

Tris Buffer

Tris(hydroxymethyl)aminomethane — High-Purity Biological Buffer | Catalogue No. ASC-8019

1. Product Overview

Tris(hydroxymethyl)aminomethane — widely known as Tris base, Trizma base, THAM, or Trometamol — is a high-purity biological buffer central to molecular biology and biochemistry research. Its optimal pKa of 8.06–8.1 makes it ideally suited to buffering within the physiological pH range (pH 7.0–9.0) relevant to most living systems. Tris is used both independently as a buffer and as a core component of mixed buffer formulations, including Tris-EDTA (TE) buffer, Tris-acetate-EDTA (TAE) buffer, and Tris-borate-EDTA (TBE) buffer — the standard buffers underpinning agarose gel electrophoresis of DNA and RNA.

2. Chemical & Physical Information

Product Name	Tris(hydroxymethyl)aminomethane (Tris Buffer)
Catalogue Number	ASC-8019
CAS Number	77-86-1
Chemical Formula	$C_4H_{11}NO_3$
Molecular Weight	121.14 g/mol
EC Number	201-064-4
Appearance	White crystalline powder
Melting Point	171–176°C
Boiling Point	219–220°C
Solubility	Freely soluble in water (~50 g/100 mL at 25°C); soluble in ethanol; slightly soluble in ethyl acetate
pKa	8.06–8.1 at 20–25°C (temperature-dependent)
Effective Buffer Range	pH 7.0–9.0

3. Synonyms

Trizma base; Tris base; THAM; Trometamol; Tromethamine; 2-Amino-2-(hydroxymethyl)-1,3-propanediol; Trimethylolaminomethane; Tris-Amino.

4. Buffer Preparation Notes

Property	Detail
Temperature Sensitivity	pH increases approximately 0.03 unit per 1°C decrease in temperature
Dilution Sensitivity	pH decreases 0.03–0.05 unit per ten-fold dilution
Recommended Measurement	Use a calibrated pH meter with a glass/calomel combination electrode at the actual working temperature
Common Formulations	TE buffer, TAE buffer, TBE buffer, Tris-glycine (SDS-PAGE running buffer)

5. Typical Applications

Category	Typical Use
Gel electrophoresis	TAE and TBE buffer for DNA/RNA separation
Protein extraction	Cell lysis and protein buffer systems
Enzyme assays	Buffering for lactate dehydrogenase and other enzymatic assays
Cell biology	Cell membrane permeability studies
Analytical chemistry	Basimetric (acidimetric) standard for acid solution standardisation
General buffering	TE buffer and standard pH solutions

6. Key Limitations

- Tris has been reported to interfere with the activity of a number of enzymes, since its primary amine group can participate in unwanted side reactions. Use with caution in enzyme assays or protein systems sensitive to primary amines; consider alternative buffers (e.g. HEPES, phosphate buffer) where appropriate.
- Buffer pH is temperature- and concentration-dependent — always verify at working temperature and concentration.

7. Storage & Stability

- Store in a cool, dry place, tightly sealed, protected from moisture.
- Relatively non-hygroscopic and stable under recommended storage conditions.

8. Intended Use

For laboratory research use only. Not for diagnostic or therapeutic use.

9. Quality & Supply Assurance

- Supplied with Certificate of Analysis (COA) for every batch
- Identity confirmed against reference spectrum
- Consistent batch-to-batch quality
- Technical support available from AuSaMicS Life Science

10. Literature & References

1. Sambrook J, Russell DW. Molecular Cloning: A Laboratory Manual, 4th ed. Cold Spring Harbor Laboratory Press, 2012.
2. Good NE, Winget GD, Winter W, Connolly TN, Izawa S, Singh RM. Hydrogen ion buffers for biological research. Biochemistry. 1966;5(2):467–477.

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