1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Decaborane(14)
Product Number: 278815
Brand: Aldrich
Supplier: Sigma-Aldrich
Supplier Address: 3050 Spruce Street, SAINT LOUIS MO 63103, USA
Telephone: +1 800-325-5832
Fax: +1 800-325-5052
Emergency Phone #: (314) 776-6555
Preparation Information: Sigma-Aldrich Corporation
Telephone: 1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards: Flammable solid, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Irritant

Target Organs: Central nervous system, Liver, Kidney

GHS Classification:
- Flammable solids (Category 1)
- Acute toxicity, Oral (Category 3)
- Acute toxicity, Inhalation (Category 2)
- Acute toxicity, Dermal (Category 3)
- Skin irritation (Category 2)
- Eye irritation (Category 2A)
- Specific target organ toxicity - single exposure (Category 3)

GHS Label elements, including precautionary statements

Pictogram: 

Signal word: Danger
Hazard statement(s):
- H228: Flammable solid.
- H301 + H311: Toxic if swallowed or in contact with skin
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H330: Fatal if inhaled.
- H335: May cause respiratory irritation.

Precautionary statement(s):
- P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P260: Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
- P280: Wear protective gloves/ protective clothing.
P284 Wear respiratory 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: 0
- Physical hazards: 3

NFPA Rating
- Health hazard: 3
- Fire: 0
- Reactivity Hazard: 3

Potential Health Effects
- Inhalation May be fatal if inhaled. Causes respiratory tract irritation.
- Skin Toxic if absorbed through skin. Causes skin irritation.
- Eyes Causes eye irritation.
- Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>Decaboron tetradecahydride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>$H_{14}B_{10}$</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>122.22 g/mol</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decaborane</td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>17702-41-9</td>
</tr>
<tr>
<td>EC-No.</td>
<td>241-711-8</td>
</tr>
</tbody>
</table>

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. FIREFIGHTING MEASURES

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

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Borane/boron oxides

Further information
Use water spray to cool unopened containers.
6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. 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.

Methods and materials for containment and cleaning up
Sweep up and shovel. 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). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).

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. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decaborane</td>
<td>17702-41-9</td>
<td>TWA 0.05 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Central Nervous System convulsion cognitive decrement Danger of cutaneous absorption</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL 0.15 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Central Nervous System convulsion cognitive decrement Danger of cutaneous absorption</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>TWA 0.05 ppm 0.3 mg/m3</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin designation</td>
<td>The value in mg/m3 is approximate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA 0.05 ppm 0.3 mg/m3</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<td></td>
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<tr>
<td>Skin notation</td>
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<td></td>
<td>TWA 0.05 ppm 0.3 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
<td></td>
<td></td>
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<tr>
<td>Potential for dermal absorption</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
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, 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**
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- **Form**: crystalline
- **Colour**: white

**Safety data**
- **pH**: no data available
- **Melting point/freezing point**: Melting point/range: 98 - 100 °C (208 - 212 °F) - lit.
- **Boiling point**: 213 °C (415 °F) - lit.
- **Flash point**: no data available
- **Flammability (solid, gas)**: The substance or mixture is a flammable solid with the category 1.
- **Ignition temperature**: no data available
- **Auto-ignition temperature**: no data available
- **Lower explosion limit**: no data available
- **Upper explosion limit**: no data available
- **Vapour pressure**: 0.20 hPa (0.15 mmHg) at 20 °C (68 °F)
- **Density**: 0.94 g/cm³ at 25 °C (77 °F)
- **Water solubility**: no data available
- **Partition coefficient: n-octanol/water**: no data available
- **Relative vapor 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
no data available

Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid
Oxygen, Carbon disulfide, Oxidizing agents, Forms dangerously shock sensitive mixtures with carbon tetrachloride, Halogenated hydrocarbon

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Borane/boron oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
LD50 Oral - rat - 64 mg/kg

Inhalation LC50
LC50 Inhalation - rat - 4 h - 46 ppm
Remarks: Behavioral:Convulsions or effect on seizure threshold. Liver:Other changes. Kidney, Ureter, Bladder:Other changes.

Dermal LD50
LD50 Dermal - rat - 740 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)
Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>May be fatal if inhaled. Causes respiratory tract irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Toxic if swallowed.</td>
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<tr>
<td>Skin</td>
<td>Toxic if absorbed through skin. Causes skin irritation.</td>
</tr>
<tr>
<td>Eyes</td>
<td>Causes eye irritation.</td>
</tr>
</tbody>
</table>

Signs and Symptoms of Exposure
May cause convulsions, Nausea, Dizziness, Headache. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
RTECS: HD1400000

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

Other adverse effects
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. 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: 1868   Class: 4.1 (6.1)   Packing group: II
Proper shipping name: Decaborane
Reportable Quantity (RQ):
Marine Pollutant: No
Poison Inhalation Hazard: No

**IMDG**
UN number: 1868  Class: 4.1 (6.1)  Packing group: II  EMS-No: F-A, S-G
Proper shipping name: DECABORANE
Marine Pollutant: No

**IATA**
UN number: 1868  Class: 4.1 (6.1)  Packing group: II
Proper shipping name: Decaborane
IATA Passenger: Not permitted for transport

15. REGULATORY INFORMATION

**OSHA Hazards**
Flammable solid, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Irritant

**SARA 302 Components**
The following components are subject to reporting levels established by SARA Title III, Section 302:

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<td>2007-07-01</td>
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**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, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

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**Pennsylvania Right To Know Components**

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**New Jersey Right To Know Components**

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**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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