



# SILVER FERN CHEMICAL, INC.

## Safety Data Sheet

**SILVER FERN**  
CHEMICAL INC

### THEIC-Tris(2-hydroxyethyl) Isocyanurate

#### SECTION 1: IDENTIFICATION

- 1.1 Product identifier**  
**Product Name:** THEIC  
 Tris(2-hydroxyethyl) Isocyanurate
- 1.2. Other identifiers**  
**CAS Number:** 839-90-7  
**Chemical Name/Description:**  
**Synonyms:** THEIC, Tris(2-hydroxyethyl) Isocyanurate,  
 Isocyanuric Acid, Tris(2-hydroxy ethyl ester)
- 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](mailto: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 hzardous proudct under the above regulation

##### 2.3. Hazards not otherwise classified

-None

#### SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

CAS #	Content (W/W)	Ingredients
839-90-7	~100%	1,3,5-Tris(2-hydroxyethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione

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

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



CAS #	Content (W/W)	Ingredients	GHS Classification
107-21-1	>=0.5 < 1.0	Ethane-1,2-diol	Acute Toxicity, Category 4; H302 Specific target organ toxicity- repeated exposure, Category 2; H373 Kidney

## 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 (CO<sub>2</sub>)
- Dry Powder
- Foam
- Water Spray

#### Unsuitable extinguishing media:

- High volume of water jet - Frothing Possible

## 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

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### 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
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## SECTION 7: HANDLING AND STORAGE

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[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

- 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

Components	Value type	Value	Basis
Ethane-1,2-diol	C	100 mg/m <sup>3</sup>	USA ACGIH Threshold Limit Values (TLV)
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)

Effective Date: [February 21, 2017]

Supersedes: [June 3, 2016]

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



### 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

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

Upper/lower flammability or explosive limits	no data available
Vapor pressure	0.00001 hPa (50 °C)
Vapor density	1.46 (20 °C)
Relative density	no data available
Solubilit(ies)	<u>Water solubilty:</u> 820 g/l (20 °C) Soluble
	<u>Solubility in other solvents:</u> Alcohol: slightly soluble Acetone: slightly soluble log Pow: -1.63 (23 °C)
Partition Coefficient: n-octanol/water	
Auto-ignition temperature	no data available
Decomposition temperature:	296 °C
Viscosity	not applicable
Oxidizing properties	Not considered as oxidizing, Expert statement
<b>9.2 Other information</b>	
Surface Tension	71.1 mN/m

## SECTION 10: STABILITY AND REACTIVITY

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### 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:
  - o Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke)
  - o Nitrogen oxide (NOx)
  - o 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

<b>Acute toxicity (other routes of Administration)</b>	no data available
<b><u>Skin corrosion/irritation</u></b>	Rabbit No skin irritation Method: OECD Test Guideline 404 Unpublished reports
<b><u>Serious eye damage/eye irritation</u></b>	Rabbit No skin irritation Method: OECD Test Guideline 405 Unpublished reports
<b><u>Respiratory or skin sensitisation</u></b>	Local lymph node assay – Mouse Does not cause skin sensitisation Unpublished reports
<b><u>Mutagenicity</u></b>	
<b>Genotoxicity in vitro</b>	Ames test With and without metabolic activation Negative Method: Mutagenicity (Salmonella typhimurium-reverse mutation assay)  Negative Methode: Mutagenicity (Escherichia coli-reverse mutation assay) Unpublished reports  Chromosome 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
<b>Genotoxicity in vivo</b>	
Ethan-1,2-diol	Rodent dominant Letal test-Rat Male and female Oral Method: according to a standardized method  Negative Published data
<b><u>Carcinogenicity</u></b>	no data available
<b><u>Toxicity for reproduction and development</u></b>	
<b>Toxicity to reproduction/Fertility</b>	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

Method: OECD Test Guideline 422  
Unpublished reports

**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

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### 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**

**Stability in water**

Half-life value: > 5 d  
pH: 4.0  
Temperature of hydrolysis: 50 °C

Half-life value: > 5 d  
pH: 7.0  
Temperature of hydrolysis: 50 °C

Half-life value: > 5 d  
pH: 9.0  
Temperature of hydrolysis: 50 °C

Method: OECD Test Guideline 111  
Stable, Unpublished reports

**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

Unpublished reports

#### 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)

Soild  
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

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#### Waste disposal of substance:

##### Prohibtied

- The product should not be allowed to enter drains, water course or the soil
- Recycle 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

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

## 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:

Inventory Information	Status
United States TSCA Inventory	Listed
Canadian Domestic Substances List (DSL)	Listed
European Inventory of Existing Commercial Chemical Substances (EINECS)	Listed
Australia Inventory of Chemical Substances (AICS)	Listed
Japan. CSCL - Inventory of Existing and New Chemical Substances	Listed
Korea. Korean Existing Chemicals Inventory	Listed
China. Inventory of Existing Chemical Substances in China (IECSC)	Listed
New Zealand. Inventory of Chemical Substances	Listed
Philippines Inventory of Chemicals and Chemical Substances	Listed

## 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

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February 21, 2017

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