

**Material Safety Data Sheet**

Version 3.2  
Revision Date 02/12/2011  
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**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : **Di-n-butylmagnesium solution**

Product Number : 345113  
Brand : Aldrich  
Product Use : For laboratory research purposes.

Supplier : **Sigma-Aldrich** Manufacturer : Sigma-Aldrich Corporation  
3050 Spruce Street 3050 Spruce St.  
SAINT LOUIS MO 63103 St. Louis, Missouri 63103  
USA USA

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

Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

**2. HAZARDS IDENTIFICATION**

**Emergency Overview**

**OSHA Hazards**

Flammable liquid, Water Reactive, Target Organ Effect, Corrosive

**Target Organs**

Central nervous system, Heart, Lungs, ears, Kidney, Liver, Bladder

**GHS Classification**

Flammable liquids (Category 2)  
Pyrophoric liquids (Category 1)  
Substances, which in contact with water, emit flammable gases (Category 1)  
Skin corrosion (Category 1B)  
Serious eye damage (Category 1)  
Specific target organ toxicity - single exposure (Category 3)  
Aspiration hazard (Category 1)  
Acute aquatic toxicity (Category 1)  
Chronic aquatic toxicity (Category 1)

**GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.  
H250 Catches fire spontaneously if exposed to air.  
H260 In contact with water releases flammable gases which may ignite spontaneously.  
H304 May be fatal if swallowed and enters airways.  
H314 Causes severe skin burns and eye damage.  
H336 May cause drowsiness or dizziness.  
H410 Very toxic to aquatic life with long lasting effects.

**Precautionary statement(s)**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P222 Do not allow contact with air.  
P223 Keep away from any possible contact with water, because of violent reaction and possible flash fire.  
P231 + P232 Handle under inert gas. Protect from moisture.  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
P273 Avoid release to the environment.  
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.  
P331 Do NOT induce vomiting.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.  
P422 Store contents under inert gas.  
P501 Dispose of contents/ container to an approved waste disposal plant.

**HMIS Classification**

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

**NFPA Rating**

Health hazard: 3  
Fire: 3  
Reactivity Hazard: 2  
Special hazard.: W

**Potential Health Effects**

**Inhalation** May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Vapours may cause drowsiness and dizziness.

**Skin** May be harmful if absorbed through skin. Causes skin burns.

**Eyes** Causes eye burns.

**Ingestion** May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula : C<sub>8</sub>H<sub>18</sub>Mg

CAS-No.	EC-No.	Index-No.	Concentration
<b>Heptane</b>			
142-82-5	205-563-8	601-008-00-2	80 %
<b>Dibutylmagnesium</b>			
1191-47-5	214-736-7	-	20 %
<b>Triethylaluminium</b>			
97-93-8	202-619-3	013-004-00-2	<= 1 %

**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.

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**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**

Flammable in the presence of a source of ignition when the temperature is above the flash point. May burn in presence of air, or emit a flammable gas in the presence of water or water vapour. Keep away from heat/sparks/open flame/hot surface. No smoking. Keep away from heat/sparks/open flame/hot surface/air/water. No smoking.

**Suitable extinguishing media**

Dry powder

**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, Magnesium oxide, Aluminum oxide

**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. Discharge into the environment must be avoided.

**Methods and materials for containment and cleaning up**

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Do not flush with water.

**7. HANDLING AND STORAGE****Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

**Conditions for safe 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.

Never allow product to get in contact with water during storage.

Air sensitive.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Heptane	142-82-5	TWA	400 ppm 1,600 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		STEL	500 ppm 2,000 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	500 ppm 2,000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

Remarks	The value in mg/m3 is approximate.		
	TWA	400 ppm	USA. ACGIH Threshold Limit Values (TLV)
Central Nervous System impairment Upper Respiratory Tract irritation			
	STEL	500 ppm	USA. ACGIH Threshold Limit Values (TLV)
Central Nervous System impairment Upper Respiratory Tract irritation			
	TWA	85 ppm 350 mg/m3	USA. NIOSH Recommended Exposure Limits
15 minute ceiling value			
	C	440 ppm 1,800 mg/m3	USA. NIOSH Recommended Exposure Limits
15 minute ceiling value			

**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. 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. Protective gloves against thermal risks

**Eye protection**

Tightly fitting safety goggles. Faceshield (8-inch minimum). 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, Flame retardant antistatic protective clothing. 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	liquid
Colour	no data available

**Safety data**

pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	-6 °C (21 °F) - closed cup
Ignition temperature	no data available
Autoignition	no data available

temperature

Lower explosion limit no data available  
Upper explosion limit no data available  
Vapour pressure no data available  
Density 0.713 g/cm<sup>3</sup>  
Water solubility no data available  
Partition coefficient: n-octanol/water no data available  
Relative vapour density no data available  
Odour no data available  
Odour Threshold no data available  
Evaporation rate no data available

## 10. STABILITY AND REACTIVITY

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

Vapours may form explosive mixture with air.  
Reacts violently with water.

### Conditions to avoid

Heat, flames and sparks, Extremes of temperature and direct sunlight, Exposure to moisture.

### Materials to avoid

Bases, Oxidizing agents, Strong oxidizing agents, Oxygen, Alcohols, acids

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Magnesium oxide, Aluminum oxide  
Other decomposition products - no data available

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Oral LD50

no data available

#### Inhalation LC50

no data available

#### Dermal LD50

no data available

#### Other information on acute toxicity

no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/eye irritation

Eyes: 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)

no data available

### 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. Vapours may cause drowsiness and dizziness.

#### Ingestion

May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

#### Skin

May be harmful if absorbed through skin. Causes skin burns.

#### Eyes

Causes eye burns.

### Signs and Symptoms of Exposure

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

### Synergistic effects

no data available

### Additional Information

RTECS: Not available

## 12. ECOLOGICAL INFORMATION

### Toxicity

no data available

### Persistence and degradability

no data available

### Bioaccumulative potential

no data available

### Mobility in soil

no data available

### PBT and vPvB assessment

no data available

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**Other adverse effects**

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

Very toxic to aquatic life with long lasting effects.

Triethylaluminium  
Dibutylmagnesium

97-93-8  
1191-47-5

1993-04-24

**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.

**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. Offer surplus and non-recyclable solutions to a licensed disposal company. 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: 3399 Class: 4.3 (3) Packing group: I  
Proper shipping name: Organometallic substance, liquid, water-reactive, flammable (Dibutylmagnesium, Heptane, Triethylaluminium)  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

UN number: 3399 Class: 4.3 (3) Packing group: I EMS-No: F-G, S-N  
Proper shipping name: ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE (Triethylaluminium, Dibutylmagnesium, Heptane)  
Marine pollutant: No

**IATA**

UN number: 3399 Class: 4.3 (3) Packing group: I  
Proper shipping name: Organometallic substance, liquid, water-reactive, flammable (Triethylaluminium, Dibutylmagnesium, Heptane)  
IATA Passenger: Not permitted for transport

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

Flammable liquid, Water Reactive, Target Organ Effect, 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**

Fire Hazard, Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

	CAS-No.	Revision Date
Heptane	142-82-5	2007-03-01
Triethylaluminium	97-93-8	1993-04-24

**Pennsylvania Right To Know Components**

	CAS-No.	Revision Date
Heptane	142-82-5	2007-03-01
Triethylaluminium	97-93-8	1993-04-24
Dibutylmagnesium	1191-47-5	

**New Jersey Right To Know Components**

	CAS-No.	Revision Date
Heptane	142-82-5	2007-03-01

**16. OTHER INFORMATION****Further information**

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