SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier
   Product Name: 2-Ethylhexanoic Acid
   Synonym(s): 2-Ethylhexoic Acid; 2-Ethyl-1-hexanoic Acid; 3-Heptanecarboxylic Acid; 2-Ethylcaproic Acid
   REACH Registration Number: No data available at this time.

1.2 Relevant identified uses of the substance or mixture and uses advised against
   General use: Industrial applications
   Uses advised against: None known

1.3 Details of the supplier and of the safety data sheet
   Manufacturer/Distributor
   Silver Fern Chemical, Inc.
   2226 Queen Anne Avenue North
   Suite C
   Seattle, WA 98109 USA
   1-866-282-3384

1.4 Emergency telephone number: INFO-TRAC +1-800-535-5053; Outside USA & Canada +1-352-323-3500

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture
   Product definition: Substance
   Classification in accordance with 29 CFR 1910 (OSHA HCS) and Regulation (EC) No 1272/2008
   Reproductive toxicity - Category 2 [H361d]

2.2 Label Elements
   Hazard Symbol(s): GHS08
   Signal Word: Warning
   Hazard Statement(s): H361d - May damage fertility or the unborn child
   Precautionary Statements:
   [Prevention] P201 - Obtain special instructions before use.
   P202 - Do not handle until all safety precautions have been read and understood.
   P281 - Use personal protective equipment as required.
   [Response] P308 + P313 - IF exposed or concerned: Get medical advice.
   [Storage] P405 - Store locked up.
   [Disposal] P501 - Dispose of contents and containers in accordance with national and local regulations.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
   None identified

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
   % by Weight   Ingredient             CAS Number  EC Number  Index Number  GHS Classification
   >99           2-Ethylhexanoic Acid  149-57-5    205-743-6   607-230-00-6   H361d

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

3.2 Mixtures
   Not applicable
SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

**Inhalation:** If product mist or vapor causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Loosen tight fitting clothing such as a collar, tie, belt or waistband. If symptoms persist or if the victim feels unwell, seek medical attention.

**Eyes:** Immediately flush eyes with large amounts of water for 15 minutes, occasionally lifting the upper and lower lids. Remove contact lenses, if present and easy to do, after the first 2 minutes and continue rinsing. If irritation persists, seek medical attention, preferably from an ophthalmologist.

**Skin:** Flush skin with large amounts of water while removing contaminated clothing and continue rinsing for at least 15 minutes. Wash exposed skin areas with soap and water. Wash contaminated clothing and shoes thoroughly before reuse. If irritation persists, seek medical attention.

**Ingestion:** If product mist or vapor causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Loosen tight fitting clothing such as a collar, tie, belt or waistband. If symptoms persist or if the victim feels unwell, seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

**Potential health symptoms and effects**

**Eyes:** May cause eye irritation with redness, discomfort and tearing. May cause slight, transient corneal injury.

**Skin:** May cause skin irritation with localized redness. Prolonged skin contact may cause severe irritation with localized redness, discomfort and drying and flaking of the skin. Skin contact may aggravate preexisting dermatitis.

**Inhalation:** Low inhalation hazard at room temperature due to the material's low vapor pressure. Vapor from heated material may cause irritation of the upper respiratory tract and mucous membranes.

**Ingestion:** May cause gastrointestinal upset with nausea, vomiting and diarrhea. May cause irritation of the mucous membranes of the mouth, throat and stomach. Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury. Persons with preexisting skin disorders may be more susceptible to the effects of this substance. 2-Ethylhexanoic Acid has caused developmental in laboratory animal test studies. Refer to Section 11.2.

**Chronic:** Persons with preexisting skin disorders may be more susceptible to the effects of this substance. 2-Ethylhexanoic Acid has caused developmental in laboratory animal test studies. Refer to Section 11.2.

4.3 Indication of any immediate medical attention and special treatment needed

**Advice to Doctor and Hospital Personnel**

Treat symptomatically and supportively. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishable media

**Suitable methods of extinction:** Use dry chemical, carbon dioxide, alcohol-resistant foam, water spray or water fog.

**Unsuitable methods of extinction:** Water jets may spread the fire.

5.2 Special hazards arising from the substance or mixture

Closed containers may explode due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

**Explosion hazards:** Not considered to be explosion hazard.

5.3 Advice for firefighters

Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. Water contaminated by this material must be contained from being discharged to any waterway, sewer or drain to prevent environmental contamination.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate non-essential personnel. Wear appropriate protective clothing designated in Section 8. Ventilate the area. Remove all sources of ignition. No smoking.

6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways.

6.3 Methods and materials for containment and cleaning up

Cover drains and contain spill. Cover with a large quantity of inert absorbent. Do not use combustible material such as sawdust. Collect material and place into an approved container for proper disposal. Observe possible material restrictions (Sections 7.2 and 10.5). Dispose of waste via a licensed waste disposal contractor.

6.4 Reference to other sections

See Section 13 for additional waste treatment information.
SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling
Wear all appropriate personal protective equipment specified in Section 8. Do not get in eyes or on skin or clothing. No smoking. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear an appropriate respirator. Wash contaminated clothing and shoes before reuse.

Advice on protection against fire and explosion
May be combustible at high temperatures.

7.2 Conditions for safe storage, including any incompatibilities
Store in dry, cool, well-ventilated areas away from incompatible materials (see Section 10.5), food and drink. Transfer only to approved containers having correct labeling. Keep container tightly closed. Protect container against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Containers of this material are hazardous when empty since they retain product residues. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Do not take internally. Keep out of reach of children.

7.3 Specific end uses
Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Occupational exposure limits

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Ingredient</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>NIOSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>149-57-5</td>
<td>2-Ethylhexanoic Acid</td>
<td>-----------</td>
<td>5 mg/m³ TWA</td>
<td>--------</td>
</tr>
</tbody>
</table>

8.2 Exposure controls
Engineering measures: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable.

Individual protection measures: Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking, smoking or using the lavatory.

Eye/face protection: Wear safety glasses with unperforated side shields or protective splash goggles during use.

Hand Protection: Wear gloves recommended by glove supplier for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period.

Skin protection: Wear protective clothing. Wear protective boots if the situation requires.

Respiratory protection: Always use an approved respirator when vapor/aerosols are generated. Where risk assessment shows air-purifying respirators are appropriate use a full-faced respirator with multi-purpose 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). Follow OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

Environmental exposure controls: Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

SECTION 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>Appearance</td>
<td>Clear, colorless liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild, characteristic</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>144.21 g/mol</td>
</tr>
<tr>
<td>Chemical Formula</td>
<td>C₈H₁₆O₂</td>
</tr>
<tr>
<td>pH</td>
<td>3.5</td>
</tr>
<tr>
<td>Freezing/Melting Point</td>
<td>-59 °C (-74 °F)</td>
</tr>
<tr>
<td>Initial Boiling Point</td>
<td>228 °C (442 °F)</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>0.01 (BuOAc = 1)</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
**Flash Point** 114 °C (237 °F) (ASTM D 7094-04)
**Autoignition Temperature** 390 °C (734 °F)
**Decomposition Temperature** No data available
**Lower Explosive Limit (LEL)** 0.9% (v)
**Upper Explosive Limit (UEL)** 6.7% (v)
**Vapor Pressure** Negligible @ 20 °C
**Vapor Density** 5 (Air = 1)
**Specific Gravity** 0.903 @ 20 °C
**Viscosity** 7.7 cPs @ 20 °C
**Solubility in Water** 1.5 g/l (OECD 105)
**Partition Coefficient: n-octanol/water** log Pow = 2.7 @ 25 °C

### 9.2 Other data
No data available

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**SECTION 10 - STABILITY AND REACTIVITY**

10.1 Reactivity
No special reactivity has been reported.

10.2 Chemical stability
This product is stable under recommended storage conditions, handling and use.

10.3 Possibility of hazardous reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid
Temperature extremes, contact with incompatible materials

10.5 Incompatible materials
Oxidizing agents, strong reducing agents, strong bases, amines, ammonia, metals (copper, copper alloys, carbon steel)

10.6 Hazardous decomposition products
Thermal decomposition products include oxides of carbon.

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**SECTION 11 - TOXICOLOGICAL INFORMATION**

11.1 Information on toxicological effects

- **Acute Oral Toxicity**
  LD₉₀, rat: 3,640 mg/kg

- **Acute inhalation toxicity**
  LC₅₀, rat: >0.11 mg/m³ (No deaths occurred at this concentration.)

- **Acute dermal toxicity**
  LD₉₀, rat: >2,000 mg/kg (No deaths occurred at this concentration.)

- **Skin irritation/corrosion**
  May cause skin irritation

- **Eye irritation/corrosion**
  May cause eye irritation

- **Sensitization**
  No data available

- **Genotoxicity**
  Animal genetic studies were negative.

- **Mutagenicity**
  In vitro and in vivo toxicity studies were negative.

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

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

- **Aspiration hazard**
  May be harmful if swallowed and enters the airways.

11.2 Further information
This product contains no substances present at levels greater than or equal to the 0.1% threshold (de minimis) that are identified as a probable, possible, potential or confirmed carcinogens by ACGIH, IARC, NTP or OSHA.

- **Reproductive effects**
  2-ethylhexanoic Acid has been toxic to the fetus in lab animals at doses nontoxic to the mother. It did not cause birth defects in laboratory animals. Effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

RCRA P-Series: No listing
RCRA U-Series: No listing

13.2 Persistence and degradability
This substance is readily biodegradable

13.3 Bioaccumulation potential
The substance is not expected to bioaccumulate.

13.4 Mobility in soil
This substance is expected to have low mobility in soil.

13.5 Results of PBT and vPvB assessment
No data available

13.6 Other adverse effects
Additional ecological information
Do not allow material to run into surface waters, wastewater or soil.
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 14 - TRANSPORT INFORMATION

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

NOT REGUALTED FOR TRANSPORT

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for substance or mixture
U. S. Federal Regulations
OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910.1200.
OSHA Process Safety Management Standard: This material is not regulated under OSHA PSM Standard 29 CFR 1910.119.
EPA Risk Management Planning Standard: This material is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.
EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.
Toxic Substance Control Act (TSCA) Inventory: This substance is listed on the TSCA Inventory. It is not subject to TSCA 12(b) Export Notification.
Drug Enforcement Administration (DEA) List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.4(f)(2) and Chemical Code Number Not listed
Drug Enforcement Administration (DEA) Lists 1 & 2, Exempt Chemical Mixtures (21 CFR 1310.12(c)) and Code Number Not listed
Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) Chemicals
Not listed
SARA Section 311/312 Hazard Categories: Chronic Health Hazard
SARA 302/304 Extremely Hazardous Substance: None of the chemicals in this product are subject to reporting requirements of these sections of Title III of SARA.
SARA 302/304 Emergency Planning & Notification: None of the chemicals in this product are subject to reporting requirements of these sections of Title III of SARA.
Comprehensive Response Compensation and Liability Act (CERCLA):  This product contains no CERCLA reportable substance(s).

Clean Air Act (CAA)
This product does not contain any chemicals listed as Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).
This product does not contain any Class 1 Ozone depleters.
This product does not contain any Class 2 Ozone depleters.

Clean Water Act (CWA)
None of the chemicals in this product are listed as a Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

U.S. State Regulations
California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986
This product does not contain any chemicals known to the State of California to cause cancer, birth defects or reproductive harm.

Other U.S. State Inventories
2-Ethylhexanoic Acid (CAS #149-57-5) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: MI.

Canada
WHMIS Hazard Symbol and Classification
E - Corrosive

Canadian National Pollutant Release Inventory (NPRI):  None of the substances in this product are listed on the NPRI.

European Economic Community
WGK, Germany (Water danger/protection): 1 (low hazard to waters)

Global Chemical Inventory Lists

<table>
<thead>
<tr>
<th>Country</th>
<th>Inventory Name</th>
<th>Inventory Listing*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada:</td>
<td>Domestic Substance List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada:</td>
<td>Non-Domestic Substance List (NDSSL)</td>
<td>No</td>
</tr>
<tr>
<td>Europe:</td>
<td>Inventory of New and Existing Chemicals (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States:</td>
<td>Toxic Substance Control Act (TSCA)</td>
<td>Yes</td>
</tr>
<tr>
<td>Australia:</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand:</td>
<td>New Zealand Inventory of Chemicals (NZIoC)</td>
<td>Yes</td>
</tr>
<tr>
<td>China:</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan:</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea:</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines:</td>
<td>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Yes - All components of this product are in compliance with the inventory requirements administered by the governing country.
No - One or more components of this product are not on the inventory or are exempt from listing.

15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out.

SECTION 16 - OTHER INFORMATION

Hazardous Material Information System (HMIS)

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Physical Hazard</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>C (safety glasses, gloves and an apron)</td>
</tr>
</tbody>
</table>

HMIS Hazard Rating Legend
0 = Minimal  1 = Slight  2 = Moderate  3 = Serious  4 = Severe  * = Chronic Health Hazard

NFPA Hazard Rating Legend
0 = Insignificant  1 = Slight  2 = Moderate  3 = High  4 = Extreme

Abbreviation Key
ACGIH  American Conference of Governmental Industrial Hygienists
ADR  Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)
CAS  Chemical Abstract Services
CFR  Code of Federal Regulations
DOT  Department of Transportation
EMS Guide  Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA  Environmental Protection Agency
ERG  Emergency Response Guide Book
FDA  Food and Drug Administration

Effective Date: 31 March 2017
Supercedes: 10 April 2015

Safety Data Sheet
2-Ethylhexanoic Acid
DISCLAIMER OF RESPONSIBILITY

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume damage or expense arising out of or in any way responsibility and expressly disclaim liability for loss, connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

Revision Date: 31 March 2017

<end of document>