

MATERIAL SAFETY DATA SHEET

*Biology*

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Kodak Accession Number: 900329

SECTION I. IDENTIFICATION

- Product Name: Phenylhydrazine
- Synonym(s): Hydrazinobenzene
- Formula: C6 H8 N2
- CAT No(s): 104 7331; 104 7398; 104 7471; 104 7513; 104 7554; 104 7596
- Chem. No(s): 00329
- Kodak's Internal Hazard Rating Codes: R: 2 S: 3 F: 2 C: 2-H

SECTION II. PRODUCT AND COMPONENT HAZARD DATA

COMPONENT(S):	Percent	ACGIH TLV(R)	CAS Reg. No.
Phenylhydrazine	ca. 100	5 ppm (skin-A2)	100-63-0

SECTION III. PHYSICAL DATA

- Appearance and Odor: Yellow crystals or oily liquid; faint aromatic odor
- Melting Point: 20 C (68 F)
- Boiling with Decomposition: 243 C (469 F)
- Vapor Pressure: LT 0.1 mmHg @ 20 C (68 F)
- Evaporation Rate (n-butyl acetate = 1): Not Available
- Vapor Density (Air = 1): 3.7
- Volatile Fraction by Weight: Negligible
- Specific Gravity (water = 1): 1.1
- Solubility in Water (by Weight): Slight

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

- Flash Point: 60 C (140 F) Setaflash closed cup
- Autoignition Temperature: 233 C (452 F)
- Extinguishing Media: Water spray; Carbon dioxide
- Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Use water spray to keep fire-exposed containers cool.
- Unusual Fire and Explosion Hazards: Fire or excessive heat may cause production of hazardous decomposition products. Greatly increases the burning rate of combustible materials.

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SECTION V. REACTIVITY DATA

- Stability: Stable, however, material can violently decompose above 150 C. Avoid temperatures above 50 C.
- Incompatibility: Oxidizers, Combustible materials
- Hazardous Decomposition Products: As with any other organic material, combustion will produce carbon dioxide and probably carbon monoxide. Oxides of nitrogen may also be present.
- Hazardous Polymerization: Will not occur.

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SECTION VI. TOXICITY AND HEALTH HAZARD DATA

A. EXPOSURE LIMITS:

Threshold Limit Value (TLV): 0.1 ppm 8-h TWA, A2 Suspected Carcinogen, ACGIH 1989-90.

Permissible Exposure Limit (PEL): 5 ppm, STEL 10, OSHA 1989.

- B. EXPOSURE EFFECTS: Phenylhydrazine is harmful by all routes of exposure. Can cause kidney and liver damage and blood disorders. Can cause cyanosis (blue-grey skin and lips caused by lack of oxygen).

Carcinogenicity Status:

Phenylhydrazine has been identified as a carcinogen or potential carcinogen for hazard communication purposes by:

American Conference of Governmental Industrial Hygienists (ACGIH);  
A2-Suspected Carcinogen.

Inhalation: Harmful if inhaled.

Skin: Harmful if absorbed through the skin. May cause allergic skin reaction.

Eyes: Causes eye irritation.

Ingestion: Harmful if swallowed.

C. FIRST AID:

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes. If symptoms are present after washing, get medical attention.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention.

Ingestion: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Note to Physicians. Absorption of this product into the body leads to the formation of methemoglobin which, in sufficient concentration, causes cyanosis. Since reversion of methemoglobin to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures such as bed rest and oxygen inhalation. Thorough cleansing of the entire contaminated area of the body, including scalp and nails, is of utmost importance. If cyanosis is severe, intravenous injection of methylene blue, 1 milligram per kilogram of body weight, may be of value.

D. TOXICITY DATA:

Test	Species	Result(2)	Classification(6)
Acute Oral LD50	Rat	188 mg/kg	Moderately toxic
Acute Oral LD50	Guinea Pig	80 mg/kg	
Acute Oral LD50	Rabbit	80 mg/kg	

Contact dermatitis in exposed workers has been reported.(2)

Repeated doses of phenylhydrazine have produced kidney and liver injury and hemolytic anemia in experimental animals.(2)

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SECTION VII. PERSONAL PROTECTION AND CONTROLS

A. VENTILATION:

Use process enclosures, local exhaust ventilation or other engineering controls to reduce vapor or dust concentrations to an acceptable level.

B. RESPIRATORY PROTECTION:

An appropriate full faced NIOSH-approved air-supplied respirator should be worn if needed. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 29 CFR 1910.134.

C. SKIN AND EYE PROTECTION:

Wear neoprene gloves, boots, apron and protective clothing.  
Wear goggles or face shield.

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SECTION VIII. SPECIAL STORAGE AND HANDLING PRECAUTIONS

Material is combustible. Keep away from heat and flame.  
Material is a strong reducing agent. Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Do not store near combustible materials. Store in tightly closed container.

High temperatures may cause explosive decomposition, if confined.

Keep from contact with oxidizing materials.

Since empty container retains product residue, follow label warnings even after container is empty.

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SECTION IX. SPILL, LEAK, AND DISPOSAL PROCEDURES

For large spills use a NIOSH-approved self-contained breathing apparatus.

Remove all sources of ignition.

Absorb material in vermiculite or other suitable non-combustible absorbent and place in impervious container.

Dispose in an approved incinerator equipped with afterburner and scrubber or contract with licensed chemical waste disposal service.

Discharge, treatment, or disposal may be subject to federal, state, or local laws.

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SECTION X. ENVIRONMENTAL EFFECTS DATA

A. SUMMARY:

This chemical has a high potential to affect aquatic organisms. It is not likely to bioconcentrate. It is expected to biodegrade and is not expected to persist in the environment. The direct instantaneous discharge to a receiving body of water of an amount of this chemical which will rapidly produce, by dilution, a final concentration of 0.01 mg/L or less is not expected to cause an adverse environmental effect. After dilution with a large amount of water, followed by secondary waste treatment, this chemical is not expected to have any adverse environmental impact.2-5

Unless noted, data below are for phenylhydrazine:

B. ACUTE AQUATIC EFFECTS:

96-hour LC50; Fathead minnow: 0.1-1.0 microL/L(2)

96-hour LC50; Water flea: 0.1-1.0 microL/L(2)

C. SECONDARY WASTE TREATMENT COMPATIBILITY:

At a concentration of 108 mg/L, phenylhydrazine retards fermentation and at 1080 mg/L decomposition processes are almost completely stopped.(4)

Phenylhydrazine hydrochloride at a concentration of 100 mg/L killed an algal culture in 5 days.(3)

D. BIOCONCENTRATION POTENTIAL:

Octanol/Water Partition Coefficient:  $\log P = 1.27$ ;  $P = 18(5)$

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SECTION XI. REFERENCES

1. American Conference of Governmental Industrial Hygienists, Documentation of the Threshold Limit Values, 4th Edition, Cincinnati, Ohio, 1983.
2. Toxicity results are from unpublished data, Health and Environment Laboratories, Eastman Kodak Company, Rochester, New York.
3. Battelle's Columbus Laboratories, Water Quality Critical Data Book - Vol. 3 - Effects of Chemicals on Aquatic Life - Selected Data from the Literature Through 1968, for the U.S. Environmental Protection Agency, Project No. 18050 GWV, Contract No. 68-01-0007, May 1971.
4. McKee, J.E. and Wolf, H.W., Eds., "Water Quality Criteria," State of California, Publication No. 3-A, 1963.
5. Pomona College, Medicinal Chemistry Project, "Chemical Parameter Data Base," Leo, A.J. and Hansch, C., Eds., Seaver Chemistry Laboratory, Claremont, California, June 22, 1983.
6. Hodge, H.C. and Sterner, J.H., American Industrial Hygiene Association Quarterly, 10, 93 (1949).

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