SECTION 1: Identification

1.1. Identification

Product name: BERYLLIUM 2,4-PENTANEDIONATE
Product code: AKB150
Product form: Substance
Physical state: Solid
Formula: C10H14BeO4
Synonyms: BERYLLIUM ACETYLACETONATE
BIS(2,4-PENTANEDIONATO)BERYLLIUM
BIS(PENTANE-2,4-DIONATO-O,O')BERYLLIUM
Chemical family: METAL COMPOUND

1.2. Recommended use and restrictions on use

Recommended use: Chemical intermediate

1.3. Supplier

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 classification

Acute toxicity (oral) Category 3
Acute toxicity (inhalation:dust,mist) Category 2
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2
Skin sensitization, Category 1
Carcinogenicity Category 1B
Specific target organ toxicity (single exposure) Category 3
Specific target organ toxicity (repeated exposure) Category 1
Hazardous to the aquatic environment - Chronic Hazard Category 2

H301 - Toxic if swallowed
H330 - Fatal if inhaled
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H350 - May cause cancer
H335 - May cause respiratory irritation
H372 - Causes damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US):

Signal word (GHS US): Danger

Hazard statements (GHS US):
H301 - Toxic if swallowed
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H330 - Fatal if inhaled
H335 - May cause respiratory irritation
H350 - May cause cancer
H372 - Causes damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects

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.
P310 - Immediately call a POISON CENTER
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
BERYLLIUM 2,4-PENTANEDIONATE

Safety Data Sheet

P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing must not be allowed out of the workplace
P273 - Avoid release to the environment.
P284 - [In case of inadequate ventilation] wear In case of inadequate ventilation wear respiratory protection.
P330 - Rinse mouth.
P301+P310 - If swallowed: Immediately call a POISON CENTER
P302+P352 - If on skin: Wash with plenty of soap and water
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337+P313 - If eye irritation persists: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.
P320 - Specific treatment is urgent (see first aid instructions on this label)
P362+P364 - Take off contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P391 - Collect spillage.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
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)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Mono-constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>BERYLLIUM 2,4-PENTANEDIONATE</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>10210-64-7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryllium 2,4-pentaedioate</td>
<td>(CAS-No.) 10210-64-7</td>
<td>95 - 100</td>
<td>Acute Tox. 3 (Oral), H301 Acute Tox. 2 (Inhalation:dust,mist), H330 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, H317 Carc. 1B, H350 STOT SE 3, H335 STOT RE 1, H372 Aquatic Chronic 2, H411</td>
</tr>
</tbody>
</table>

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

3.2. Mixtures
Not applicable

SECTION 4: First-aid measures

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. Call a POISON CENTER or doctor/physician.
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 immediate 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 immediate medical advice/attention.
First-aid measures after ingestion: Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects: May cause cancer. Causes damage to organs through prolonged or repeated exposure.
Symptoms/effects after inhalation: Fatal if inhaled. May cause respiratory irritation. Beryllium compound vapors and dust are toxic.
Symptoms/effects after skin contact: Causes skin irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact: Causes serious eye irritation.
Symptoms/effects after ingestion: Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard. In general, beryllium salts have been reported as poisonous when taken orally.

4.3. Immediate medical attention and special treatment, if necessary
No additional information available

Print date: 04/09/2019
EN (English US) SDS ID: AKB150 2/7
BERYLLIUM 2,4-PENTANEDIONATE
Safety Data Sheet

SECTION 5: Fire-fighting measures
5.1. Suitable (and unsuitable) extinguishing media
Unsuitable extinguishing media: Do not use straight streams.

5.2. Specific hazards arising from the chemical
Fire hazard: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Special protective equipment and precautions for fire-fighters
Firefighting instructions: Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.
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
Avoid release to the environment. 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
For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up: Collect spillage. 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: Observe special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Do not breathe dust. Avoid dust formation. Use only outdoors or in a well-ventilated area.
Hygiene measures: Wash contaminated clothing before use. 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.
Storage area: Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection
8.1. Control parameters
| Beryllium 2,4-pentaedioate (10210-64-7) | OSHA | OSHA PEL (TWA) (mg/m³) | 2 mg/m³ BeO

8.2. Appropriate engineering controls
Appropriate engineering controls: Handle in an enclosing hood with exhaust ventilation.

8.3. Individual protection measures/Personal protective equipment

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:
BERYLLIUM 2,4-PENTANEDIONATE
Safety Data Sheet

Chemical goggles. Contact lenses should not be worn

**Skin and body protection:**
Wear suitable protective clothing

**Respiratory protection:**
In case of inadequate ventilation wear 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

<table>
<thead>
<tr>
<th>9.1. Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
</tr>
<tr>
<td>Appearance</td>
</tr>
<tr>
<td>Molecular mass</td>
</tr>
<tr>
<td>Color</td>
</tr>
<tr>
<td>Odor</td>
</tr>
<tr>
<td>Odor threshold</td>
</tr>
<tr>
<td>Refractive index</td>
</tr>
<tr>
<td>pH</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
</tr>
<tr>
<td>Melting point</td>
</tr>
<tr>
<td>Freezing point</td>
</tr>
<tr>
<td>Boiling point</td>
</tr>
<tr>
<td>Flash point</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
</tr>
<tr>
<td>Decomposition temperature</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
</tr>
<tr>
<td>Sublimation point</td>
</tr>
<tr>
<td>Vapor pressure</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
</tr>
<tr>
<td>Relative density</td>
</tr>
<tr>
<td>% Volatiles</td>
</tr>
<tr>
<td>Solubility</td>
</tr>
<tr>
<td>Log Pow</td>
</tr>
<tr>
<td>Log Kow</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
</tr>
<tr>
<td>Explosive properties</td>
</tr>
<tr>
<td>Oxidizing properties</td>
</tr>
<tr>
<td>Explosion limits</td>
</tr>
</tbody>
</table>

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Material decomposes slowly in contact with air by reaction with water and carbon dioxide.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Beryllium oxide fumes. Organic acid vapors.
BERYLLIUM 2,4-PENTANEDIONATE
Safety Data Sheet

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

<table>
<thead>
<tr>
<th>BERYLLIUM 2,4-PENTANEDIONATE (10210-64-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
</tr>
<tr>
<td>100 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
</tr>
<tr>
<td>0.05 mg/l/4h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beryllium 2,4-pentaedioate (10210-64-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
</tr>
<tr>
<td>100 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
</tr>
<tr>
<td>0.05 mg/l/4h</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
Mutagenic data has been reported.
Carcinogenicity : May cause cancer.
Beryllium and its compounds are considered to be experimental carcinogens, tumorigens and neoplastigens.
Reproductive toxicity : Not classified
Triphenyltin hydroxide is an experimental teratogen.
Specific target organ toxicity – single exposure : May cause respiratory irritation.
Specific target organ toxicity – repeated exposure : Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard : Not classified
Symptoms/effects after inhalation : Fatal if inhaled. May cause respiratory irritation. Beryllium compound vapors and dust are toxic.
Symptoms/effects after skin contact : Causes skin irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact : Causes serious eye irritation.
Symptoms/effects after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard. In general, beryllium salts have been reported as poisonous when taken orally.

SECTION 12: Ecological information

12.1. Toxicity
Ecology - general : Toxic to aquatic life with long lasting effects.

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
Other adverse effects : This substance may be hazardous to the environment.
Effect on the ozone layer : No additional information available

SECTION 13: Disposal considerations

13.1. Disposal 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. (BERYLLIUM 2,4-PENTANEDIONATE), 6.1, III |
| **Proper Shipping Name (DOT)** | Beryllium compounds, n.o.s. (BERYLLIUM 2,4-PENTANEDIONATE) |
| **Class (DOT)** | 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132 |
| **Packing group (DOT)** | III - Minor Danger |
| **Hazard labels (DOT)** | 6.1 - Poison |

**Dangerous for the environment**: Yes

**Marine pollutant**: Yes

| **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

| **BERYLLIUM 2,4-PENTANEDIONATE (10210-64-7)** |
| **TSCA Exemption/Exclusion** |
| **CAUTION**: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States. |

**Beryllium 2,4-pentaedioate (10210-64-7)**

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

**CANADA**

No additional information available

**EU-Regulations**

| **Beryllium 2,4-pentaedioate (10210-64-7)** |
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

**National regulations**
BERYLLIUM 2,4-PENTANEDIONATE
Safety Data Sheet

Beryllium 2,4-pentanedioate (10210-64-7)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)

15.3. US State regulations
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

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>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H330</td>
<td>Fatal if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H350</td>
<td>May cause cancer</td>
</tr>
<tr>
<td>H372</td>
<td>Causes damage to organs through prolonged or repeated exposure</td>
</tr>
<tr>
<td>H411</td>
<td>Toxic to aquatic life with long lasting effects</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.

Hazard Rating
Health: 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures

Flammability: 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)

Physical: 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.

Date of issue: 08/02/2017 Version: 1.0

SDS US (GHS HazCom 2012) - Custom

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

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

© 2019 Gelest Inc. Morrisville, PA 19067