SAFETY DATA SHEET
9-oxo-10(E),12(E)-Octadecadienoic Acid

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 10685
Product Name: 9-oxo-10(E),12(E)-Octadecadienoic Acid
Synonyms: 9-oxo-10E,12E-octadecadienoic acid; 9-oxo-ODA;

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:
Company Name: Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:
2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
Flammable Liquids, Category 2
Serious Eye Damage/Eye Irritation, Category 2A
2.1.2 Classification according to Directive 1999/45/EC:
F: Highly Flammable
Xi: Irritant
Risk Phrases: R11, R36
For full text of R-phrases: see SECTION 15.

2.2 Label Elements:
2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word: Danger
GHS Hazard Phrases:
H225: Highly flammable liquid and vapor.
H319: Causes serious eye irritation.
GHS Precaution Phrases:
P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.
P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
P264: Wash {hands} thoroughly after handling.
GHS Response Phrases:
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.
2.2.2 Labeling according to Directive 1999/45/EC:

F  Xi

2.3 Adverse Human Health

Causes serious eye irritation.

Effects and Symptoms: Material may be irritating to the mucous membranes and upper respiratory tract. May be harmful by inhalation, ingestion, or skin absorption. May cause skin or respiratory system irritation. To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

### Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/ REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./ EC Index No.</th>
<th>Risk Phrases/ GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>54232-58-5 NA</td>
<td>9-oxo-10(E),12(E)-Octadecadienoic Acid</td>
<td>1.0 %</td>
<td>NA</td>
<td>No phrases apply. No data available.</td>
</tr>
<tr>
<td>64-17-5 KQ6300000</td>
<td>Ethyl alcohol</td>
<td>99.0 %</td>
<td>200-578-6 603-002-00-5</td>
<td>F; R11 Flam. Liq. 2: H225</td>
</tr>
</tbody>
</table>

### Section 4. First Aid Measures

4.1 Description of First Aid Measures:

**In Case of Inhalation:** Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

**In Case of Skin Contact:** Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

**In Case of Eye Contact:** Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.

**In Case of Ingestion:** Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed:

- May cause anemia, cough, CNS depression, drowsiness, headache, heart damage, lassitude (weakness, exhaustion), liver damage, narcosis, reproductive effects, teratogenic effects.

### Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:

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

**Unsuitable Extinguishing Media:**

- A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards:

- Can release vapors that form explosive mixtures at temperatures at or above the flashpoint.
- Container explosion may occur under fire conditions.
- Emits toxic fumes under fire conditions.
- Sensitive to static discharge.
- Vapors can travel to a source of ignition and flash back.

**Flash Pt:** 14.00 C  **Method Used:** Closed Cup
EXPLOSIVE LIMITS: LEL: 3.3% at 25.0 C  UEL: 19.0% at 25.0 C

5.3 FIRE FIGHTING

INSTRUCTIONS: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes. Note: Flammable as diluted in ethanol.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 PROTECTIVE PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Avoid breathing vapors and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 ENVIRONMENTAL PRECAUTIONS: Take steps to avoid release into the environment, if safe to do so.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

7.1 PRECAUTIONS TO BE TAKEN IN HANDLING: Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure. Keep away from sources of ignition. Take precautionary measures against static discharge.

7.2 PRECAUTIONS TO BE TAKEN IN STORING: Keep away from heat, sparks, and flame. Keep container tightly closed. Store in accordance with information listed on the product insert.

OTHER PRECAUTIONS: Hygroscopic.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 EXPOSURE PARAMETERS:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>54232-58-5</td>
<td>9-oxo-10(E),12(E)-Octadecadienoic Acid</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>64-17-5</td>
<td>Ethyl alcohol</td>
<td>TWA: 1920 mg/m3 (1000 ppm) STEL: ()</td>
<td>TWA: 1900 mg/m3 (1000 ppm) STEL: 9500 mg/m3 (5000 ppm)</td>
<td>No data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>54232-58-5</td>
<td>9-oxo-10(E),12(E)-Octadecadienoic Acid</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>64-17-5</td>
<td>Ethyl alcohol</td>
<td>PEL: 1000 ppm</td>
<td>TLV: 1000 ppm</td>
<td>No data.</td>
</tr>
</tbody>
</table>
8.2 Exposure Controls:

8.2.1 Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:
- Eye Protection: Safety glasses
- Protective Gloves: Compatible chemical-resistant gloves
- Other Protective Clothing: Lab coat
- Respiratory Equipment: NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices:
- Do not take internally.
- Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
- Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [ ] Gas [X] Liquid [ ] Solid

Appearance and Odor: Solution

Melting Point: No data.

Boiling Point: No data.

Flash Pt: 14.00 C Method Used: Closed Cup

Evaporation Rate: No data.

Explosive Limits:
- LEL: 3.3% at 25.0 C
- UEL: 19.0% at 25.0 C

Vapor Pressure (vs. Air or mm Hg): 43 MM_HG at 20.0 C

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Autoignition Pt: 363.00 C

9.2 Other Information

Percent Volatile: No data.

Molecular Formula & Weight: C18H30O3 294.4

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [ ] Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will occur [ ] Will not occur [X]

10.4 Conditions To Avoid: heat, flames and sparks

10.5 Incompatibility - Materials To Avoid:
- alkali metals
- ammonia
- peroxides
- strong oxidizing agents

10.6 Hazardous Decomposition Or Byproducts:
- carbon dioxide
- carbon monoxide
Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

Ethanol - Toxicity Data: Oral TDLO (man): 1.14 ml/kg; Oral TDLO (man): 650 mg/kg; Oral LD50 (rat): 7,060 mg/kg; Oral LD50 (mouse): 3,450 mg/kg; Oral LD50 (mouse): 10.5 ml/kg; Oral LD50 (rabbit): 6,300 mg/kg; Inhalation LC50 (rat): 20,000 ppm (10h); Inhalation LC50 (human): 1,800 ppm (30m); Inhalation LC50 (human): 2,500 mg/m³ (20m); Inhalation LC50 (rabbit): 5,900 mg/m³ (6h); Inhalation LC50 (mouse): 29,300 ppm (7h);

Ethanol - Irritation Data: Eyes (rabbit): 500 mg (24h) mild; Skin (rabbit): 20 mg (24h) moderate;

Chronic Toxicological Effects: Ethanol - Investigated as a mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

Ethanol RTECS Number: KQ6300000

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Ethyl Alcohol Solution
DOT Hazard Class: 3 FLAMMABLE LIQUID
UN/NA Number: 1170 Packing Group: II

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Ethyl Alcohol Solution
UN Number: 1170 Packing Group: II
Hazard Class: 3 - FLAMMABLE LIQUID

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Ethyl Alcohol Solution
UN Number: 1170 Packing Group: II
Hazard Class: 3 - FLAMMABLE LIQUID IATA Classification: 3

Additional Transport Information: Transport in accordance with local, state, and federal regulations. When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.
SAFETY DATA SHEET
9-oxo-10(E),12(E)-Octadecadienoic Acid

Section 15. Regulatory Information

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>54232-58-5</td>
<td>9-oxo-10(E),12(E)-Octadecadienoic Acid</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>64-17-5</td>
<td>Ethyl alcohol</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>54232-58-5</td>
<td>9-oxo-10(E),12(E)-Octadecadienoic Acid</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No</td>
</tr>
<tr>
<td>64-17-5</td>
<td>Ethyl alcohol</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

European Community Hazard Symbol codes:

- F
- Xi

European Community Risk and Safety Phrases:

- R11 Highly flammable.
- R36 Irritating to eyes.
- S16 Keep away from sources of ignition.
- S24/25 Avoid contact with skin and eyes.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S33 Take precautionary measures against static discharges.
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Regulatory Information Statement:

This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 11/18/2013

Additional Information About This Product: No data available.

Company Policy or Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required