

# MATERIAL SAFETY DATA SHEET

## TRIS HCL

### SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

**MANUFACTURER'S NAME:** GENOMIC SOLUTIONS, INC.  
**ADDRESS:** 4355 VARSITYV DR.  
ANN ARBOR, MI 48108  
**TELEPHONE NUMBER:** (734) 975-4800  
**US EMERGENCY PHONE:** (800) 535-5053  
**INTERNATIONAL EMERGENCY PHONE:** 1(352) 323-3500 (Call Collect)

**CAS NUMBER:** 1185-53-1

**SUBSTANCE:** TRIS HCL

**TRADE NAMES/SYNONYMS:**

80-0078, TRIS HCL, 250G; 80-0161, TRIS HCL, 1000G; 1,3-PROPANEDIOL, 2-AMINO-2-(HYDROXYMETHYL)-, HYDROCHLORIDE; 2-AMINO-2-(HYDROXYMETHYL)-1,3-PROPANEDIOL, HYDROCHLORIDE; TRIS CHLORIDE; TRIS HYDROCHLORIDE; TROMETHAMINE HYDROCHLORIDE; TRIS (HYDROXYMETHYL) AMINOMETHANE; TRIZMA HYDROCHLORIDE; TRIS (HYDROXYMETHYL) HYDROCHLORIDE; TRIS (HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE; C4H12CLNO3.

**CHEMICAL FAMILY:** AMINE, ALIPHATIC; SALT

**CREATION DATE:** 6/14/95

**REVISED:** 2/20/98

### SECTION 2 - PHYSICAL / CHEMICAL CHARACTERISTICS

**COMPONENT:** TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE

**CAS NUMBER:** 1185-53-1

**PERCENTAGE:** 100

#### PHYSICAL AND CHEMICAL PROPERTIES

**DESCRIPTION:** Odorless, clear to white, hygroscopic crystals or crystalline powder

**MOLECULAR WEIGHT:** 157.60

**MOLECULAR FORMULA:** N-H<sub>2</sub>-C(C-H<sub>2</sub>-O-H)<sub>3</sub>.H-CL

**MELTING POINT:** 302-306 F (150-152 C) decomposes

**BOILING POINT:** N/A

**VAPOR PRESSURE:** no data available

**VAPOR DENSITY:** N/A

**SPECIFIC GRAVITY:** not available

**WATER SOLUBILITY:** soluble

**VOLATILITY:** 0%

**pH:** N/A

**ODOR THRESHOLD:** no data available

**EVAPORATION RATE:** N/A

**OTHER PHYSICAL DATA:** 40%(w/v) solution is clear and colorless, pH: 3.5-5.5 (0.5 M in water @ 20 C)

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### SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

**CERCLA RATINGS (SCALE 0-3): HEALTH = U FIRE = 1 REACTIVITY = 0 PERSISTENCE = 0**

**NFPA RATINGS (SCALE 0-4): HEALTH = U FIRE = 1 REACTIVITY = 0**

#### **EMERGENCY OVERVIEW:**

Odorless, clear to white, hygroscopic crystals or crystalline powder.

May be irritating to the respiratory tract, skin and eyes. May form flammable or explosive dust-air mixtures.

Avoid breathing dust. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Avoid creation of dust. Wash thoroughly after handling. Use only with adequate ventilation.

#### **POTENTIAL HEALTH EFFECTS**

##### **INHALATION:**

*Short Term Effects:* May cause irritation. Additional effects may include coughing, chest pain and difficulty breathing.

*Long Term Effects:* No information is available.

##### **SKIN CONTACT:**

*Short Term Effects:* May cause irritation.

*Long Term Effects:* In addition to effects from short term exposure, may cause tumors.

##### **EYE CONTACT:**

*Short Term Effects:* May cause irritation.

*Long Term Effects:* No information is available.

##### **INGESTION:**

*Short Term Effects:* May cause gastrointestinal irritation. Additional effects may include burns, digestive disorders, weakness and coma.

*Long Term Effects:* No information is available.

##### **CARCINOGEN STATUS:**

**OSHA:** N

**NTP:** N

**IARC:** N

#### **FIRE FIGHTING MEASURES**

##### **FIRE AND EXPLOSION HAZARD:**

Slight fire hazard when exposed to heat or flame. Dust-air mixtures may ignite or explode.

##### **EXTINGUISHING MEDIA:**

Dry chemical, carbon dioxide, water spray or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

##### **FIREFIGHTING:**

Move container from fire area if you can do it without risk. Do not scatter spilled material with high-pressure water streams. Dike fire-control water for later disposal (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 31).

Use agents suitable for type of surrounding fire. Avoid breathing hazardous vapors, keep upwind.

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FLASH POINT: no data available  
LOWER FLAMMABLE LIMIT: no data available  
UPPER FLAMMABLE LIMIT: no data available  
AUTOIGNITION: no data available

### HAZARDOUS COMBUSTION PRODUCTS:

Thermal decomposition products may include toxic and corrosive fumes of chlorides and toxic oxides of nitrogen.

## SECTION 4 - REACTIVITY HAZARD DATA

### STABILITY AND REACTIVITY

#### REACTIVITY:

Stable under normal temperatures and pressures.

#### CONDITIONS TO AVOID:

May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks, or open flame.

#### INCOMBATIBILITIES:

TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE: OXIDIZERS (STRONG): Fire and explosion hazard.

#### HAZARDOUS DECOMPOSITION:

Thermal decomposition products may include toxic and corrosive fumes of chlorides and toxic oxides of nitrogen.

#### POLYMERIZATION:

Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

## SECTION 5 - HEALTH HAZARD DATA

### EMERGENCY FIRST AID

#### INHALATION:

*First Aid* - Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

#### SKIN CONTACT:

*First Aid* - Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

#### EYE CONTACT:

*First Aid* - Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

#### INGESTION:

*First Aid* - If vomiting occurs, keep head lower than hips to help prevent aspiration. Treat symptomatically and supportively. Get medical attention if needed.

#### NOTE TO PHYSICIAN

ANTIDOTE:

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No specific antidote. Treat symptomatically and supportively.

### TOXICOLOGY INFORMATION

TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE:

**CARCINOGEN STATUS:** None.

**ACUTE TOXICITY LEVEL:** No data available.

**TARGET EFFECTS:** No data available.

### HEALTH EFFECTS

#### **INHALATION:**

TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE:

*Acute Exposure:* No specific information available. Based on information on tris(hydroxymethyl) aminomethane, may cause irritation of the mucous membranes with tightness and pain in the chest, coughing, and difficulty breathing.

*Chronic Exposure:* No data available.

#### **SKIN CONTACT:**

TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE:

*Acute Exposure:* No specific information available. Based on information on tris(hydroxymethyl) aminomethane, may cause irritation with redness, pain, and possibly sensitization.

*Chronic Exposure:* No specific information available. Based on information on tris(hydroxymethyl) aminomethane, may cause dermatitis due to irritation or sensitization. Mice used in a long-term exposure study developed benign and malignant tumors of the skin, forestomach, and oral cavity. Papillary tumors of the lung were observed, and a tubular adenoma of the kidney was observed in one mouse.

#### **EYE CONTACT:**

TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE:

ACUTE EXPOSURE -

CHRONIC EXPOSURE - No data available.

*Acute Exposure:* May cause irritation.

*Chronic Exposure:* No data available.

#### **INGESTION:**

TRIS(HYDROXYMETHYL) AMINOMETHANE HYDROCHLORIDE:

*Acute Exposure:* No specific information available. Based on information on tris(hydroxymethyl) aminomethane, may cause gastrointestinal irritation and possibly burns to the mouth and stomach. Large doses to laboratory animals caused weakness, collapse and coma.

*Chronic Exposure:* No data available.

### **SECTION 6 - CONTROL AND PROTECTIVE MEASURES**

#### **EXPOSURE LIMITS:**

No occupational exposure limits established by OSHA, ACGIH, or NIOSH.

#### **VENTILATION:**

Provide local exhaust ventilation. Ventilation equipment should be explosion-proof if explosive concentrations of dust, vapor or fume are present.

#### **EYE PROTECTION:**

Employee must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.

#### **EMERGENCY WASH FACILITIES:**

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Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.

### **CLOTHING:**

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

### **GLOVES:**

Employee must wear appropriate protective gloves to prevent contact with this substance.

### **RESPIRATOR:**

The following respirators are recommended based on information found in the physical data, toxicity and health effects sections. They are ranked in order from minimum to maximum respiratory protection.

The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

Any dust and mist respirator with a full facepiece.

Any air-purifying full facepiece respirator with a high-efficiency particulate filter.

Any powered air-purifying respirator with a tight-fitting facepiece and high-efficiency particulate filter.

Any type 'C' supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure mode or with a full facepiece, helmet or hood operated in continuous-flow mode.

Any self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

### **FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:**

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

## **SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/LEAK PROCEDURES**

### **ACCIDENTAL RELEASE MEASURES**

#### **OCCUPATIONAL SPILL:**

Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into clean, dry containers for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

### **HANDLING AND STORAGE**

Observe all federal, state and local regulations when storing this substance. Store away from incompatible substances.

### **DISPOSAL INFORMATION**

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Observe all federal, state and local regulations when disposing of this substance.

### SECTION 8 - TRANSPORTATION AND REGULATORY INFORMATION

#### TRANSPORTATION INFORMATION:

No classification currently assigned

#### REGULATORY INFORMATION:

TSCA STATUS: Y  
CERCLA SECTION 103 (40CFR302.4): N  
SARA SECTION 302 (40CFR355.30): N  
SARA SECTION 304 (40CFR355.40): N  
SARA SECTION 313 (40CFR372..65): N  
OSHA PROCESS SAFETY (29CFR1910.119): N  
CALIFORNIA PROPOSITION 65: N

#### SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40 CFR 370.21)

ACUTE HAZARD: N  
CHRONIC HAZARD: N  
FIRE HAZARD: N  
REACTIVITY HAZARD: N  
SUDDEN RELEASE HAZARD: N

While the information and recommendations set forth herein are believed to be accurate as of the date hereof,

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## **TRIS HCL**

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