



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: 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 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)

Effective Date: [February 21, 2017]

Supersedes: [June 3, 2016]

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



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 (CO₂)
- 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

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

- 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 ³	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)

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

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
9.2 Other information	
Surface Tension	71.1 mN/m

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:
 - 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



Acute toxicity (other routes of Administration)	no data available
<u>Skin corrosion/irritation</u>	Rabbit No skin irritation Method: OECD Test Guideline 404 Unpublished reports
<u>Serious eye damage/eye irritation</u>	Rabbit No skin irritation Method: OECD Test Guideline 405 Unpublished reports
<u>Respiratory or skin sensitisation</u>	Local lymph node assay – Mouse Does not cause skin sensitisation Unpublished reports
<u>Mutagenicity</u>	
Genotoxicity in vitro	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
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
<u>Carcinogenicity</u>	no data available
<u>Toxicity for reproduction and development</u>	
Toxicity to reproduction/Fertility	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

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

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

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 Commerican 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

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.

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