

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

- 1.1 Product Code:** 600202
Product Name: Tris-HCl Stock Solution (1 M, pH 8.0)
- 1.2 Relevant identified uses of the substance or mixture and uses advised against:**
Relevant identified uses: For research use only, not for human or veterinary use.
- 1.3 Details of the Supplier of the Safety Data Sheet:**
- Company Name:** Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
- Web site address:** www.caymanchem.com
- Information:** Cayman Chemical Company +1 (734)971-3335
- 1.4 Emergency telephone number:**
- Emergency Contact:** CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:**
Skin Corrosion/Irritation, Category 2
Serious Eye Damage/Eye Irritation, Category 2
- 2.2 Label Elements:**



GHS Signal Word: Warning

GHS Hazard Phrases:

H315: Causes skin irritation.

H319: Causes serious eye irritation.

GHS Precaution Phrases:

P264: Wash {hands} thoroughly after handling.

P280: Wear {protective gloves/protective clothing/eye protection/face protection}.

GHS Response Phrases:

P302+352: IF ON SKIN: Wash with plenty of soap and water.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332+313: If skin irritation occurs, get medical advice/attention.

P337+313: If eye irritation persists, get medical advice/attention.

P362+364: Take off contaminated clothing and wash it before reuse.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Causes serious eye irritation.
Effects and Symptoms: Causes skin irritation.
 Material may be irritating to the mucous membranes and upper respiratory tract.
 May be harmful by inhalation, ingestion, or skin absorption.
 May cause respiratory system irritation.
 To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

| CAS # / RTECS # | Hazardous Components (Chemical Name)/ REACH Registration No. | Concentration | EC No./ EC Index No. | GHS Classification |
|------------------------|---|----------------|---------------------------|--|
| 77-86-1 TY2900000 | Trizma base | 12.12 % | 201-064-4 NA | Skin Corr. 2: H315 Eye Damage 2: H319 STOT (SE) 3: H335 |
| 7647-01-0 MW4025000 | Hydrochloric acid | 0.0 -5.0 % | 231-595-7 017-002-00-2 | Corrosive 1: H290 Skin Corr. 1B: H314 STOT (SE) 3: H335 H336 Eye Damage 1: H318 |
| 7732-18-5 ZC0110000 | Water | 82.88 -87.88 % | 231-791-2 NA | No data available. |

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.
Media: Use water spray to cool fire-exposed containers.
Unsuitable Extinguishing A solid water stream may be inefficient.
Media:

5.2 Flammable Properties and Hazards: No data available.
Hazards: No data available.
Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Autoignition Pt: No data.

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

- 6.1 Protective Precautions,** Avoid breathing vapors and provide adequate ventilation.
Protective Equipment and As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator,
Emergency Procedures: and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).
- 6.2 Environmental** Take steps to avoid release into the environment, if safe to do so.
Precautions:
- 6.3 Methods and Material For** Contain spill and collect, as appropriate.
Containment and Cleaning Transfer to a chemical waste container for disposal in accordance with local regulations.
Up:

Section 7. Handling and Storage

- 7.1 Precautions To Be Taken** Avoid breathing dust/fume/gas/mist/vapours/spray.
in Handling: Avoid prolonged or repeated exposure.
- 7.2 Precautions To Be Taken** Keep container tightly closed.
in Storing: Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

| CAS # | Chemical Name | Jurisdiction | Recommended Exposure Limits | Notations |
|-----------|-------------------|--------------|---|-----------|
| 7647-01-0 | Hydrochloric acid | ACGIH TLV | CEIL: 2 ppm) | |
| | | Europe | TWA: 8 mg/m3 (5 ppm) STEL: 15 mg/m3 (10 ppm) | |
| | | France VL | STEL: 7.6 mg/m3 (5 ppm) | |
| | | OSHA PELs | CEIL: 5 ppm | |
| | | Britain EH40 | TWA: 2 mg/m3 (1 ppm) STEL: 8 mg/m3 (5 ppm) | |

8.2 Exposure Controls:

- 8.2.1 Engineering Controls** Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne
(Ventilation etc.): levels below recommended exposure limits.
- 8.2.2 Personal protection equipment:**
- Eye Protection:** Safety glasses
- Protective Gloves:** Compatible chemical-resistant gloves
- Other Protective Clothing:** Lab coat
- Respiratory Equipment** NIOSH approved respirator, as conditions warrant.
(Specify Type):
- Work/Hygienic/Maintenan** Do not take internally.
ce Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
 Wash thoroughly after handling.
 No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

| | | | |
|---|--------------------|---------------|-----------|
| Physical States: | [] Gas | [X] Liquid | [] Solid |
| Appearance and Odor: | A solution | | |
| pH: | 8.0 | | |
| Melting Point: | No data. | | |
| Boiling Point: | No data. | | |
| Flash Pt: | No data. | | |
| Evaporation Rate: | No data. | | |
| Flammability (solid, gas): | No data available. | | |
| Explosive Limits: | LEL: No data. | UEL: No data. | |
| Vapor Pressure (vs. Air or mm Hg): | No data. | | |
| Vapor Density (vs. Air = 1): | No data. | | |
| Specific Gravity (Water = 1): | No data. | | |
| Solubility in Water: | No data. | | |
| Octanol/Water Partition Coefficient: | No data. | | |
| Autoignition Pt: | No data. | | |
| Decomposition Temperature: | No data. | | |
| Viscosity: | No data. | | |

9.2 Other Information

Percent Volatile: No data.

Section 10. Stability and Reactivity

| | | |
|-------------|---|---|
| 10.1 | Reactivity: | No data available. |
| 10.2 | Stability: | Unstable [] Stable [X] |
| 10.3 | Stability Note(s): | Stable if stored in accordance with information listed on the product insert. |
| | Polymerization: | Will occur [] Will not occur [X] |
| 10.4 | Conditions To Avoid: | No data available. |
| 10.5 | Incompatibility - Materials To Avoid: | amines alkali metals bases metals oxidizing agents permanganates |
| 10.6 | Hazardous Decomposition or Byproducts: | carbon dioxide carbon monoxide hydrogen chloride gas |

Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.
 Trizma Base - Toxicity Data: Oral LD50 (mouse): 5500 mg/kg; Oral LD50 (rat): >3000 mg/kg;
 Intraperitoneal LD50 (mouse): 3350 mg/kg;

Chronic Toxicological Effects: Trizma Base - Investigated as a primary irritant and reproductive effector.
 Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here.
 See actual entry in RTECS for complete information.
 Trizma Base RTECS Number: TY2900000

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

| CAS # | Hazardous Components (Chemical Name) | NTP | IARC | ACGIH | OSHA |
|-----------|--------------------------------------|------|------|-------|------|
| 77-86-1 | Trizma base | n.a. | n.a. | n.a. | n.a. |
| 7647-01-0 | Hydrochloric acid | n.a. | 3 | A4 | n.a. |
| 7732-18-5 | Water | n.a. | n.a. | n.a. | n.a. |

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.
 Runoff from fire control or dilution water may cause pollution.

12.2 Persistence and Degradability: No data available.

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.
DOT Hazard Class:
UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Not dangerous goods.
UN Number:
Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport Information: Transport in accordance with local, state, and federal regulations.



SAFETY DATA SHEET

Tris-HCl Stock Solution (1 M, pH 8.0)

Revision: 12/23/2016
Supersedes Revision: 10/17/2013

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

| CAS # | Hazardous Components (Chemical Name) | S. 302 (EHS) | S. 304 RQ | S. 313 (TRI) |
|-----------|--------------------------------------|--------------|-------------|---------------|
| 77-86-1 | Trizma base | No | No | Yes-Cat. N106 |
| 7647-01-0 | Hydrochloric acid | Yes 500 LB | Yes 5000 LB | Yes |
| 7732-18-5 | Water | No | No | No |

| CAS # | Hazardous Components (Chemical Name) | Other US EPA or State Lists |
|-----------|--------------------------------------|--|
| 77-86-1 | Trizma base | CAA HAP,ODC: HAP; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No |
| 7647-01-0 | Hydrochloric acid | CAA HAP,ODC: HAP; CWA NPDES: No; TSCA: Yes - Inventory, 4 Test; CA PROP.65: No |
| 7732-18-5 | Water | CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No |

Regulatory Information Statement: This SDS was prepared in accordance with 29 CFR 1910.1200 and Regulation (EC) No.1272/2008.

Section 16. Other Information

Revision Date: 12/23/2016

Additional Information About This Product: No data available.

This Product:

Company Policy or Disclaimer: DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.