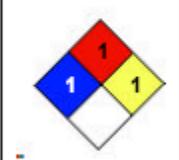




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# MATERIAL SAFETY DATA SHEET

## Tris Base

NFPA	HMIS	Personal Protective Equipment								
	<table border="1"><tr><td>HEALTH</td><td>1</td></tr><tr><td>FLAMMABILITY</td><td>1</td></tr><tr><td>REACTIVITY</td><td>1</td></tr><tr><td>PPE</td><td></td></tr></table>	HEALTH	1	FLAMMABILITY	1	REACTIVITY	1	PPE		
HEALTH	1									
FLAMMABILITY	1									
REACTIVITY	1									
PPE										

*In Case of Emergency: Call ChemTrac (24 hr): 800-424-9300, 703-527-3887 Call (330)425-2522*

### 1. Product Identification

Synonyms: TRIS; 2-Amino-2-(hydroxymethyl)-1,3-propanediol; THAM; Tromethamine (USP); TRIS (Base); Trisamine  
CAS No.: 20-200, 20-201, 20-262  
Molecular Weight: 121.14  
Chemical Formula: H<sub>2</sub>NC(CH<sub>2</sub>OH)<sub>3</sub>  
Product Codes: MT 1503

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Tris	77-86-1	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

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

Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

##### Ingestion:

Mild alkali. Causes irritation and reddening to the mucous membranes of the mouth, esophagus, and gastrointestinal tract. Symptoms may include nausea,

vomiting and diarrhea. Large oral doses may cause weakness, collapse, blood clotting and coma. Estimated lethal dose: 50 grams.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

Chronic Exposure:  
Chronic dermatitis may follow skin contact.  
Aggravation of Pre-existing Conditions:  
No information found.

## 4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

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

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

## 5. Fire Fighting Measures

Fire:

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source. Slight fire hazard when exposed to heat or flame.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

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.

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

## 8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

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

## 9. Physical and Chemical Properties

**Appearance:** Transparent, colorless crystals.

**Odor:** Slight characteristic odor.

**Solubility:** 550 mg/mL

**Density:** No information found.

**pH:** 10.4 (0.1 molar solution)

**% Volatiles by volume @ 21C (70F):** 0

**Boiling Point:** 219 - 220C (426 - 428F)

**Melting Point:** 171 - 172C (340 - 342F)  
**Vapor Density (Air=1):** No information found.  
**Vapor Pressure (mm Hg):** No information found.  
**Evaporation Rate (BuAc=1):** No information found.

## 10. Stability and Reactivity

Stability:  
 Stable under ordinary conditions of use and storage.  
 Hazardous Decomposition Products:  
 Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.  
 Hazardous Polymerization:  
 Will not occur.  
 Incompatibilities:  
 Copper, brass, aluminum, and oxidizing agents.  
 Conditions to Avoid:  
 Heat, incompatibles.

## 11. Toxicological Information

Tris: oral rat LD50: 5900 mg/kg.

-----\Cancer Lists\-----  
 ---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Tris (77-86-1)	No	No	None

## 12. Ecological Information

Environmental Fate:  
 No information found.  
 Environmental Toxicity:  
 No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations.  
 Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not Regulated

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Tris (77-86-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----  
 --Canada--

Ingredient	Korea	DSL	NDSL	Phil.
Tris (77-86-1)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----  
 -SARA 302- -----SARA 313-----

Ingredient	RQ	TPQ	List Chemical	Catg.
Tris (77-86-1)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----  
 -RCRA- -TSCA  
 CERCLA 261.33 8(d)

Ingredient	RCRA	TSCA	CERCLA 261.33	8(d)
Tris (77-86-1)	No	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0

Label Hazard Warning:

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

Label Precautions:

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Use only with adequate ventilation.

Keep container closed.

Avoid breathing dust.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

*Status: Accepted*

*Reviewed By: Brady Chung*

*Review Date: 7/23/2009*

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