

# MATERIAL SAFETY DATA SHEET



Conforms to 93/112/EC and ISO 11014-1

## 1. Chemical Product and Company Identification

**Product Name:** ProtoMarkers

**Product Number:** EC-898

### Chemical Names/

### Description:

Aqueous solution of tris base, SDS, glycerol,  
mercaptoethanol (and dyed proteins National Diagnostics  
305 Patton Drive  
Atlanta, GA 30336

(800) 52

(404) 69

### Emergency Numbers

### Chemtrec

**(800) 424-9300 (U.S. & Canada)**

**01-703-527-3887 (outside U.S. & Canada)**

## 2. Composition/Information on Ingredients

Component	% Comp.	CAS #	EINECS #	TLV (Units)
2-Mercaptoethanol	2	60-24-2	200-464-6	Not Established
Tris-Base	1.5	77-86-1	201-064-4	none established
SDS	4.4	151-21-3	205-788-1	
Glycerol	20	56-81-5	200-289-5	10 mg/m3

## 3. Hazards Identification

### Appearance and Odor

Clear, colorless solution.

### EMERGENCY OVERVIEW - IMMEDIATE HAZARD

2-Mercaptoethanol

DANGER! MAY BE FATAL IF ABSORBED THROUGH SKIN. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. COMBUSTIBLE LIQUID AND VAPOR. Health hazards given on this data sheet apply to concentrated solutions of mercaptoethanol or the substance in its pure form. Hazards of dilute solutions may be reduced, depending upon the concentration. Degree of hazard for these reduced concentrations is not currently addressed in the available literature.

Tris-Base

CAUSES IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.

### EMERGENCY OVERVIEW - CHRONIC HAZARD WARNING:

2-Mercaptoethanol

NO INFORMATION FOUND ON THE CHRONIC HAZARDS OF MERCAPTOETHANOL.

Tris-Base

CHRONIC DERMATITIS MAY FOLLOW SKIN CONTACT.

## **Potential Health Effects**

### **Inhalation**

2-Mercaptoethanol:

Vapors irritate the mucous membranes and respiratory tract.

Tris-Base:

Causes irritation to the respiratory tract.

### **Ingestion**

2-Mercaptoethanol:

Toxic. Harmful if swallowed. Sore throat, abdominal pain and vomiting may occur.

Tris-Base:

Causes irritation and reddening to the mucous membranes of the mouth, esophagus, and gastrointestinal tract.

### **Skin**

2-Mercaptoethanol:

Toxic. Causes skin irritation and may be absorbed in the body in toxic quantities.

Tris-Base:

Causes irritation to the skin.

### **Eyes**

2-Mercaptoethanol:

Vapors irritate the eyes with redness and pain. Splashes may cause severe irritation.

Tris-Base:

Causes irritation to the eyes.

## **Signs and Symptoms of Overexposure**

### **Inhalation**

2-Mercaptoethanol:

Symptoms may include coughing, sore throat, shortness of breath, head ache, nausea, and vomiting.

Prolonged exposure can cause CNS stimulation.

Tris-Base:

Coughing, shortness of breath.

### **Ingestion**

2-Mercaptoethanol:

Symptoms may include sore throat, abdominal pain, and vomiting.

Tris-Base:

Symptoms may include nausea, vomiting, and diarrhea. Large oral doses may cause weakness, collapse, blood clotting, and coma. The estimated lethal dose of Tris Base is 50 grams dry solid.

### **Skin**

2-Mercaptoethanol:

Symptoms may include skin irritation.

Tris-Base:

Redness, itching, and pain.

### **Eyes**

2-Mercaptoethanol:

Symptoms may include redness and pain.

Tris-Base:

Redness, itching, and pain.

## **Carcinogenicity**

2-Mercaptoethanol:

Substance is neither a known nor an anticipated carcinogen. Not listed by NTP, IARC, or OSHA.

Tris-Base:

Not listed as a carcinogen by NTP or IARC.

### **Mutagenicity**

2-Mercaptoethanol:

No information available.

Tris-Base:

No information found.

### **Reproductive Toxicity**

2-Mercaptoethanol:

No information available.

Tris-Base:

No information found.

### **Teratogenic Effects**

2-Mercaptoethanol:

No information available.

Tris-Base:

No information found.

### **Routes of Entry**

2-Mercaptoethanol:

Toxic effects possible by inhalation, ingestion, and skin absorption.

Tris-Base:

Ingestion.

### **Target Organ Statement**

2-Mercaptoethanol:

Behavioral: Tremor, convulsion, excitement, muscle contraction/spasticity. Lungs, thorax: Respiratory depression. GI: Changes in structure/function of salivary glands.

Tris-Base:

No information available.

## **4. First Aid Measures**

### **Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

### **Ingestion**

Do not induce vomiting. If swallowed and the person is conscious, immediately give large amounts of water. Get medical attention.

### **Skin**

Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

### **Eyes**

Immediately flush eyes with plenty of water for at least fifteen minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## **5. Fire Fighting Measures**

Flash Point	N.A.	Flammable Limits	N.A.
Flash Point Method	N.A.	Autoignition temperature	N.A.

### Extinguishing media

Use media appropriate to the primary cause of fire.

### Protective Equipment

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

### Hazardous Combustion Products

Thermal decomposition products may include toxic oxides of nitrogen, sulfur, and carbon.

### Unusual Fire and Explosion Hazards

N.A.

NFPA Codes: Health N.D. Flammability N.D. Reactivity N.D.

## 6. Accidental Release Measures

### Steps to be taken in case material is released or spilled

Contain and clean up spill immediately, prevent from entering floor drains. Contain liquids using absorbents. Shovel all spill materials into disposal drum. Scrub spill area with detergent, flush with copious amounts of water.

### Waste Disposal Method

Disposal must be made in accordance with applicable federal, state, and local regulations.

### Personal Precautions

Wear appropriate protective equipment as specified in section 8.

## 7. Handling and Storage

### Handling

Avoid contact and inhalation. Do not get in eyes, on skin, on clothing. Wash thoroughly after handling.

### Storage

Keep frozen until ready to use. Protect from physical damage. Isolate from incompatible materials (section 10).

### Storage Temperature

### Disposal

Observe all national, state, and local regulations regarding disposal.

## 8. Exposure Controls/Personal Protection

### Airborne Exposure Limits

Component: 2-Mercaptoethanol

ACGIH Threshold Limit Value (TLV): Not Established

OSHA Permissible Exposure Limit (PEL): AIHA WEEL 0.2ppm, 8 hr. TWA

Component: Tris-Base

ACGIH Threshold Limit Value (TLV): none established

OSHA Permissible Exposure Limit (PEL): none established

### Engineering Controls

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source.

### Respiratory Protection

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

### Eye Protection

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

### Skin Protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### Other Control Measures

N.A.

## 9. Physical Properties

<b>Boiling point</b>	220 F	<b>Evaporation Rate</b>	Water
<b>Melting point</b>	N.A.	<b>Solubility in water</b>	Soluble
<b>Vapor pressure (mmHg)</b>	Water	<b>pH</b>	6.8
<b>Vapor density (Air = 1)</b>	Water	<b>Specific gravity (H<sub>2</sub>O = 1)</b>	No information.
<b>% volatile by volume</b>	75		

## 10. Stability and Reactivity

### Stability

Stable under ordinary conditions of use and storage. (Keep frozen until ready to use).

### Conditions to Avoid

Heat, incompatibles.

### Hazardous Decomposition Products

Toxic gases may be involved in a fire. Glycerin decomposes upon heating above 290C, forming corrosive gas (acrolein).

### Hazardous Polymerization

Will not occur

### Incompatibles

2-Mercaptoethanol:

Oxidizing agents, moisture, Avoid contact with metals.

Tris-Base:

No incompatibility data found.

SDS:

Strong oxidizers, acids.

Glycerol:

Strong oxidizers. Can react violently with acetic anhydride, calcium oxychloride, chromium oxides and alkali metal hydrides.

## 11. Toxicological Information

### Product LD50 Values

ProtoMarkers	Oral Rat LD50 (mg/kg):	12200
ProtoMarkers	Dermal Rabbit LD50 (mg/kg):	7500

### Component Cancer List Status

	NTP Carcinogen		IARC Category
	Known	Anticipated	
2-Mercaptoethanol	No	No	None
Tris-Base	No	No	None
SDS	No	No	None
Glycerol	No	No	None

## 12. Ecological Information

### 2-Mercaptoethanol

When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material may biodegrade to a moderate extent. This material has a log octanol-water partition coefficient of less than 3.0. This material has an estimated bioconcentration factor (BCF) of less than 100. Volatilization, adsorption and bioconcentration are not expected to be important environmental fate processes. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

### Tris-Base

No information found on either the environmental fate or environmental toxicity of this material.

### SDS

No information found.

### Glycerol

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition. This material is not expected to be toxic to aquatic

life.

### 13. Disposal Considerations

Observe all national, state, and local regulations regarding disposal.

### 14. Transport Information

#### **D.O.T.**

Proper Shipping Name: Not regulated.

Hazard Class: N.A.

UN Number: N.A.

Packing Group: N.A.

#### **I.A.T.A.**

Proper Shipping Name: Not regulated.

Hazard Class: N.A.

UN Number: N.A.

Packing Group: N.A.

#### **I.M.O.**

Proper Shipping Name: Not regulated.

Hazard Class: N.A.

UN Number: N.A.

Packing Group: N.A.

### 15. Regulatory Information

#### **United States**

##### **TSCA Regulatory Statement**

All intentional ingredients are listed on the TSCA Inventory.

##### **SARA 311/312 Hazard Categories**

Component	Fire	Pressure	Reactivity	Acute	Chronic
2-Mercaptoethanol	Yes	No	No	Yes	No
Tris-Base	No	No	No	Yes	No
SDS	No	No	No	Yes	Yes
Glycerol	No	No	No	Yes	Yes

#### **Europe**

##### **EEC Regulatory**

All intentional ingredients are listed on the European EINECS Inventory.

### 16. Other Information

**NFPA Codes: Health N.D. Flammability N.D. Reactivity N.D.**

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