

**SIGMA-ALDRICH****Material Safety Data Sheet**Version 3.0  
Revision Date 01/15/2009  
Print Date 12/14/2009**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : Benzene-d<sub>6</sub>  
 Product Number : 151815  
 Brand : Aldrich  
 Company : Sigma-Aldrich  
 3050 Spruce Street  
 SAINT LOUIS MO 63103  
 USA  
 Telephone : +18003255832  
 Fax : +18003255052  
 Emergency Phone # : (314) 776-6555

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms : Hexadeuterobenzene  
 Formula : C<sub>6</sub>D<sub>6</sub>  
 Molecular Weight : 84.15 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Benzene-D6			
1076-43-3	214-061-8	-	-

**3. HAZARDS IDENTIFICATION****Emergency Overview****OSHA Hazards**

Flammable Liquid, Target Organ Effect, Irritant, Carcinogen, Mutagen

**Target Organs**

Blood, Bone marrow, Eyes, Female reproductive system.

**HMS Classification**

Health Hazard: 2  
 Chronic Health Hazard: \*  
 Flammability: 3  
 Physical hazards: 0

**NFPA Rating**

Health Hazard: 2  
 Fire: 3  
 Reactivity Hazard: 0

**Potential Health Effects**Sigma-Aldrich Corporation  
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**Inhalation**  
**Skin**  
**Eyes**  
**Ingestion**

May be harmful if inhaled. Causes respiratory tract irritation.  
 May be harmful if absorbed through skin. Causes skin irritation.  
 Causes eye irritation.  
 Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.

**4. FIRST AID MEASURES****General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**5. FIRE-FIGHTING MEASURES****Flammable properties**

Flash point -11 °C (12 °F) - closed cup

Ignition temperature 562 °C (1,044 °F)

**Suitable extinguishing media**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

**Special protective equipment for fire-fighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Further information**

Use water spray to cool unopened containers.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions**

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods for cleaning up**

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

**7. HANDLING AND STORAGE****Handling**

Avoid exposure - obtain special instructions before use. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

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**Storage**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

Handle and store under inert gas. hygroscopic

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Update	Basis
Benzene-D6	1076-43-3	TWA	0.5 ppm 1.6 mg/m3	1997-05-21	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004; Committees on Threshold Limit Values (TLVs ) and Biological Exposure Indices (BEIs)
Remarks	Skin contact does contribute to exposure. Confirmed human carcinogen.				
		STEL	2.5 ppm 8 mg/m3	1997-05-21	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004; Committees on Threshold Limit Values (TLVs ) and Biological Exposure Indices (BEIs)
	Skin contact does contribute to exposure. Confirmed human carcinogen.				
		TWA	1 ppm	1989-03-01	US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A
	Sec. 1910.1028 Benzene. The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply. See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028.				
		STEL	5 ppm	1989-03-01	US. Department of Labor - Occupational Safety and Health Administration

					Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A
	See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028. The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply. Sec. 1910.1028 Benzene.				
		TWA	10 ppm	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration; (OSHA) Standards, Toxic and Hazardous Substances, Subpart Z 29 CFR Part 1910.1000, Table Z-2
	(Z37.40-1969) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.				
		CEIL	25 ppm	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration; (OSHA) Standards, Toxic and Hazardous Substances, Subpart Z 29 CFR Part 1910.1000, Table Z-2
	(Z37.40-1969) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.				
		AMP	50 ppm	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration; (OSHA) Standards, Toxic and Hazardous Substances, Subpart Z 29 CFR Part 1910.1000, Table Z-2
	(Z37.40-1969) This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.				
		TWA	1 ppm	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PEL) 29 CFR 1910.1000 Air Contaminants.
		STEL	5 ppm	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration

(OSHA) Permissible  
Exposure Limits (PEL) 29  
CFR 1910.1000 Air  
Contaminants.

#### Personal protective equipment

##### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

##### Hand protection

Handle with gloves.

##### Eye protection

Safety glasses

##### Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

##### Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance

Form liquid  
Colour colourless

#### Safety data

pH no data available  
Melting point 6.8 °C (44.2 °F)  
Boiling point 79.1 °C (174.4 °F)  
Flash point -11 °C (12 °F) - closed cup  
Ignition temperature 562 °C (1,044 °F)  
Lower explosion limit 1.3 %(V)  
Upper explosion limit 8 %(V)  
Vapour pressure 221 hPa (166 mmHg) at 37.7 °C (99.9 °F)  
99.5 hPa (74.6 mmHg) at 20 °C (68 °F)  
Density 0.95 g/mL at 25 °C (77 °F)  
Water solubility no data available  
Relative vapour density 2.91  
- (Air = 1.0)

## 10. STABILITY AND REACTIVITY

#### Storage stability

Stable under recommended storage conditions.

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#### Conditions to avoid

Heat, flames and sparks.

#### Materials to avoid

Acids, Bases, Halogens, Strong oxidizing agents, metal salts

#### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

#### Hazardous reactions

Vapours may form explosive mixture with air.

## 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

no data available

#### Irritation and corrosion

no data available

#### Sensitisation

no data available

#### Chronic exposure

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

IARC: Group 1 - Carcinogenic to humans (Benzene-D6)

NTP: NTP known to be carcinogenic (Benzene-D6)

OSHA: 1910.1028 (Benzene-D6)

Laboratory experiments have shown mutagenic effects.

#### Signs and Symptoms of Exposure

Nausea, Dizziness, Headache, Inhalation of high concentrations of benzene may have an initial stimulatory effect on the central nervous system characterized by exhilaration, nervous excitation and/or giddiness, depression, drowsiness, or fatigue. The victim may experience tightness in the chest, breathlessness, and loss of consciousness. Tremors, convulsions, and death due to respiratory paralysis or circulatory collapse can occur in a few minutes to several hours following severe exposures. Aspiration of small amounts of liquid immediately causes pulmonary edema and hemorrhage of pulmonary tissue. Direct skin contact may cause erythema. Repeated or prolonged skin contact may result in drying, scaling dermatitis, or development of secondary skin infections. The chief target organ is the hematopoietic system. Bleeding from the nose, gums, or mucous membranes and the development of purpuric spots, pancytopenia, leukopenia, thrombocytopenia, aplastic anemia, and leukemia may occur as the condition progresses. The bone marrow may appear normal, aplastic or hyperplastic, and may not correlate with peripheral blood-forming tissues. The onset of effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased.

#### Potential Health Effects

**Inhalation** May be harmful if inhaled. Causes respiratory tract irritation,  
**Skin** May be harmful if absorbed through skin. Causes skin irritation.  
**Eyes** Causes eye irritation.  
**Ingestion** Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.  
**Target Organs** Blood, Bone marrow, Eyes, Female reproductive system.

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**12. ECOLOGICAL INFORMATION****Elimination information (persistence and degradability)**

no data available

**Ecotoxicity effects**

no data available

**Further information on ecology**

no data available

**13. DISPOSAL CONSIDERATIONS****Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

**14. TRANSPORT INFORMATION****DOT (US)**

UN-Number: 1114 Class: 3 Packing group: II  
 Proper shipping name: Benzene  
 Marine pollutant: No  
 Poison Inhalation Hazard: No

**IMDG**

UN-Number: 1114 Class: 3 Packing group: II EMS-No: F-E, S-D  
 Proper shipping name: BENZENE  
 Marine pollutant: No

**IATA**

UN-Number: 1114 Class: 3 Packing group: II  
 Proper shipping name: Benzene

**15. REGULATORY INFORMATION****OSHA Hazards**

Flammable Liquid, Target Organ Effect, Irritant, Carcinogen, Mutagen

**DSL Status**

This product contains the following components listed on the Canadian NDSL list. All other components are on the Canadian DSL list.

Benzene-D6

CAS-No.  
1076-43-3**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

Benzene-D6

CAS-No.                      Revision Date  
1076-43-3                      1991-07-01**SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

Benzene-D6

CAS-No.                      Revision Date  
1076-43-3                      1991-07-01**Pennsylvania Right To Know Components**

Benzene-D6

CAS-No.                      Revision Date  
1076-43-3                      1991-07-01**New Jersey Right To Know Components**

Benzene-D6

CAS-No.                      Revision Date  
1076-43-3                      1991-07-01**California Prop. 65 Components**

WARNING! This product contains a chemical known in the State of California to cause cancer.  
Benzene-D6

CAS-No.                      Revision Date  
1076-43-3                      2004-05-12**California Prop. 65 Components**

WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.  
Benzene-D6

CAS-No.                      Revision Date  
1076-43-3                      2004-05-12**16. OTHER INFORMATION****Further Information**

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