SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION

Product Name: 1.0M Tris Buffer, pH 8.8
Ultra Pure Grade

Catalogue Number: 1415

Other means of identification: Tris-HCl Buffer

Recommended use of the chemical and restrictions on use:
For R&D use only. Not for pharmaceutical, household or other uses.

Supplier Information:
Axil Scientific Pte Ltd
41 Science Park Road
#04-08 The Gemini
Singapore Science Park II
Singapore 117610
Tel: +65 6775 7318
Fax: +65 6775 7211
Email: info@axilscientific.com

Apical Scientific Sdn Bhd
No 7-1 to 7-4 Jalan SP 2/7
#04-08 The Gemini
Seri Kembangan 43300
Tel: +603 8943 3252
Fax: +603 8943 3243
Email: custcare@apicalscientific.com

Emergency phone number:
Monday – Friday, 8:00 a.m. to 6:00 p.m.
+65 6775 7318 (Singapore)
+603 8943 3252 (Malaysia)

SECTION 2 – HAZARDS IDENTIFICATION

GHS Classification
Not a dangerous substance or mixture according to the Globally Harmonised System (GHS).

Other Hazards - None

SECTION 3 – COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical characterization: Mixture

Chemical Identity: Tris Base
Synonyms: THAM
Tris(hydroxymethyl)aminomethane
Trisamine
Trimethylol aminomethane
Trisaminol
TRIS
2-Amino-2-(hydroxymethyl)-1,3-propanediol
1,1,1-Tris(hydroxy methyl) Methylamine
Tromethamol

Molecular Formula: (HOCH₂)₃CNH₂
Molecular Weight: 121.14 g/mol

Chemical Identity: Hydrochloric Acid
Molecular Formula: HCl
SAFETY DATA SHEET

Molecular Weight: 36.46 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tris Base</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No: 77-86-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC-No: 201-064-4</td>
<td></td>
<td>5 % - 10 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrochloric Acid</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS-No: 7647-01-0</td>
<td>Met. Corr. 1; 1; STOT SE 3; H290, H314, H318, H335</td>
<td>≤ 1 %</td>
</tr>
</tbody>
</table>

SECTION 4 – FIRST-AID MEASURES

**Eye Contact**
Flush eyes with water as a precaution.

**Skin Contact**
Immediately wash skin thoroughly with soap and copious amounts of water.

**Inhalation**
Remove to fresh air. If not breathing, give artificial respiration or if breathing is difficult, give oxygen.

**Ingestion**
Never give anything by mouth to an unconscious person. Rinse mouth with water.

**Most important symptoms and effects, both acute and delayed**
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Indication of immediate medical attention and special treatment needed**
Data not available.

SECTION 5 – FIRE-FIGHTING MEASURES

**Extinguishing Media**
Use water spray, dry chemical powder, carbon dioxide or alcohol-resistant foam.

**Special Exposure Hazards**
Carbon oxides, nitrogen oxides, hydrogen chloride gas

**Special Fire-fighting Procedures**
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Further Information
Data not available.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions
Prevent skin/eye contact. Avoid breathing vapours, mist or gas.

Environmental Precautions
Do not allow material into sewers and drainage systems.

Methods for Cleaning Up
Clean up spills immediately, observing precautions in the safety data sheet and label. Dispose into a chemical waste container.

SECTION 7 – HANDLING AND STORAGE

Precautions for safe handling
Use with adequate ventilation as necessary or desired. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Follow all SDS/ label precautions. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage, including any incompatibilities
Store in tightly closed container in a cool, dry and well-ventilated area.

SECTION 8 – EXPOSURE CONTROLS/ PERSONAL PROTECTION

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td>PEL (short-term)</td>
<td>5 ppm 7.5 mg/m³</td>
<td>Singapore. Workplace Safety and Health Act – First Schedule Permissible Exposure Limits of Toxic Substances</td>
</tr>
</tbody>
</table>

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice.

Eye/ Face Protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin/ Hand Protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific workplace. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let product enter drains.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>Appearance</td>
<td>Colourless solution</td>
</tr>
<tr>
<td>b)</td>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>c)</td>
<td>Odour Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>d)</td>
<td>pH</td>
<td>8.6 – 9.0 (Neat, 25 ºC)</td>
</tr>
<tr>
<td>e)</td>
<td>Melting/freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>f)</td>
<td>Initial boiling point and boiling range</td>
<td>Not available</td>
</tr>
<tr>
<td>g)</td>
<td>Flash point</td>
<td>Not available</td>
</tr>
<tr>
<td>h)</td>
<td>Evaporation rate</td>
<td>Not available</td>
</tr>
<tr>
<td>i)</td>
<td>Flammability (solid, gas)</td>
<td>Not available</td>
</tr>
<tr>
<td>j)</td>
<td>Upper/lower flammability or explosive limits</td>
<td>Not available</td>
</tr>
</tbody>
</table>
k) Vapour pressure (mm Hg) Not available
l) Vapour density Not available
m) Relative density Not available
n) Water solubility Not available
o) Partition coefficient: n-octanol/water Not available
p) Autoignition temperature Not available
q) Decomposition temperature Not available
r) Viscosity Not available

SECTION 10 – STABILITY AND REACTIVITY

Reactivity
Data not available.

Chemical stability
Data not available.

Possibility of hazardous reactions
Data not available.

Conditions to avoid
Data not available.

Incompatible material
Bases, Oxidizing agents, Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx), Hydrogen chloride gas

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute toxicity
Data not available.

Skin corrosion/irritation
Data not available.

Serious eye damage/eye irritation
Data not available.

Respiratory or skin sensitization
Data not available.
Germ cell mutagenicity
Data not available.

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
Data not available.

Specific target organ toxicity – single exposure
Data not available.

Specific target organ toxicity – repeated exposure
Data not available.

Aspiration hazard
Data not available.

Other information
RTECS: Data not available

SECTION 12 – ECOLOGICAL INFORMATION

Toxicity
Data not available.

Persistence and degradability
Data not available.

Bioaccumulative potential
Data not available.

Mobility in soil
Data not available.

Other adverse effect
Data not available.

SECTION 13 – DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose off as unused product.

SECTION 14 – TRANSPORT INFORMATION

UN Number
ADR/RID: -  IMDG: -  IATA-DGR: -
SAFETY DATA SHEET

UN Proper Shipping Name:
ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA-DGR: Not dangerous goods

Transport Hazard Class(es)
ADR/RID: -
IMDG: -
IATA-DGR: -

Packing Group
ADR/RID: -
IMDG: -
IATA-DGR: -

Environmental Hazards
ADR/RID: no
IMDG: marine pollutant: no
IATA-DGR: no

Special Precaution for Users
Data not available

SECTION 15 – REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
Data not available

SECTION 16 – OTHER INFORMATION

Date of Issue: JULY 11, 2008  Date of Revision: MAY 07, 2017

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. Axil Scientific Pte Ltd shall not be held liable for any damage resulting from handling or from contact with the above product.