

Material Safety Data Sheet

NFPA	HMIS	Personal Protective Equipment						
	<table border="1" style="margin: auto;"> <tr> <td style="background-color: #00FFFF;">Health Hazard</td> <td style="text-align: center; border: 1px solid black;">2</td> </tr> <tr> <td style="background-color: #FFC0CB;">Fire Hazard</td> <td style="text-align: center; border: 1px solid black;">1</td> </tr> <tr> <td style="background-color: #FFFF00;">Reactivity</td> <td style="text-align: center; border: 1px solid black;">0</td> </tr> </table>	Health Hazard	2	Fire Hazard	1	Reactivity	0	 See Section 15.
Health Hazard	2							
Fire Hazard	1							
Reactivity	0							

Section 1. Chemical Product and Company Identification		Page Number: 1
Common Name/Trade Name	Benzidine	Catalog Number(s). B2010 CAS# 92-87-5 RTECS DC9625000 TSCA TSCA 8(b) inventory: No products were found. CI# Not available.
Manufacturer	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	<b style="color: blue;">IN CASE OF EMERGENCY <b style="color: blue;">CHEMTREC (24hr) 800-424-9300 CALL (310) 516-8000
Commercial Name(s)	Not available.	
Synonym	1,1'-Biphenyl)-4,4'-diamine; 4,4'-Bianiline; 4,4'-Biphenyldiamine; 4,4'-Biphenylenediamine;\n4,4'-Diamino-1,1'-biphenyl; 4,4'-Diaminobiphenyl; 4,4'-Diaminodiphenyl; 4,4'-Diphenylenediamine; p,p'Diaminobiphenyl; p,p'-Dianiline; p,p'-Bianiline; p-Diaminodiphenyl	
Chemical Name	Benzidine	
Chemical Family	Not available.	
Chemical Formula	C12-H12-N2	
Supplier	SPECTRUM LABORATORY PRODUCTS INC. 14422 S. SAN PEDRO STREET GARDENA, CA 90248	

Section 2. Composition and Information on Ingredients					
Name	CAS #	Exposure Limits			% by Weight
		TWA (mg/m ³)	STEL (mg/m ³)	CEIL (mg/m ³)	
1) Benzidine	92-87-5				100
Toxicological Data on Ingredients					
Benzidine: ORAL (LD50): Acute: 309 mg/kg [Rat]. 214 mg/kg [Mouse].					

Section 3. Hazards Identification

Potential Acute Health Effects	Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator), of eye contact (irritant).
Potential Chronic Health Effects	<p>CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC, 1 (Clear evidence. Known to be a human carcinogen) by NTP, + (Proven. Cancer suspect agent) by OSHA.</p> <p>MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.</p> <p>TERATOGENIC EFFECTS: Not available.</p> <p>DEVELOPMENTAL TOXICITY: Not available.</p> <p>The substance may be toxic to kidneys, liver.</p> <p>Repeated or prolonged exposure to the substance can produce target organs damage.</p>

Section 4. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention if irritation occurs.
Skin Contact	Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.
Serious Skin Contact	Not available.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Serious Inhalation	Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
Serious Ingestion	Not available.

Section 5. Fire and Explosion Data

Flammability of the Product	May be combustible at high temperature.
Auto-Ignition Temperature	Not available.
Flash Points	Not available.
Flammable Limits	Not available.
Products of Combustion	These products are carbon oxides (CO, CO ₂), nitrogen oxides (NO, NO ₂ ...).
Fire Hazards in Presence of Various Substances	Slightly flammable to flammable in presence of heat.
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Special Remarks on Fire Hazards	When heated to decomposition it emits very toxic fumes of nitrogen oxides. Material in powder form, capable of creating a dust explosion.
Special Remarks on Explosion Hazards	Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Section 6. Accidental Release Measures

Small Spill Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill Use a shovel to put the material into a convenient waste disposal container.

Section 7. Handling and Storage

Precautions Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label.

Storage Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits Not available.

Section 9. Physical and Chemical Properties

Physical state and appearance Solid. (Crystalline powder.)

Odor Not available.

Molecular Weight 184.24 g/mole

Taste Not available.

pH (1% soln/water) Not available.

Color Beige. White to yellowish. White.

Boiling Point 401°C (753.8°F)

Melting Point 115°C (239°F) - 128 C.

Critical Temperature Not available.

Specific Gravity 1.25 (Water = 1)

Vapor Pressure Not applicable.

Vapor Density 6.36 (Air = 1)

Volatility Not available.

Odor Threshold Not available.

Water/Oil Dist. Coeff. The product is more soluble in oil; log(oil/water) = 1.3

Ionicity (in Water) Not available.

Dispersion Properties See solubility in water, diethyl ether.

Solubility Partially soluble in diethyl ether.
Very slightly soluble in cold water.
1 gram dissolves in 2500 ml cold water; 1 gram dissolves in 107 ml boiling water; 1 gram dissolves in 5 ml boiling alcohol; 1 gram dissolves in 50 ml ether.
Other information on Solubility in Water: 322 mg/L at 25 deg. C.

Section 10. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not available.
Conditions of Instability	Excess heat, incompatible materials, dust generation.
Incompatibility with various substances	Not available.
Corrosivity	Not available.
Special Remarks on Reactivity	Benzidine is hypergolic (will ignite spontaneously) with red fuming nitric acid.
Special Remarks on Corrosivity	Not available.
Polymerization	Will not occur.

Section 11. Toxicological Information

Routes of Entry	Absorbed through skin. Inhalation. Ingestion.
Toxicity to Animals	Acute oral toxicity (LD50): 214 mg/kg [Mouse].
Chronic Effects on Humans	CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC, 1 (Clear evidence. Known to be a human carcinogen) by NTP, + (Proven. Cancer suspect agent) by OSHA. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver.
Other Toxic Effects on Humans	Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).
Special Remarks on Toxicity to Animals	Not available.
Special Remarks on Chronic Effects on Humans	May affect genetic material (mutagenic). May cause cancer.
Special Remarks on other Toxic Effects on Humans	Acute Potential Health Effects Skin: May cause skin irritation. Can be absorbed through the skin. Eyes: May cause eye irritation. Inhalation: Ingestion: Harmful if swallowed. It can cause nausea, vomiting. It may cause liver and kidney damage. Chronic Potential Health Effects Skin: Prolonged or repeated skin contact may cause skin allergy.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
Toxicity of the Products of Biodegradation	The products of degradation are less toxic than the product itself.
Special Remarks on the Products of Biodegradation	Not available.

Section 13. Disposal Considerations

Waste Disposal Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14. Transport Information

DOT Classification CLASS 6.1: Poisonous material.

Identification : Benzidine UNNA: 1885 PG: II

Special Provisions for Transport Not available.

DOT (Pictograms)

**Section 15. Other Regulatory Information and Pictograms**

Federal and State Regulations

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzidine
 California prop. 65 (no significant risk level): Benzidine: 1e-006 mg/day (value)
 California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzidine
 Connecticut carcinogen reporting list.: Benzidine
 Connecticut hazardous material survey.: Benzidine
 Illinois chemical safety act: Benzidine
 New York release reporting list: Benzidine
 Rhode Island RTK hazardous substances: Benzidine
 Pennsylvania RTK: Benzidine
 Minnesota: Benzidine
 Massachusetts RTK: Benzidine
 Massachusetts spill list: Benzidine
 New Jersey: Benzidine
 New Jersey spill list: Benzidine
 Louisiana spill reporting: Benzidine
 California Director's List of Hazardous Substances: Benzidine
 TSCA 5(a)2 final significant rules: Benzidine
 TSCA 8(c) calls for record of SAR: Benzidine
 TSCA 8(d) H and S data reporting: Benzidine: Effective date: 6/1/87; Sunset date: 6/1/97
 SARA 302/304/311/312 extremely hazardous substances: Benzidine
 SARA 313 toxic chemical notification and release reporting: Benzidine
 CERCLA: Hazardous substances: Benzidine: 1 lbs. (0.4536 kg)

California Proposition 65 Warnings

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzidine
 California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
 EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 202-199-1).
 Canada: Listed on Canadian Non-Domestic Substance List (NDSL).
 China: Listed on National Inventory.
 Japan: Not listed on National Inventory (ENCS).
 Korea: Listed on National Inventory (KECI).
 Philippines: Listed on National Inventory (PICCS).
 Australia: Listed on AICS.

Other Classifications

WHMIS (Canada) CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
 CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
 Class D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC)

R22- Harmful if swallowed.
 R45- May cause cancer.
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S53- Avoid exposure - obtain special instructions before use.
 S60- This material and its container must be disposed of as hazardous waste.
 S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMS (U.S.A.)

Health Hazard	2
Fire Hazard	1
Reactivity	0
Personal Protection	E

National Fire Protection Association (U.S.A.)

Health  Flammability **1**
 Reactivity **0**
 Specific hazard

WHMIS (Canada) (Pictograms)



DSCL (Europe) (Pictograms)



TDG (Canada) (Pictograms)



ADR (Europe) (Pictograms)



Protective Equipment



Gloves



Lab coat.



Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.



Safety glasses.

Section 16. Other Information**MSDS Code** B0674**References** Not available.**Other Special Considerations** Major Uses: in manufacture of azo dyes; as a reagent for the detection of blood; as a rubber compounding agent; as a reagent for hydrogen peroxide in milk; in the manufacture of plastic films; in organic synthesis; a chemical intermediate

Validated by Sonia Owen on 9/18/2008.

Verified by Sonia Owen.

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CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.