1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Diketene
Product Catalogue Number: 558351
Brand: MedKoo Biosciences
CAS-No: 674-82-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Synthesis of substances.

1.3 Details of the supplier of the safety data sheet

Company: MedKoo Biosciences, Inc.
2500 Gateway Centre Blvd. Suite 400, Morrisville, NC27560, USA
Telephone: 919-636-5577
Fax: 919-980-4831

1.4 Emergency telephone number

Emergency Phone #: 911 (in USA) or local emergency phone#

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 3), H226
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 3), H331

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram:

Signal word: Danger
Hazard statement(s)
H226: Flammable liquid and vapor.
H302: Harmful if swallowed
H331: Toxic if inhaled.

Precautionary statement(s)
P210: Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proff electrical/ventilating/lighting/equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P264: Washing skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well ventilated area.
P280: Wear protective gloves/eye/protection/face protection.
P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rise mouth.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P311: IF INHALED: Remove person to fresh air and keep comfortable for breaking. Call a POISON CENTER or doctor/prisician.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol resistant foam to extinguish.
P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
P403 + P235: Store in a well-ventilated place. Keep cool.
P405: Store locked up.
P501: Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

| Synonyms: | Acetyl ketene; Diketene |
| Formula: | C4H4O2 |
| Molecular weight: | 84.07 |
| CAS-No: | 674-82-8 |

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diketene</td>
<td>Flam. Liq. 3; Acute Tox. 4; Acute Tox. 3; H 226, H302; H331</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of 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**
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

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

5.2 Special hazards arising from the substance or mixture
**Carbon oxides**
5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
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.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 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.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.
Keep away from sources of ignition. No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Containers
Recommended storage temperature: -20 °C.
Handle and open container with care. Reacts violently with water.
Storage class (TRGS 510: Flammable liquids).

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diketene</td>
<td>674-82-8</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.
Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face 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 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.

**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.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose 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).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a) Appearance Form:</strong></td>
<td>Color: yellow Form: Liquid</td>
</tr>
<tr>
<td><strong>b) Odour</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>c) Odour Threshold</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>d) pH</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>e) Melting point/freezing point</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>f) Initial boiling point and boiling range</strong></td>
<td>69-70 °C (156 – 158 °F) at 133hPa (100 mmHg)</td>
</tr>
<tr>
<td><strong>g) Flash point</strong></td>
<td>34 °C (93 °F) – closed cup</td>
</tr>
<tr>
<td><strong>h) Evaporation rate</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>i) Flammability (solid, gas)</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>j) Upper/lower flammability or explosive limits</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>k) Vapour pressure</strong></td>
<td>10.5hPa (7.9 mmHg) at 20 °C (68 °F)</td>
</tr>
<tr>
<td></td>
<td>68 hPa (51 mmHg) at 55 °C (131 °F)</td>
</tr>
<tr>
<td><strong>l) Vapour density</strong></td>
<td>2.9 – (Air = 1.0)</td>
</tr>
<tr>
<td><strong>m) Relative density</strong></td>
<td>1.097 g/cm³</td>
</tr>
<tr>
<td><strong>n) Water solubility</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>o) Partition coefficient: noctanol/ water</strong></td>
<td>log Pow: &gt; 99</td>
</tr>
<tr>
<td><strong>p) Auto-ignition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>q) Decomposition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>r) Viscosity</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>s) Explosive properties</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>t) Oxidizing properties</strong></td>
<td>No data available</td>
</tr>
</tbody>
</table>

**9.2 Other safety information**
Relative vapor densit: 2.9 – (Air = 1.0)

**10. STABILITY AND REACTIVITY**

**10.1 Reactivity**: No data available
10.2 **Chemical stability**: Stable under recommended storage conditions.

10.3 **Possibility of hazardous reactions**: Vapors may form explosive mixture with air.

10.4 **Conditions to avoid**: Heat, flames and sparks.

10.5 **Incompatible materials**: Strong oxidizing agents; acids. Bases, Amines, Soda glass, Oxidizing agents.

10.6 **Hazardous decomposition products**
   - Other decomposition products - No data available
   - In the event of fire: see section 5

11. **TOXICOLOGICAL INFORMATION**

11.1 **Information on toxicological effects**

- **Acute toxicity**
  - LD50 Oral: Rat – 614mg/kg
  - LC50 Inhalation: Guinea pig – 2h – 3,000mg/m3.
  - LD50 Dermal: Rabbit – 3,105mg/kg
  - No data available

- **Skin corrosion/irritation**: Skin - Rabbit
- **Serious eye damage/eye irritation**: No data available
- **Respiratory or skin sensitisation**
- **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**
  - Reproductive toxicity - Rat - No data available
  - Maternal Effects: No data available
  - Reproductive toxicity - Rat - No data available
  - Effects on Newborn: No data available
  - Developmental Toxicity - Rat - No data available
  - Specific Developmental Abnormalities: No data available

- **Specific target organ toxicity - single exposure** No data available.

- **Specific target organ toxicity - repeated exposure**: No data available

- **Aspiration hazard**: No data available

- **Additional Information**
  - RTECS: RQ8225000

12. **ECOLOGICAL INFORMATION**

12.1 **Toxicity**: No data available

12.2 **Persistence and degradability**: No data available
12.3 **Bioaccumulative potential**: No data available

12.4 **Mobility in soil**: No data available

12.5 **Results of PBT and vPvB assessment**

   PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 **Other adverse effects**: No data available

13. **DISPOSAL CONSIDERATIONS**

13.1 **Waste treatment methods**

   **Product**
   Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

   **Contaminated packaging**
   Dispose of as unused product.

14. **TRANSPORT INFORMATION**

   **DOT (US)**
   UN number: 2521   Class: 6.1 (3)   Packing group:1
   Proper shipping name: Diketene, stabilized
   Reportable Quantity (RQ):

   **IMDG**
   UN number: 2521   Class: 6.1 (3)   Packing group:1   EMS-No:F-E, S-D
   Proper shipping name: Diketene, stabilized

   **IATA**
   UN number: 2521   Class: 6.1 (3)
   Proper shipping name: Diketene, stabilized
   IATA Passenger: Not permitted for transport
   IATA Cargo: Not permitted for transport

15. **REGULATORY INFORMATION**

   **SARA 302 Components**
   No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

   **SARA 313 Components**
   No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313.

   **SARA 311/312 Hazards**
   Fire Hazard, Acute Health Hazard

   **Massachusetts Right To Know Components**
   Components | CAS-No. | Revision data  
   Diketene   | 674-82-8 | 1993-04-24

   **Pennsylvania Right To Know Components**
   Components | CAS-No. | Revision data  
   Diketene   | 674-82-8 | 1993-04-24
New Jersey Right To Know Components

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Revision data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diketene</td>
<td>674-82-8</td>
<td>1993-04-24</td>
</tr>
</tbody>
</table>

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

Full text of H-Statements referred to under sections 2 and 3.
Acute Tox.  Acute toxicity
Flam. Liq.  Flammable liquids
H226       Flammable liquid and vapour.
H302       Harmful if swallowed
H331       Toxic if inhaled.

HMIS Rating
Health hazard: 2
Chronic Health Hazard: *
Flammability: 3
Physical Hazard 0

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

Further information
Copyright: MedKoo Biosciences. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. MedKoo Biosciences and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.medkoo.com for additional terms and conditions of sale.

Preparation Information
MedKoo Biosciences, Inc.
Product Safety – multiple Region
Tel: 919-636-5577

Version: 3.11. Revision Date: 8/6/2018 Print Date: 8/6/2018

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