**SECTION 1: Identification**

1. **Product name:** COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLMETHYLSILANE COMPLEX
   
   **Product code:** AKC252.8
   
   **Product form:** Mixture
   
   **Physical state:** Liquid
   
   **Formula:** C10H13CuF6O2Si
   
   **Synonyms:** COPPER HFAC VTMS
   
   **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-US classification**
   
   - Flammable liquids Category 4: H227 - Combustible liquid
   - Acute toxicity (oral) Category 4: H302 - Harmful if swallowed
   - Skin corrosion/irritation Category 2: H315 - Causes skin irritation
   - Serious eye damage/eye irritation Category 2A: H319 - Causes serious eye irritation
   
   **Full text of H statements:** see section 16

2.2. **GHS Label elements, including precautionary statements**

   **GHS US labeling**
   
   **Signal word (GHS US):** Warning
   
   **Hazard statements (GHS US):**
   
   - H227 - Combustible liquid
   - H302 - Harmful if swallowed
   - H315 - Causes skin irritation
   - H319 - Causes serious eye irritation
   
   **Precautionary statements (GHS US):**
   
   - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
   - P210 - Keep away from heat, open flames, sparks. - No smoking.
   - P264 - Wash hands thoroughly after handling.
   - P270 - Do not eat, drink or smoke when using this product.
   - P330 - Rinse mouth.
   - P301+P312 - If swallowed: Call a doctor if you feel unwell
   - P302+P352 - If on skin: Wash with plenty of water
   - P332+P313 - If skin irritation occurs: Get medical advice/attention.
   - 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.
   - P321 - Specific treatment (see first aid instructions on this label)
   - P362+P364 - Take off contaminated clothing and wash before reuse.
   - P370+378 - In case of fire: Use water spray, foam, carbon dioxide, dry chemical to extinguish. P403+P235 - Keep in a cool place
   - 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
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper(I)/(II) hexafluoro-2,4-pentanedionate-vinyltrimethylsilane complex</td>
<td>(CAS-No.) 139566-53-3</td>
<td>80 - 90</td>
<td>Flam. Liq. 4, H227, Acute Tox. 4 (Oral), H302, Skin Irrit. 2, H315, Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td>Copper II hexafluoropentanedionate</td>
<td>(CAS-No.) 14781-45-4</td>
<td>10 - 20</td>
<td>Skin Irrit. 2, H315, Eye Irrit. 2A, H319</td>
</tr>
</tbody>
</table>

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

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. IF exposed or concerned: Get medical advice/attention.

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 immediate 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 (acute and delayed)

Symptoms/effects after inhalation: May cause irritation to the respiratory tract.

Symptoms/effects after skin contact: Causes skin irritation. Decomposition products are potentially sensitizing.

Symptoms/effects after eye contact: Causes serious eye irritation.

Symptoms/effects after ingestion: Harmful if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

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

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media


Unsuitable extinguishing media: Water.

5.2. Specific hazards arising from the chemical

Fire hazard: Combustible liquid. 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: Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Wear pressure demand self-contained breathing apparatus with full facepiece and full protective clothing. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Remove ignition sources. Use special care to avoid static electric charges.

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: Equip cleanup crew with proper protection. Do not attempt to take action without suitable protective equipment. 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 liquid 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: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal. Use only non-sparking tools.

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

Additional hazards when processed: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapor and mist. Use only non-sparking tools.

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

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Keep container tightly closed. Keep in a cool place.

Incompatible materials: Water.

Storage area: Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Copper II hexafluoropentanedionate (14781-45-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA PEL (TWA) (mg/m³)</td>
</tr>
<tr>
<td>1 mg/m³ as Cu</td>
</tr>
</tbody>
</table>

8.2. Appropriate engineering controls

Appropriate engineering controls: Provide local exhaust or general room 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:

Chemical goggles. 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

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>370.84 g/mol</td>
</tr>
<tr>
<td>Color</td>
<td>Green</td>
</tr>
</tbody>
</table>
COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX
Safety Data Sheet

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: -5 °C
Freezing point: No data available
Boiling point: 50 °C @ 50 mm Hg
Flash point: 72 °C
Auto-ignition temperature: 340 °C
Decomposition temperature: No data available
Flammability (solid, gas): Combustible liquid
Vapor pressure: No data available
Relative vapor density at 20 °C: > 1
Relative density: 1.49
Solubility: Insoluble in water. Reacts with 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
Oxidizing properties: No data available
Explosion limits: ≥ 0.3 vol % (lower)

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 below 25°C. Slowly decomposes at elevated temperature.

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

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials
Water.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified

<table>
<thead>
<tr>
<th>COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX (139566-53-3/14781-45-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
</tr>
<tr>
<td>622.222 mg/kg body weight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Copper(I)/(II) hexafluoro-2,4-pentanedionate-vinyltrimethylsilane complex (139566-53-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
</tr>
<tr>
<td>560 mg/kg</td>
</tr>
<tr>
<td>ATE US (oral)</td>
</tr>
<tr>
<td>560 mg/kg body weight</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/irritation: Causes serious eye irritation.
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX
Safety Data Sheet

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 : Causes skin irritation. Decomposition products are potentially sensitizing.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : Harmful if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

Reason for classification : Expert judgment

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
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
DOT NA no. : NA1993

14.2. UN proper shipping name
Transport document description : NA1993 Combustible liquid, n.o.s. (COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX), 3, III

Proper Shipping Name (DOT) : Combustible liquid, n.o.s. (COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX)

Class (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Packing group (DOT) : III - Minor Danger

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT Packaging Exceptions (49 CFR 173.xxx) : 150

DOT Symbols : D - Proper shipping name for domestic use only, or to and from Canada,G - Identifies PSN requiring a technical name

14.3. Additional information
Other information : This product is Combustible as defined by the US Department of Transportation (DOT). It is regulated for transport in the US in container > 119 gallons (450 liters). The product is not regulated for transport by the IATA, ADR/RID, ADNR or the IMDG regulations.
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: 60 L (49 CFR 173.27)
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 220 L

SECTION 15: Regulatory information

15.1. US Federal regulations
COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX (139566-53-3/14781-45-4)

| 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.

Copper(I)/(II) hexafluoro-2,4-pentanedionate-vinyltrimethylsilane complex (139566-53-3)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

Copper II hexafluoropentanedionate (14781-45-4)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA
No additional information available

EU-Regulations
No additional information available

Copper II hexafluoropentanedionate (14781-45-4)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
Copper II hexafluoropentanedionate (14781-45-4)
Listed on the Korean ECL (Existing Chemicals List)

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:

| H227 | Combustible liquid |
| H302 | Harmful if swallowed |
| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |

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.
COPPER(I)/(II) HEXAFLUORO-2,4-PENTANEDIONATE-VINYLTRIMETHYLSILANE COMPLEX
Safety Data Sheet

Hazard Rating

Health: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given.

Flammability: 2 Moderate Hazard - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100°F but below 200°F. (Classes II & IIIA)

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: 08/21/2015 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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