# **Material Safety Data Sheet**

Version 4.2 Revision Date 03/22/2011 Print Date 08/25/2011

#### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Hexamethylenediamine

Product Number : H11696 Brand : Aldrich

Supplier : Sigma-Aldrich

3050 Spruce Street SAINT LOUIS MO 63103

USA

Telephone : +1 800-325-5832 Fax : +1 800-325-5052 Emergency Phone # (For : (314) 776-6555

both supplier and

manufacturer)

Preparation Information : Sigma-Aldrich Corporation

Product Safety - Americas Region

1-800-521-8956

#### 2. HAZARDS IDENTIFICATION

### **Emergency Overview**

### **OSHA Hazards**

Target Organ Effect, Harmful by ingestion., Harmful by skin absorption., Corrosive

#### **Target Organs**

Liver

#### **GHS Classification**

Acute toxicity, Dermal (Category 4) Acute toxicity, Oral (Category 4) Skin corrosion (Category 1B) Serious eye damage (Category 1)

Specific target organ toxicity - single exposure (Category 3)

Acute aquatic toxicity (Category 3)

#### GHS Label elements, including precautionary statements

Pictogram



Signal word Danger

Hazard statement(s)

H302 + H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

H402 Harmful to aquatic life.

Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if

present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/ physician.

**HMIS Classification** 

Health hazard: 3
Chronic Health Hazard: \*
Flammability: 2
Physical hazards: 1

**NFPA Rating** 

Health hazard: 3 Fire: 2 Reactivity Hazard: 1

#### **Potential Health Effects**

**Inhalation** May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous

membranes and upper respiratory tract.

**Skin** Harmful if absorbed through skin. Causes skin burns.

**Eyes** Causes eye burns. **Ingestion** Harmful if swallowed.

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 1,6-Diaminohexane

1,6-Hexanediamine

Formula :  $C_6H_{16}N_2$ Molecular Weight : 116.2 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Hexamethylenediamine			
124-09-4	204-679-6	612-104-00-9	-

# 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

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

#### 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

### Conditions of flammability

Not flammable or combustible.

# Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

# Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

#### **Hazardous combustion products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)

#### 6. ACCIDENTAL RELEASE MEASURES

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### Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

### **Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

#### 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

#### Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Hygroscopic. Store under inert gas.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis	
Hexamethylenedi amine	124-09-4	TWA	0.5 ppm	USA. ACGIH Threshold Limit Values (TLV)	
Remarks	Upper Respiratory Tract & skin irritation				
		TWA	1 ppm	USA. Workplace Environmental Exposure Levels (WEEL)	

### Personal protective equipment

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) 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. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

## Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

# Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

# **Appearance**

Form solid

Colour colourless

Safety data

рΗ 12.4 at 100 g/l at 25 °C (77 °F)

Meltina Melting point/range: 42 - 45 °C (108 - 113 °F) - lit.

point/freezing point

**Boiling point** 204 - 205 °C (399 - 401 °F) Flash point 80 °C (176 °F) - closed cup

Ignition temperature no data available Autoignition no data available

temperature

0.7 %(V) Lower explosion limit 6.3 %(V) Upper explosion limit

Vapour pressure no data available

Density 0.89 g/cm3 at 25 °C (77 °F)

4.01

Water solubility no data available Partition coefficient: log Pow: 0.02

n-octanol/water Relative vapour

density - (Air = 1.0)

Odour no data available Odour Threshold no data available Evaporation rate no data available

### 10. STABILITY AND REACTIVITY

# **Chemical stability**

hygroscopic Stable under recommended storage conditions.

#### Possibility of hazardous reactions

no data available

#### Conditions to avoid

no data available

### Materials to avoid

acids, Acid chlorides, Acid anhydrides, Strong oxidizing agents, Carbon dioxide (CO2)

#### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx) Other decomposition products - no data available

### 11. TOXICOLOGICAL INFORMATION

#### **Acute toxicity**

Oral LD50

LD50 Oral - rat - 750 mg/kg

Inhalation LC50 **Dermal LD50** 

LD50 Dermal - rabbit - 1,110 mg/kg

#### Other information on acute toxicity

no data available

#### Skin corrosion/irritation

no data available

### Serious eye damage/eye irritation

no data available

### Respiratory or skin sensitization

no data available

# Germ cell mutagenicity

no data available

### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable,

possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a

carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or

anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a

carcinogen or potential carcinogen by OSHA.

# Reproductive toxicity

no data available

### **Teratogenicity**

no data available

# Specific target organ toxicity - single exposure (Globally Harmonized System)

May cause respiratory irritation.

#### Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

# Aspiration hazard

no data available

### Potential health effects

Inhalation May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous

membranes and upper respiratory tract.

Ingestion Harmful if swallowed.

Skin Harmful if absorbed through skin. Causes skin burns.

**Eves** Causes eve burns.

#### Signs and Symptoms of Exposure

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

## Synergistic effects

no data available

# Additional Information

RTECS: MO1180000

#### 12. ECOLOGICAL INFORMATION

#### **Toxicity**

Toxicity to fish LC50 - Leuciscus idus (Golden orfe) - 62 mg/l - 96 h

Toxicity to daphnia

invertebrates.

EC50 - Daphnia magna (Water flea) - 23.4 mg/l - 48 h and other aquatic

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# Persistence and degradability

Biodegradability Result: 56 % - Partially biodegradable.

#### Bioaccumulative potential

no data available

#### Mobility in soil

no data available

#### PBT and vPvB assessment

no data available

#### Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life.

#### 13. DISPOSAL CONSIDERATIONS

#### **Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. 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.

### Contaminated packaging

Dispose of as unused product.

# 14. TRANSPORT INFORMATION

DOT (US)

UN number: 2280 Class: 8 Packing group: III

Proper shipping name: Hexamethylenediamine, solid

Marine pollutant: No

Poison Inhalation Hazard: No

**IMDG** 

UN number: 2280 Class: 8 Packing group: III EMS-No: F-A, S-B

Proper shipping name: HEXAMETHYLENEDIAMINE, SOLID

Marine pollutant: No

IATA

UN number: 2280 Class: 8 Packing group: III

Proper shipping name: Hexamethylenediamine, solid

#### 15. REGULATORY INFORMATION

### **OSHA Hazards**

Target Organ Effect, Harmful by ingestion., Harmful by skin absorption., Corrosive

#### **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**

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

### **Massachusetts Right To Know Components**

Hexamethylenediamine CAS-No. Revision Date 2007-03-01

Pennsylvania Right To Know Components

Hexamethylenediamine CAS-No. Revision Date 2007-03-01

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# **New Jersey Right To Know Components**

Hexamethylenediamine

CAS-No. 124-09-4 Revision Date 2007-03-01

# California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

#### 16. OTHER INFORMATION

#### **Further information**

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