

Material Safety Data Sheet

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Date Updated: 14/MAR/2004
Version 1.1
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 3,3'-DIAMINOBENZIDINE, 99%
Product Number D12384

Company Sigma-Aldrich Pty. Ltd.
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2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
3,3'-DIAMINOBENZIDINE	91-95-2	202-110-6	None

Formula C12H14N4
Molecular Weight 214.27 AMU
Synonyms (1,1'-Biphenyl)-3,3',4,4'-tetramine (9CI) *
3,3'-Diaminobenzidene *
3,3',4,4'-Diphenyltetramine *
3,3',4,4'-Tetraaminobiphenyl *
3,3',4,4'-Tetraaminodiphenyl

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Harmful if swallowed. Irritating to eyes, respiratory system and skin.

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 skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

AFTER EYE CONTACT

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.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

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.

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 respirator, chemical safety goggles, 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. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep tightly closed.

SPECIAL REQUIREMENTS: Light sensitive.**8 - Exposure Controls / Personal Protection****ENGINEERING CONTROLS**

Safety shower and eye bath. Mechanical exhaust required.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	0.003 ppm
		0.03 mg/m ³ , E

Remarks: 4

Remarks: H, TRGS 901-48

EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	0.03 mg/m ³
		0.003 ppm

Remarks: K

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	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	173 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	N/A	
SG/Density	N/A	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
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	N/A	

10 - Stability and Reactivity

STABILITY

Stable: Stable.
Conditions to Avoid: Light.
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: DV8750000

ACUTE TOXICITY

LD50
Oral
Mouse
1834 mg/kg

SIGNS AND SYMPTOMS OF EXPOSURE

The chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes eye irritation.

Inhalation: May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion: Harmful if swallowed.

CONDITIONS AGGRAVATED BY EXPOSURE

Although diaminobenzidine is structurally related to benzidine, there is no evidence for the carcinogenicity of diaminobenzidine.

CHRONIC EXPOSURE - CARCINOGEN

Rat

Route of Application: Oral

Exposure Time: 27D

Result: Skin and Appendages: Other: Tumors.

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria.

CHRONIC EXPOSURE - MUTAGEN

Rat

500 UMOL/L

Cell Type: liver

Unscheduled DNA synthesis

Mouse

100 MG/KG

Intraperitoneal

Other mutation test systems

Mouse

100 MG/KG

Intraperitoneal

Cytogenetic analysis

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL

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.

14 - Transport Information

RID/ADR

Non-hazardous for road transport.

IMDG

Non-hazardous for sea transport.

IATA

Non-hazardous for air transport.

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

INDICATION OF DANGER: Xn

Harmful.

R-PHRASES: 22-36/37/38

Harmful if swallowed. Irritating to eyes, respiratory system and skin.

S-PHRASES: 26

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

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.

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