

JAY ORGANICS

Plot no.-456,Phase-II, G.I.D.C., Vatva, Ahmedabad, INDIA-382445.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT

Substance: P-Phenylenediamine

Synonyms: 1,4-Diaminobenzene 1,4-Benzenediamine 1,4-Phenylenediamine

Chemical Family: Amines, Aromatic

2. COMPOSITION, INFORMATION ON INGREDIENTS

Component: P-Phenylenediamine

Cas Number: 106-50-3

Molecular Formula: C₆H₈N₂

Ec Number (Einecs): 203-404-7

Ec Index Number: 612-028-00-6

Percentage: 99.5% min

3. HAZARDS IDENTIFICATION

Nfpa Ratings (Scale 0-4): Health=2 Fire=1 Reactivity=0

Emergency Overview:

Color: white to red

Physical Form: Crystals Powder

Major Health Hazards: harmful if swallowed, respiratory tract irritation, skin irritation, eye irritation, tears, blood damage, allergic reactions

Potential Health Effects:

Inhalation:

Short Term Exposure:

Irritation, allergic reactions, digestive disorders, difficulty breathing, asthma, dizziness, bluish skin color, lung congestion, convulsions, coma

Long Term Exposure: liver damage

Skin Contact:

Short Term Exposure:

Irritation (possibly severe), allergic reactions, itching, bluish skin color

Long Term Exposure:

Digestive disorders, asthma, dizziness, joint pain, visual disturbances

Eye Contact:

Short Term Exposure: irritation, tearing, eye damage

Long Term Exposure: blindness

Ingestion:

Short Term Exposure:

Vomiting, digestive disorders, asthma, dizziness, bluish skin color, coma

Long Term Exposure: kidney damage, liver damage

Carcinogen Status:

Osha: No

Ntp: No

Iarc: No

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

Antidote: methylene blue, intravenous; ascorbic acid, intravenous.

Note To Physician: For inhalation, consider oxygen. For ingestion, consider gastric lavage and activated charcoal slurry. Consider oxygen.

5. FIRE FIGHTING MEASURES

Fire And Explosion Hazards: Slight fire hazard.

Extinguishing Media: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

Fire Fighting:

Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by products. Stay upwind and keep out of low areas.

Flash Point: 311 F (155 C)

Lower Flammable Limit: 1.5%

6. ACCIDENTAL RELEASE MEASURES

Occupational Release:

Do not touch spilled material. Stop leak if possible without personal risk. Small spills: Absorb with sand or other non-combustible material. Collect with absorbent into suitable container. Small dry spills: Collect spilled material in appropriate container for disposal. Move containers away from spill to a safe area. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

Storage:

Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Limits:

P-Phenylenediamine:

0.1 mg/m³ OSHA TWA (skin)

0.1 mg/m³ ACGIH TWA

0.1 mg/m³ NIOSH recommended TWA 10 hour(s) (skin)

0.1 mg/m³ DFG MAK (peak limitation category - II, with excursion factor of 2) (inhalable dust fraction) (skin sensitizer) (cutaneous absorption danger)

0.1 mg/m³ UK OES TWA (skin)

Measurement Method: Particulate filter (with special coating); Ethylenedinitrilo-tetraacetic acid; High-pressure liquid chromatography with ultraviolet detection; OSHA # 87

Ventilation: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

Eye Protection: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Clothing: Protective clothing is not required.

Gloves: Wear appropriate chemical resistant gloves.

Respirator: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

2.5 mg/m³

Any supplied-air respirator operated in a continuous-flow mode.

5 mg/m³

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

25 mg/m³

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying respirator with a full facepiece, a canister providing protection against this substance, and a high-efficiency particulate filter.

Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Color: White To Red

Physical Form: Crystals/Powder

Odor: Not Available

Molecular Weight: 108.15

Molecular Formula: C₆H₈N₂

Boiling Point: 513 F (267 C)

Melting Point: 284 F (140 C)

Vapor Pressure: Not Applicable

Vapor Density (Air=1): 3.7

Specific Gravity (Water=1): 1.1

Water Solubility: Soluble

Ph: Not Applicable

Volatility: Not Applicable

Odor Threshold: Not Available

Evaporation Rate: Not Applicable

Coefficient Of Water/Oil Distribution: Not Available

Solvent Solubility:

Soluble: Alcohol, Chloroform, Ether

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Conditions To Avoid: Avoid heat, flames, sparks and other sources of ignition. Avoid generating dust. Keep out of water supplies and sewers.

Incompatibilities: oxidizing materials

P-Phenylenediamine:

Oxidizers (Strong): Fire and explosion hazard.

Hazardous Decomposition:

Thermal decomposition products: oxides of carbon, nitrogen

Polymerization: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

P-Phenylenediamine:

Irritation Data:

250 mg/24 hour(s) skin-human mild; 250 mg/24 hour(s) skin-mouse mild; 250 mg/24 hour(s) skin-dog mild; 12500 ug/24 hour(s) skin-rabbit mild; 250 mg/24 hour(s) skin-rabbit moderate; 250 mg/24 hour(s) skin-pig mild; 250 mg/24 hour(s) skin-guinea pig mild

Toxicity Data:

71 mg/kg oral-man TDLo; 80 mg/kg oral-rat LD50; 920 mg/m³/4 hour(s) inhalation-rat LC50; 37 mg/kg intraperitoneal-rat LD50; 170 mg/kg subcutaneous-rat LDLo; 50 mg/kg intravenous-rat LDLo; 133 mg/kg unreported-rat LD50; 100 mg/kg oral-mouse LDLo; 50 mg/kg intraperitoneal-mouse LD50; 140 mg/kg subcutaneous-mouse LDLo; 331 mg/kg unreported-mouse LD50; 100 mg/kg subcutaneous-dog LDLo; 17 mg/kg intravenous-dog LDLo; 100 mg/kg oral-cat LDLo; 250 mg/kg oral-rabbit LDLo; 5 gm/kg skin-rabbit LDLo; 150 mg/kg intraperitoneal-rabbit LDLo; 200 mg/kg subcutaneous-rabbit LDLo; 300 mg/kg intravenous-rabbit LDLo; 145 mg/kg oral-guinea pig LD50; 145 mg/kg unreported-guinea pig LD50; 100 mg/kg oral-quail LD50; 100 mg/kg oral-wild bird LD50; 1050 mg/kg/30 week(s) intermittent oral-rat TDLo; 28 gm/kg/80 week(s) continuous oral-rat TDLo; 16800 mg/kg/12 week(s) continuous oral-rat TDLo; 105 mg/kg/30 week(s) intermittent oral-rabbit TCLo

Carcinogen Status:

IARC: Animal Inadequate Evidence, Group 3; ACGIH: A4 -Not Classifiable as a Human Carcinogen

Local Effects:

Irritant: inhalation, skin, eye

Acute Toxicity Level:

Toxic: inhalation, ingestion

Target Organs: blood, immune system (sensitizer)

Tumorigenic Data:

2625 mg/kg subcutaneous-rat TDLo/30 week(s) continuous

Mutagenic Data:

mutation in microorganisms - Salmonella typhimurium 2 umol/plate (+S9); mutation in microorganisms - Salmonella typhimurium 1 ug/plate (-S9); phage inhibition capacity - Escherichia coli 125 ug/well; sex chromosome loss and non disjunction - Drosophila melanogaster oral 15500 umol/L 3 day(s); morphological transformation - rat embryo 1850 ng/plate; DNA inhibition - mouse oral 200 mg/kg; cytogenetic analysis - hamster ovary 15 mg/L

Health Effects:**Inhalation:****Acute Exposure:**

P-PHENYLENEDIAMINE: May cause severe irritation, sore throat, coughing, shortness of breath, dyspnea, gastritis, rhinitis, inflammation of the pharynx and larynx, methemoglobinemia, vertigo, hypertension, tremors, convulsions, coma, and pulmonary edema. Asthmatic sensitization reactions may occur in previously exposed individuals.

Chronic Exposure:

P-PHENYLENEDIAMINE: May cause liver damage. Jaundice and subacute atrophy of the liver, resulting in death, were seen in a female hairdresser using it for over a period of 5 years. It is responsible for asthmatic symptoms and other respiratory symptoms of workers in the fur dye industry.

Skin Contact:**Acute Exposure:**

P-PHENYLENEDIAMINE: May cause severe irritation, redness, pain, skin burns, dermatitis, papular eczema, urticaria, exfoliation, and stained skin. Dermatitis may be characterized by weeping, crusting and itching. It is absorbed through the skin and may cause methemoglobinemia.

Chronic Exposure:

P-PHENYLENEDIAMINE: May cause dermatitis, characterized by weeping, crusting, and itching. Jaundice and subacute atrophy of the liver, resulting in death, were seen in a female hairdresser using it for a period of 5 years. In a rare case, retrobulbar neuritis

with central scotoma and optic neuritis with papilledema were noted. Allergies such as arthritis, asthma, and gastrointestinal disturbances after ectopic exposures have been reported. Gastrointestinal and nervous symptoms were observed in a woman who used it in a hair-dye preparation; and another woman who had regularly been dyeing her hair with a commercial preparation consisting of impure p-phenylenediamine and iron experienced liver and spleen enlargement, and the patient developed progressive neurological symptoms prior to her death. Other symptoms of poisoning include vertigo, gastritis, diplopia, asthenia and exfoliative dermatitis.

Eye Contact:

Acute Exposure:

P-Phenylenediamine: May cause severe irritation, redness, pain, blurred vision, keratoconjunctivitis, swollen conjunctiva, lacrimation and corneal damage. It has caused loss of epithelium and infiltration involving the cornea. However, the cornea usually recovers rapidly. After an application to the eyelashes, corneal epithelium became eroded and iritis, iridocyclitis and eczema of the eyelid developed. In some cases vision has been lost or permanently impaired by severe corneal ulceration.

Chronic Exposure:

P-PHENYLENEDIAMINE: May cause chemosis, exophthalmos, ophthalmia, and permanent blindness. In two cases, it has caused limitation of eye movement associated with proptosis.

Ingestion:

Acute Exposure:

P-Phenylenediamine: May cause severe irritation, methemoglobinemia, vertigo, anemia, gastritis, cough, asthma, abdominal spasms, vomiting, diarrhea, inflammation of the pharynx and larynx, rise in blood pressure, transduction and coma.

Chronic Exposure:

P-Phenylenediamine: Excessive use may cause liver and kidney damage and central nervous system effects. Industrially, it has been associated with bladder tumors.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:

Fish Toxicity: 12000 ug/L 24 day(s) (Mortality) Rainbow trout, donaldson trout (Oncorhynchus mykiss)

Invertebrate Toxicity: 74060 ug/L 60 day(s) EC50 (Population Size Reduction) Ciliate (Tetrahymena pyriformis)

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

UN number

ADR/RID: 1673

IMDG: 1673

IATA: 1673

UN proper shipping name

ADR/RID: PHENYLENEDIAMINES

IMDG: PHENYLENEDIAMINES

IATA: Phenylenediamines

Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

Packaging group

ADR/RID: III

IMDG: III

IATA: III

Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

Special precautions for user

No data available

15. REGULATORY INFORMATION

U.S. Regulations:

Cercla Sections 102a/103 Hazardous Substances (40 Cfr 302.4):

P-Phenylenediamine: 5000 Lbs Rq

Sara Title Iii Section 302 Extremely Hazardous Substances (40 Cfr 355.30): Not Regulated.

Sara Title Iii Section 304 Extremely Hazardous Substances (40 Cfr 355.40): Not Regulated.

Sara Title Iii Sara Sections 311/312 Hazardous Categories (40 Cfr 370.21):

Acute: Yes

Chronic: Yes

Fire: No

Reactive: No

Sudden Release: No

Sara Title Iii Section 313 (40 Cfr 372.65):

P-Phenylenediamine

Osha Process Safety (29cfr1910.119):

Not Regulated.

State Regulations:

California Proposition 65: Not Regulated.

Canadian Regulations:

Whmis Classification: Not Determined.

European Regulations:

Ec Classification (Assigned):

T Toxic
Xi Irritant
Sensitizing
N Dangerous for the Environment

EC Classification may be inconsistent with independently-researched data.

Danger/Hazard Symbol:

Ec Risk And Safety Phrases:

R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R 36 Irritating to eyes.
R 43 May cause sensitization by skin contact.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S 1/2 Keep locked-up and out of reach of children.
S 28 After contact with skin, wash immediately with plenty of soap and

- water.
- S 36/37 Wear suitable protective clothing and gloves.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 60 This material and/or its container must be disposed of as hazardous waste.
- S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

German Regulations:

Water Hazard Class (Wgk):

State Of Classification: Annex 3

Classification Under Hazard To Water: 3

National Inventory Status:

U.S. Inventory (TSCA): Listed On Inventory.

TSCA 12(B) Export Notification: Not Listed.

16 . ADDITIONAL INFORMATION MSDS

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Jay Organics be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Jay Organics has been advised of the possibility of such damages.