SECTION 1: Identification

1.1. Product identifier
   - Product name: BERYL
   - Product code: SIB0980.0
   - Product form: Substance
   - Physical state: Solid
   - Formula: Al₂Be₃O₁₈Si₆
   - Synonyms: BERYLLIUM ALUMINOSILICATE, BERYLLIUM ALUMINUM SILICATE
   - Chemical family: INORGANIC SILICATE

1.2. Recommended use of the chemical and restrictions on use
   - Recommended use: Chemical intermediate
     For research and industrial use only

1.3. Details of the supplier of the safety data sheet
   - GELEST, INC.
     11 East Steel Road
     Morrisville, PA 19067
     USA
     T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
     info@gelest.com - www.gelest.com

1.4. Emergency telephone number
   - Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture
   - GHS-US classification
     Acute toxicity (oral) Category 3 - H301
     Carcinogenicity Category 1A - H350
   - Full text of H statements: see section 16

2.2. Label elements
   - GHS-US labeling
     Hazard pictograms (GHS-US): 
     ![GHS05]
     ![GHS08]
     - Signal word (GHS-US): Danger
     - Hazard statements (GHS-US): H301 - Toxic if swallowed
       H350 - May cause cancer
     - Precautionary statements (GHS-US): P201 - Obtain special instructions before use
       P202 - Do not handle until all safety precautions have been read and understood
       P280 - Wear protective gloves/protective clothing/eye protection/face protection
       P308+P313 - If exposed or concerned: Get medical advice/attention
       P264 - Wash hands thoroughly after handling
       P270 - Do not eat, drink or smoke when using this product
       P330 - Rinse mouth
       P301+P310 - If swallowed: Immediately call a POISON CENTER
       P321 - Specific treatment (see first aid instructions on this label)
       P405 - Store locked up
       P501 - Dispose of contents/container to licensed waste disposal facility.

2.3. Hazards not otherwise classified (HNOC)
   - No additional information available

2.4. Unknown acute toxicity (GHS US)
   - No data available
SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent
Name : BERYL
CAS No : 12168-80-8

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryl</td>
<td>(CAS No) 1302-52-9</td>
<td>97 - 100</td>
<td>Acute Tox. 3 (Oral), H301 Carc. 1A, H350</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact : Wash with plenty of soap and water. Get medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : May cause cancer.
Symptoms/effects after inhalation : May cause irritation to the respiratory tract.
Symptoms/effects after skin contact : May cause skin irritation.
Symptoms/effects after eye contact : May cause eye irritation.
Symptoms/effects after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Not combustible.
Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : None known.

5.3. Advice for firefighters

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe dust.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.
Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8. "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.
SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide local exhaust or general room ventilation to minimize exposure to dust.

Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Keep container tightly closed. Store locked up.
Incompatible materials: None known.
Storage area: Store in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>ACGIH TWA (mg/m³)</th>
<th>OSHA PEL (TWA) (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryl (1302-52-9)</td>
<td>0.002 mg/m³ Be</td>
<td>0.002 mg/m³ Be</td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls: Handle in an enclosing hood with exhaust ventilation.
Personal protective equipment: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection: Neoprene or nitrile rubber gloves.
Eye protection: Safety glasses. Contact lenses should not be worn.
Skin and body protection: Wear suitable protective clothing.
Respiratory protection: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified dust and mist (orange cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state: Solid
Appearance: Powder.
Molecular mass: 537.49 g/mol
Color: White.
Odor: No data available
Odor threshold: No data available
Refractive index: No data available
pH: No data available
Relative evaporation rate (butyl acetate=1): No data available
Melting point: 1410 °C
Freezing point: No data available
Boiling point: No data available
Flash point: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): Not combustible
Vapor pressure: < 0.001 mm Hg @ 20°C
Relative vapor density at 20 °C: No data available
Relative density: 2.66
VOC content: 100 %
Solubility: Insoluble in water.
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products
When heated above 1000°, emits toxic beryllium oxide fumes.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Oral: Toxic if swallowed.

BERYL (12168-80-8)
ATE US (oral) 86 mg/kg body weight

Beryl (1302-52-9)
LD50 oral rat 86 mg/kg
LC50 inhalation rat 20 mg/m³ Inhalation, rat TCLo 1H/17W-I:ETA-intermittent: neoplastic response
ATE US (oral) 86 mg/kg body weight

Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: May cause cancer.
An experimental carcinogen, neoplastigen and tumorigen.

BERYL (12168-80-8)

Reproductive toxicity: Not classified
Specific target organ toxicity – single exposure: Not classified
Specific target organ toxicity – repeated exposure: Not classified
Aspiration hazard: Not classified
Symptoms/effects after inhalation: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact: May cause skin irritation.
Symptoms/effects after eye contact: May cause eye irritation.
Symptoms/effects after ingestion: Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available
12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
Effect on ozone layer : No additional information available
Effect on the global warming : No known effects from this product.
GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Sewage disposal recommendations : Do not dispose of waste into sewer.
Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
UN-No.(DOT) : 1566
DOT NA no. : UN1566

14.2. UN proper shipping name
Transport document description : UN1566 Beryllium compounds, n.o.s., 6.1, III
Proper Shipping Name (DOT) : Beryllium compounds, n.o.s.
Packing group (DOT) : III - Minor Danger
Hazard labels (DOT) : 6.1 - Poison

DOT Packaging Non Bulk (49 CFR 173.xxx) : 213
DOT Packaging Bulk (49 CFR 173.xxx) : 240
DOT Packaging Exceptions (49 CFR 173.xxx) : 153
DOT Symbols : G - Identifies PSN requiring a technical name

14.3. Additional information
Emergency Response Guide (ERG) Number : 154
Other information : No supplementary information available.

Transport by sea
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Air transport
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 100 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 200 kg

SECTION 15: Regulatory information

15.1. US Federal regulations
Beryl (1302-52-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
CANADA
### BERYL Safety Data Sheet

<table>
<thead>
<tr>
<th>Beryl (1302-52-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian NDSL (Non-Domestic Substances List)</td>
</tr>
</tbody>
</table>

### EU-Regulations

<table>
<thead>
<tr>
<th>Beryl (1302-52-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)</td>
</tr>
</tbody>
</table>

### National regulations

<table>
<thead>
<tr>
<th>Beryl (1302-52-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on IARC (International Agency for Research on Cancer)</td>
</tr>
<tr>
<td>Listed on the Canadian IDL (Ingredient Disclosure List)</td>
</tr>
</tbody>
</table>

#### 15.3. US State regulations

<table>
<thead>
<tr>
<th>Beryl (1302-52-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

### SECTION 16: Other information

**Full text of H-phrases:**

<table>
<thead>
<tr>
<th>H301</th>
<th>Toxic if swallowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>H350</td>
<td>May cause cancer</td>
</tr>
</tbody>
</table>

**Abbreviations and acronyms**

- Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

**HMIS III Rating**

- **Health**: 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures
- **Flammability**: 0 Minimal Hazard - Materials that will not burn
- **Physical**: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives

Prepared by safety and environmental affairs.

Date of issue: 08/15/2017 Version: 1.0

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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