contact: Causes eye irritation.

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

Ingestion: Toxic if swallowed.

TARGET ORGAN INFORMATION

Kidneys. Liver. Bladder.

CHRONIC EXPOSURE - CARCINOGEN

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

CHRONIC EXPOSURE - MUTAGEN

Human

15 MMOL/L

Cell Type: lymphocyte

DNA damage

Human

7 MMOL/L

Cell Type: HeLa cell

DNA inhibition

Human

10 MMOL/L

Cell Type: lymphocyte

Cytogenetic analysis

Human

10 MMOL/L

Cell Type: lymphocyte

Sister chromatid exchange

Rat

100 UMOL/L

Cell Type: liver

Unscheduled DNA synthesis

Mouse

216 MG/KG

Intraperitoneal

24H

Micronucleus test

Mouse

216 MG/KG

Oral

24H

Micronucleus test

Mouse

200 MG/KG

Oral

DNA inhibition

Hamster

432 MG/KG

Intraperitoneal

24H

Micronucleus test

Hamster

187 MG/L

Cell Type: ovary

Cytogenetic analysis

Hamster

1 MG/L

Cell Type: lung

Cytogenetic analysis

Guinea pig

216 MG/KG

Intraperitoneal

24H

Micronucleus test

CMR CAT.: Carc. Cat.3

12 - Ecological Information

ECOTOXICOLOGICAL EFFECTS

Test Type: LC50 Fish

Species: Pimephales promelas (Fathead minnow)

Time: 96 h

Value: 44 mg/l

Test Type: LC50 Fish

Species: Onchorhynchus mykiss (Rainbow trout)

Time: 96 h

Value: 42.9 mg/l

Test Type: EC50 Daphnia

Species: Daphnia magna
Time: 48 h
Value: 1.4 mg/l

13 - Disposal Considerations

SUBSTANCE DISPOSAL

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.

14 - Transport Information

RID/ADR

UN#: 1673
Class: 6.1
PG: III
Proper Shipping Name: Phenylendiamines

IMDG

UN#: 1673
Class: 6.1
PG: III
Proper Shipping Name: PHENYLENEDIAMINES
Marine Pollutant: No
Severe Marine Pollutant: No

IATA

UN#: 1673
Class: 6.1
PG: III
Proper Shipping Name: PHENYLENEDIAMINES
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 612-145-00-2

INDICATION OF DANGER: T-N

Toxic. Dangerous for the environment.

R-PHRASES: 20/21-25-36-40-43-50/53-68

Harmful by inhalation and in contact with skin. Toxic if swallowed. Irritating to eyes. Limited evidence of a carcinogenic effect. May cause sensitization by skin contact. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Possible risk of irreversible effects.

S-PHRASES: 28-36/37-45-60-61

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.

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 3

16 - Other Information

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.

DISCLAIMER

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