

## TCEP

# Material Safety Data Sheet

### 1.1. Product Identifier:

**Product Name:** Tris(2-carboxyethyl)phosphine Hydrochloride (TCEP)

**CAS No:** 51805-45-9

**Product Code:** 38928

**Formula:** C<sub>9</sub>H<sub>15</sub>O<sub>6</sub>P.HCl

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### 1.2.1. Relevant identified uses

No additional information available

#### 1.2.2. Uses advised against

No additional information available

### 1.3. Details of the supplier of the safety data sheet

Company: Protein Ark Limited, The Innovation Centre, 217 Portobello, Sheffield S1 4DP, UK.

Tel: +44 (0) 33 33 44 20 25

Fax: +44 (0) 33 33 44 20 25

Email: [info@proteinark.com](mailto:info@proteinark.com)

### 1.4. Emergency telephone number

Country Official advisory body Address Emergency number

UNITED KINGDOM National Poisons Information Service (Belfast Centre)

Royal Victoria Hospital

Grosvenor Road

BT12 6BA Belfast

0870 600 6266 (UK only),

UNITED KINGDOM National Poisons Information Service (Birmingham Centre)

City Hospital

Dudley Road

B18 7QH Birmingham

0870 600 6266 (UK only)

UNITED KINGDOM National Poisons Information Service (Cardiff Centre)

Gwenwyn Ward, Llandough Hospital

Penarth

CF64 2XX Cardiff  
0870 600 6266 (UK only)

UNITED KINGDOM NPIS Edinburgh (Scottish Poisons Information Bureau)  
Royal Infirmary of Edinburgh  
51 Little France Crescent  
EH16 4SA Edinburgh  
0870 600 6266 (UK only)

UNITED KINGDOM Guy's & St Thomas' Poisons Unit  
Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust  
Avonley Road  
SE14 5ER London  
0870 243 2241

UNITED KINGDOM National Poisons Information Service (Newcastle Centre)  
Regional Drugs and Therapeutics Centre, Wolfson Unit  
Claremont Place  
Newcastle-upon-Tyne NE1 4LP Newcastle  
0870 600 6266 (UK only)

## **SECTION 2: Hazards identification**

### **2.1. Classification of the substance or mixture**

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin Corr. 1B H314

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

C; R34

Full text of R-phrases: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

### **2.2. Label elements**

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP): GHS05

CLP Signal word: Danger

Hazard statements (CLP): H314 - Causes severe skin burns and eye damage

Precautionary statements (CLP): P260 - Do not breathe dust, spray, vapours, mist

P264 - Wash hands thoroughly after handling

P280 - Wear eye protection, protective clothing, protective gloves

P301+P330+P331 - If swallowed: Rinse mouth. Do NOT induce vomiting

P304+P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P501 - Dispose of contents/container to National regulations

### 2.3. Other hazards

No additional information available

### 3.1. Substances

Substance type: Mono-constituent

Name Product identifier % Classification according to Directive 67/548/EEC

Tris(2-carboxyethyl)phosphine Hydrochloride

(Main constituent)

(CAS No.) 51805-45-9 100 C; R34

Name Product identifier % Classification according to Regulation (EC) No. 1272/2008 [CLP]

Tris(2-carboxyethyl)phosphine Hydrochloride

(Main constituent)

(CAS No.) 51805-45-9 100 Skin Corr. 1B, H314

Full text of R-, H- and EUH-phrases: see section 16

### 3.2. Mixtures

Not applicable

SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

First-aid measures after inhalation: Remove from exposure, if possible in fresh air and lie down the victim. If breathing is irregular or stopped, administer artificial respiration.

First-aid measures after skin contact: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. Consult a doctor/medical service.

First-aid measures after eye contact: Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Consult a doctor/medical service.

First-aid measures after ingestion: Do NOT induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious).

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

Symptoms/injuries after inhalation: May be irritating to the respiratory system. May be harmful if inhaled.

Symptoms/injuries after skin contact: Causes burns. MAY BE HARMFUL IF ABSORBED THROUGH SKIN.

Symptoms/injuries after eye contact: Causes serious eye burns.

Symptoms/injuries after ingestion: May cause irritation of the digestive tract. MAY BE HARMFUL IF SWALLOWED.

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

Treat symptomatically.

## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

Suitable extinguishing media: Alcohol-resistant foam. Carbon dioxide. dry chemical powder.

### **5.2. Special hazards arising from the substance or mixture**

Fire hazard: carbon oxides (CO and CO<sub>2</sub>). On burning: release of harmful/irritant gases/vapours.

Reactivity: None under normal conditions.

### **5.3. Advice for firefighters**

Firefighting instructions: Wear self-contained breathing apparatus and protective suit (see item 8).

Protection during fire fighting: Wear a self contained breathing apparatus. Wear suitable protective clothing. SECTION 6: Accidental release measures

## **6.1. Personal precautions, protective equipment and emergency procedures**

General measures: Wear suitable protective clothing. Ensure adequate ventilation.

### **6.1.1. For non-emergency personnel**

Protective equipment: Wear personal protective equipment.

Emergency procedures: Evacuate personnel to a safe area.

### **6.1.2. For emergency responders**

Protective equipment: Wear suitable protective clothing and eye or face protection.

Emergency procedures: Evacuate and limit access.

## **6.2. Environmental precautions**

Do not allow the product to be released into the environment.

## **6.3. Methods and material for containment and cleaning up**

For containment: Keep container tightly closed.

Methods for cleaning up: Sweep or shovel spills into appropriate container for disposal.

Place in an appropriate container and dispose of the contaminated material at a licensed site.

## **6.4. Reference to other sections**

No additional information available.

## **7.1. Precautions for safe handling**

Precautions for safe handling: Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with skin, eyes and clothing.

Ensure adequate ventilation. Keep contents under nitrogen. Wear personal protective equipment.

Hygiene measures: Wash thoroughly after handling.

## **7.2. Conditions for safe storage, including any incompatibilities**

Storage conditions: Store in a dry, cool and well-ventilated place.

Store in refrigerated (0° - 10°C) location.

Store under nitrogen.

Incompatible products: Strong oxidizing agents.

Storage area: Corrosive substances.

Store in refrigerated (0° - 10°C) location.

Store under inert atmosphere.

## **7.3. Specific end use(s)**

No additional information available

## **SECTION 8: Exposure controls/personal protection**

### **8.1. Control parameters**

No additional information available

### **8.2. Exposure controls**

No additional information available

## **SECTION 9: Physical and chemical properties**

### **9.1. Information on basic physical and chemical properties**

Physical state: Solid

Appearance: Crystalline powder.

Molecular mass: 286,65 g/mol

Colour: White.

Odour: No data available

Odour threshold: No data available

pH: No data available

Relative evaporation rate (butylacetate=1): No data available

Melting point: 177 - 178 °C

Freezing point: No data available

Boiling point: No data available

Flash point: No data available

Self ignition temperature: No data available

Decomposition temperature: No data available

Flammability (solid, gas): No data available

Vapour pressure: No data available

Relative vapour density at 20 °C: No data available

Relative density: No data available

Solubility: Water: Soluble

Log Pow : No data available

Log Kow : No data available

Viscosity, kinematic: No data available

Viscosity, dynamic: No data available

Explosive properties: No data available

Oxidising properties: No data available

Explosive limits: No data available

## **9.2. Other information**

No additional information available

## **SECTION 10: Stability and reactivity**

### **10.1. Reactivity**

None under normal conditions.

### **10.2. Chemical stability**

Stable at normal conditions.

### **10.3. Possibility of hazardous reactions**

Hazardous polymerization does not occur.

### **10.4. Conditions to avoid**

No additional information available

### **10.5. Incompatible materials**

Strong reducing agents.

### **10.6. Hazardous decomposition products**

Carbon oxides. Phosphorus oxides. Hydrogen chloride.

## **SECTION 11: Toxicological information**

### **11.1. Information on toxicological effects**

Acute toxicity: Not classified

LD50 oral rat 3500 mg/kg

LD50 dermal rat > 3000 mg/kg

ATE (oral) 3500 mg/kg

Skin corrosion/irritation: Causes severe skin burns and eye damage.

Serious eye damage/irritation: Eye damage, category 1, implicit

Respiratory or skin sensitisation: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity (single exposure): Not classified

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

## **SECTION 12: Ecological information**

**12.1. Toxicity**

No additional information available

**12.2. Persistence and degradability**

No additional information available

**12.3. Bioaccumulative potential**

No additional information available

**12.4. Mobility in soil**

No additional information available

**12.5. Results of PBT and vPvB assessment**

No additional information available

**12.6. Other adverse effects**

No additional information available

**SECTION 13: Disposal considerations****13.1. Waste treatment methods**

Regional legislation (waste) : Dispose in a safe manner in accordance with local/national regulations.

Sewage disposal recommendations: Do not allow the product to be released into the environment.

Waste disposal recommendations: Dispose of in accordance with relevant local regulations.

Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber.

Ecology - waste materials: Do not allow into drains or water courses or dispose of where ground or surface waters may be affected.

**SECTION 14: Transport****14.1. UN number**

UN-No. : 3261

**14.2. UN proper shipping name**

Proper Shipping Name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.

Transport document description: UN 3261 CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (tris(2-carboxyethyl)phosphine HCl), 8, II, (E)

**14.3. Transport hazard class(es)**

Class (UN): 8

Hazard labels (UN): 8

**14.4. Packing group**

Packing group (UN): II

#### **14.5. Environmental hazards**

Other information: No supplementary information available.

#### **14.6. Special precautions for user**

##### **14.6.1. Overland transport**

Hazard identification number (Kemler No.): 80

Classification code (UN): C4

Orange plates:

Special provision (ADR) 274

Transport category (ADR) 2

Tunnel restriction code: E

Limited quantities (ADR) 1kg

Excepted quantities (ADR): E2

EAC code: 2X

##### **14.6.2. Transport by sea**

No additional information available

##### **14.6.3. Air transport**

No additional information available

#### **14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable

### **SECTION 15: Regulatory information**

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

##### **15.1.1. EU-Regulations**

No REACH Annex XVII restrictions

##### **15.1.2. National regulations**

No additional information available

#### **15.2. Chemical safety assessment**

No additional information available

### **SECTION 16: Other information**

Full text of R-, H- and EUH-phrases:

Skin Corr. 1B skin corrosion/irritation Category 1B

H314 Causes severe skin burns and eye damage

R34 Causes burns.

C Corrosive

SDS EU (REACH Annex II)



This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.