SECTION 1: IDENTIFICATION

1.1 Product identifier
Product Name: THEIC

1.2. Other identifiers
CAS Number: 839-90-7
Chemical Name/Description: THEIC, Tris(2-hydroxyethyl) Isocyanurate, Isocyanuric Acid, Tris(2-hydroxy ethyl ester
Synonyms:

1.3. Relevant identified uses of the substance or mixture and uses advised against
Uses:
- Polymer Additive
- Manufacture of polymers and copolymers
Uses Advised Against: None identified

1.4. Details of the supplier of the safety data sheet

Distributor
Silver Fern Chemical, Inc.
2226 Queen Anne Avenue North, Suite B
Seattle WA 98109, USA
Phone: 1-866-282-3384

Business Contact
Customer Service: 1-866-282-3384
info@silverfernchemical.com

1.5. Emergency phone number

24 Hour Emergency Contact
Infotrac 1-800-535-5053 (USA & Canada)
Outside USA & Canada 1-352-323-3500

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the chemical in accordance with 29 CFR 1910.1200 (d)
- Not classified as a hardous product under the regulation above

2.2. GHS label elements, including precautionary statements
- Not labelled as hazardous product under the above regulation

2.3. Hazards not otherwise classified
- None

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Content (W/W)</th>
<th>Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>839-90-7</td>
<td>~100%</td>
<td>1,3,5-Tris(2-hydroxyethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione</td>
</tr>
</tbody>
</table>

Chemical name: 1,3,5-Tris(2-hydroxyethyl) isocyanurate

Common name / synonyms: THEIC, Tris(2-hydroxyethyl) Isocyanurate, Isocyanuric Acid, Tris(2-hydroxy ethyl ester

Effective Date: [February 21, 2017]
Supersedes: [June 3, 2016]
**SECTION 4: FIRST AID MEASURES**

4.1. Description of first aid measures

**General:**
- Show this safety data sheet to the doctor in attendance

**In case of skin contact:**
- Take off contaminated clothing and shoes immediately
- Wash off with soap and plenty of water
- If skin irritation persists, call a physician

**In case of eye contact:**
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
- If eye irritation persists, consult a physician

**If swallowed:**
- Clean mouth with water and drink afterwards plenty of water
- Do NOT induce vomiting
- Seek medical advice

**If inhaled:**
- Move to fresh air
- Consult a physician

4.2. Most important symptoms and effects, both acute and delayed

**Symptoms:**
- Ingestion may provoke the following symptoms: Nausea

**Effects:**
- Skin contact may aggravate existing skin disease
- Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis

4.3. Indication of any immediate medical attention and special treatment needed

**Notes to physician**
- All treatments should be based on observed signs and symptoms of distress in the patient.
- Consideration should be given to the possibility of overexposure to materials other than this product may have occurred
- There is no specific antidote available

**SECTION 5: FIRE FIGHTING MEASURES**

5.1. Suitable and unsuitable extinguishing media

**Suitable extinguishing media:**
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment
- Carbon dioxide (CO2)
- Dry Powder
- Foam
- Water Spray

**Unsuitable extinguishing media:**
- High volume of water jet – Frothing Possible

---

**GHS Classification**

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Content (W/W)</th>
<th>Ingredients</th>
<th>Acute Toxicity, Category 4; H302 Specific target organ toxicity-repeated exposure, Category 2; H373 Kidney</th>
</tr>
</thead>
<tbody>
<tr>
<td>107-21-1</td>
<td>0.5 &lt; 1.0</td>
<td>Ethane-1,2-diol</td>
<td></td>
</tr>
</tbody>
</table>

---

**Effective Date:** [February 21, 2017]
**Supersedes:** [June 3, 2016]

1,3,5-Tris(2-hydroxyethyl)isocyanurate
5.2. Specific hazards arising from the substance or mixture

Nature of any hazardous combustion products: Hazardous decomposition products formed under fire conditions

5.3. Special protective equipment and precautions for firefighters

Special protective equipment:
- self contained breathing apparatus (EN 133)
- Full Protective Suit

Specific fire fighting methods:
- Cool closed containers exposed to fire with water spray
- Do not allow run-off from the fire fighting to enter drains or water courses

Further Information:
- Collect contaminated fire extinguishing water separately. This is not to be discharged into drains.
- Fire residues and contaminated fire extinguishing water must be exposed of in accordance with local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
- Avoid dust formation
- Avoid contact with the skin and the eyes
- If spillage occurs on the public highway, indicate the danger and notify the authorities (police, fire brigade).
- Use personal protective equipment

6.2. Methods and materials for containment and cleaning up

Recovery
- Avoid dust formation
- Do not use compressed air for cleaning purposes
- Shovel into suitable container for disposal
- Keep in properly labelled containers
- Dispose of contents/container to an approved waste disposal plant

Decontamination/cleaning
- Wash non-recoverable remainder with large amounts of water.
- Recover the cleaning water for subsequential disposal

Disposal
- Dispose of contents/container to an approved waste disposal plant
- Dispose of in accordance with local regulations

Additional Advice
- The product should not be allowed to enter drains, water courses or the soil

6.3 Environmental Precautions
- Prevent further leakage or spillage if safe to do so.
- Do not allow uncontrolled discharge of product into the environment

6.4 Reference to other sections
- For personal protection see section 8
- 

SECTION 7: HANDLING AND STORAGE

[COPY OVER ALL AVAILABLE INFO FROM SOURCE(S)]

7.1. Precautions for safe handling
- Provide appropriate exhaust ventilation at places where dust is formed
- Extracted air must not be allowed to return to the workplace

1,3,5-Tris(2-hydroxyethyl)isocyanurate

Effective Date: [February 21, 2017]
Supercedes: [June 3, 2016]
- Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.
- Non-sparking tools should be used
- Handle with care
- Avoid dust formation
- Avoid contact with skin and eyes
- Do NOT handle without gloves
- Do not mix with incompatible materials (See list section 10)

Hygiene measures
- Emergency equipment immediately accessible, with instructions for use
- Ensure that eyewash stations and safety showers are close to the workstation location
- Regular cleaning of equipment, work area and clothing
- Keep working clothes separately
- Contaminated work clothing should not be allowed out of the workplace
- Use clean, well-maintained personal protection equipment
- Store personal protection equipment in a clean location away from the work area
- Wash hands before breaks and immediately after handling the product
- Shower or bathe at the end of working
- When using do not eat, drink or smoke

7.2. Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions
- Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems
- Prevent unauthorized access
- Keep away from direct sunlight
- Keep in a cool, well-ventilated place
- Keep container tightly closed and dry
- Keep away from: STRONG OXIDIZING AGENTS

Packaging material

Suitable material
- Polypropylene bags

Unsuitable material
- Materials which are not water resistant

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

[COPY OVER ALL AVAILABLE INFO FROM SOURCE(S)]

8.1. Control Parameters

Components with other occupational exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>Value type</th>
<th>Value</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethane-1,2-diol</td>
<td>C</td>
<td>100 mg/m3</td>
<td>USA ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Form of exposure: Aerosol Only

8.2. Appropriate engineering controls

- Effective exhaust ventilation system

8.3. Individual protection measures, such as personal protective equipment

   Respiratory protection
   - In the case of dust or aerosol formation use a respirator with an approved filter
   - Suitable mask with particle filter P3 (US N95, European Norm 143)
Hand Protection
- Impervious gloves
- The selected protective gloves have to satisfy the specification of ASTM 619-10 or equivalent (EU Directive 89/686/EEC and the standard EN 374 derived from it)
- Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time
- Gloves must be inspected prior to use
- Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough

Eye Protection
- Safety glasses with side-shields conforming to EN166

Skin and body protection
- Wear suitable coveralls to prevent exposure to the skin
- Dust impervious protective suit

Hygiene measures
- Emergency equipment immediately accessible, with instructions for use
- Ensure the eyewash stations and safety showers are close to the workstation location
- Regular cleaning of equipment, work area and clothing
- Keep working clothes separately
- Contaminated work clothing should not be allowed out of the workplace
- Use clean, well-maintained personal protection equipment
- Store personal protection equipment in a clean location or away from the work area
- Wash hands before breaks and immediately after handling the product
- Shower or bathe at the end of work shift
- When using do not eat, drink or smoke

Protective measures
- The protective equipment must be selected in accordance with current CEN standards and in cooperation with the supplier of protective equipment
- Selection of the appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards and/or risks that may occur during use

Environmental exposure controls
- Prevent further leakage or spillage if safe to do so
- Do not allow uncontrolled discharge of product into the environment

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Form:</th>
<th>Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Physical State: Solid</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not Applicable</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>6.8 (200 g/l) (20 °C)</td>
<td></td>
</tr>
<tr>
<td>Melting point/freezing Point</td>
<td>133 °C</td>
<td></td>
</tr>
<tr>
<td>Initial boiling point/boiling range</td>
<td>296 °C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thermal Decomposition: YES</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>241 °C (1,013 hPA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open Cup</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>This product is not flammable</td>
<td></td>
</tr>
</tbody>
</table>

Effective Date: [February 21, 2017]
Supersedes: [June 3, 2016]

1,3,5-Tris(2-hydroxyethyl)isocyanurate
**SECTION 10: STABILITY AND REACTIVITY**

10.1. Reactivity
- Stable at normal ambient temperature and pressure
- No dangerous reaction known under conditions of normal use
- Stable under recommended storage conditions

10.3. Possibility of hazardous reactions
- No dangerous reaction known under conditions of normal use

10.4. Conditions to avoid
- Avoid dust formation
- Exposure to moisture
- Direct sources of heat

10.5. Incompatible materials
- Strong oxidizing agents

10.6. Hazardous decomposition products
- On combustion or on thermal decomposition (pyrolysis) releases:
  - Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke)
  - Nitrogen oxide (NOx)
  - Hydrogen cyanide (hydrocyanic acid)

11.1. Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)

**Acute Toxicity**

**Acute Oral Toxicity**
- Ethane-1,2-diol: This is classified as acute toxicity, category 4 Published data

**Acute inhalation toxicity**
- no data available
<table>
<thead>
<tr>
<th>Effect</th>
<th>Supercedes: June 3, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute toxicity (other routes of Administration)</strong></td>
<td>no data available</td>
</tr>
</tbody>
</table>
| Skin corrosion/irritation | Rabbit  
No skin irritation  
Method: OECD Test Guideline 404  
Unpublished reports |
| Serious eye damage/eye irritation | Rabbit  
No skin irritation  
Method: OECD Test Guideline 405  
Unpublished reports |
| Repiratory or skin sensitisation | Local lymph node assay – Mouse  
Does not cause skin sensitisation  
Unpublished reports |
| Mutagenicity  
Genotoxicity in vitro | Ames test  
With and without metabolic activation  
Negative  
Method: Mutagenicity (Salmonella typhimurium-reverse mutation assay)  
Unpublished reports  
Chromosone aberration test in vitro  
Strain: CHL  
With and without metabolic activation  
Negative  
Method: OECD Test Guideline 473  
Unpublished reports  
In vitro gene mutation study in mammalian cells  
Strain: L5178Y cells  
With and without metabolic activation  
Negative  
Method: OECD Test Guideline 476  
Unpublished reports |
| Genotoxicity in vivo  
Ethan-1,2-diol | Rodent dominant Letal test-Rat  
Male and female  
Oral  
Method: according to a standardized method  
Negative  
Published data |
| Carcinogenicity | no data available |
| Toxicity for reproduction and development | Reproduction/development toxicity screening test – Rat, male  
Oral  
NOEL parent: 1,000 mg/kg  
Rat, female  
Oral  
NOAEL parent: 1,000 mg/lg  
Rat, male and female  
Oral |
Developmental Toxicity/Teratogenicity

Rat
Oral
NOAEL maternal: 1,000 mg/kg
NOEL teratogenicity: 1,000 mg/kg

Unpublished reports

STOT

STOT-single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure

STOT-repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure

NOEL: 1,000 mg/kg
Oral-Rat, female
NOAEL: 1,000 mg/kg

Method: OECD Test Guideline 422
Unpublished reports

Experience with human exposure

Experience with human exposure: Ethane1,2-diol

Ingestion
Symptoms: Ingestion may provoke the following symptoms:
-Central nervous system effects
-Gastrointestinal disturbance
-Kidney toxicity
-Based on Human Evidence
Published Data

Aspiration toxicity
no data available

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic Compartment

Acute toxicity to fish
LC50-96 h: >100 mg/l - Oryzias latipes (Orange-red killifish)
Semi-static test
Method: OECD Test Guideline 203
Unpublished reports

Acute toxicity to daphnia and other Aquatic invertebrates
EC50 - 48 h: >1,000 mg/l - Daphnia magna (Water flea)
static test
Method: OECD Test Guideline 202
Unpublished reports

Toxicity to aquatic plants
Selenastrum capricornutum (green algae)
ErC50 - 72 h: >1,000 mg/l
NOEC - 72 h: >= 1,000 mg/l
Method: OECD Test Guideline 201
Unpublished reports

Toxicity to microorganisms
EC10 - 0.5 h: > 1,000 mg/l - activated sludge
Respiration inhibition  
Method: OECD Test Guideline 209  
Unpublished reports

EC50 - 17 h: > 10,000 mg/l – Bacteria  
Growth inhibition  
Method: DIN 38 412 Part 8  
Unpublished reports

**Chronic toxicity to fish**

Ethane-1,2-diol  
NOEC: 32,000 mg/l – 7 Days – Pimephales promelas (fathead minnow)  
Semi-static test  
Analytical monitoring: yes  
Method: according to a standardized method  
No adverse chronic effect observed up to and including the threshold of 1 mg/L.  
Published data

### 12.2 Persistence and degradability

**Abiotic degradation**

<table>
<thead>
<tr>
<th>Stability in water</th>
<th>Half-life value: &gt; 5 d</th>
<th>pH: 4.0</th>
<th>Temperature of hydrolysis: 50 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Half-life value: &gt; 5 d</td>
<td>pH: 7.0</td>
<td>Temperature of hydrolysis: 50 °C</td>
</tr>
<tr>
<td></td>
<td>Half-life value: &gt; 5 d</td>
<td>pH: 9.0</td>
<td>Temperature of hydrolysis: 50 °C</td>
</tr>
</tbody>
</table>

**Biodegradation**

**Biodegradability**  
Ultimate aerobic biodegradability  
Method: OECD Test Guideline 301  
0% - 28 d  
According to the results of tests of biodegradability this product is not Readily biodegradable  
Unpublished reports

**Degradability assessment**  
Ethane-1,2-diol  
The product is considered to be rapidly degradable in the environment

### 12.3 Bioaccumulative potential

**Bioconcentration factor (BCF)**

Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): <0.6  
Exposure Time: 42 d  
Temperature: 25 °C  
Concentration: 2.5 mg/l  
Method: OECD Test Guideline 305

Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): <1.6  
Exposure Time: 42 d  
Temperature: 25 °C  
Concentration: 0.25 mg/l  
Method: OECD Test Guideline 305  

Does not bioaccumulate
12.4 Mobility in soil

Adsorption potential (Koc) Adsorption/Soil
Log Koc: 1
Structure-activity relationship (SAR)
Published data

Known distribution to environmental compartments
Ethen-1,2-diol
Ultimate destination of the product: Water
Structure-activity relationship (SAR)
Soil
Structure-activity relationship (SAR)

12.5 Results of PBT and vPvB assessment
This substance is not considered to be persistent, bioaccumulating and Toxic (PBT).
This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects
no data available

Ecotoxicity assessment

Acute aquatic toxicity
The product does not have any known adverse effects on the aquatic Organisms tested

Chronic aquatic toxicity
Does not have any known long-term adverse effects on the aquatic organisms

SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal of substance:
Prohibited
- The product should not be allowed to enter drains, water course or the soil
- Recyle the material as far as possible
- Do not dispose of with domestic refuse
- Dispose of wastes in an approved waste disposal facility
- Can be incinerated, when in compliance with local regulations
- Must be incinerated in a suitable incineration plant holding a permit and delivered by competent authorities

Container disposal:
- Empty the packaging completely prior to disposal
- Empty containers should be taken to an approved waste handling site for recycling or disposal
- Please be aware of the possible existence of local regulations regarding disposal

SECTION 14: TRANSPORT INFORMATION

DOT Not Regulated
ADR Not Regulated
RID Not Regulated
IMDG Not Regulated
IATA Not Regulated

Unpublished reports
SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Local Regulations: No data available

Notification Status:

<table>
<thead>
<tr>
<th>Inventory Information</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States TSCA Inventory</td>
<td>Listed</td>
</tr>
<tr>
<td>Canadian Domestic Substances List (DSL)</td>
<td>Listed</td>
</tr>
<tr>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Listed</td>
</tr>
<tr>
<td>Australia Inventory of Chemical Substances (AICS)</td>
<td>Listed</td>
</tr>
<tr>
<td>Japan, CSCL – Inventory of Existing and New Chemical Substances</td>
<td>Listed</td>
</tr>
<tr>
<td>Korea, Korean Existing Chemicals Inventory</td>
<td>Listed</td>
</tr>
<tr>
<td>China. Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Listed</td>
</tr>
<tr>
<td>New Zealand. Inventory of Chemical Substances</td>
<td>Listed</td>
</tr>
<tr>
<td>Philippines Inventory of Chemicals and Chemical Substances</td>
<td>Listed</td>
</tr>
</tbody>
</table>

SECTION 16: OTHER INFORMATION

Full Text of H-Statements

- H302                                                                                  Harmful if swallowed
- H373                                                                                  May cause damage to organs through prolonged or repeated exposure if swallowed

Key or legend to abbreviations and acronyms used in the safety data sheet

- C                                                                                     Ceiling Limit

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 responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way 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.

February 21, 2017

<end of document>

SRK 2-21-17