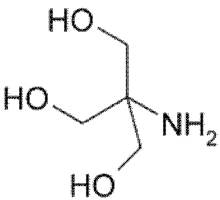


FINISHED PRODUCT INFORMATION

Product Name: TRIS Buffer (LR/AR/GR Grade)

MSDS No.: BPPL 156

Specification No.: FP-156

1. **NOMENCLATURE** : 2-Amino-2-Hydroxymethyl-Propane-1,3-Diol.
: Tromethamine,
: Tris (Hydroxymethyl) Aminomethane.
2. **CAS NO.** : 77-86-1
3. **EMPIRICAL FORMULA** : $C_4H_{11}NO_3$
4. **MOL. WT.** : 121.14
5. **STRUCTURAL FORMULA** : 

The structural formula shows a central carbon atom bonded to three hydroxymethyl groups (-CH₂OH) and one amino group (-NH₂).
6. **MELTING RANGE** : 168.0 °C to 171 °C
7. **DESCRIPTION** : White crystalline powder, Free Flowing.
: Highly soluble in water.
8. **APPLICATIONS** : Most common Buffer for Biology / Biochemistry in laboratory.
: Lab. Primary Standard for chemical analysis.
9. **PACKING** : 25 Kgs. Fibre drum with PE liner inside .
10. **SHELF LIFE** : 2 years

FINISHED PRODUCT SPECIFICATION

Product Name: TRIS Buffer (LR/AR/GR Grade)

1. **DESCRIPTION** : White crystalline powder. Free Flowing.
2. **SOLUBILITY** : Solubility in water at 20°C, 80 gms./100 ml ..
3. **IDENTIFICATION (IR)** : Passes.
4. **CLARITY & COLOUR OF SOLUTION
(APPEARANCE OF SOLUTION)** : Soluble in 10% water , solution is clear and colorless.
5. **WATER CONTENT** : ≤0.20 %
6. **ARSENIC** : NMT 0.0005 % (5 PPM)
7. **COPPER** : NMT 0.0001% (1 PPM)
8. **pH (5% Water) at 25°C** : 10.0 to 11.5
9. **WATER INSOLUBLES** : 0.005 % (50 PPM)
10. **IRON CONTENT** : NMT 0.0001% (1 PPM)
11. **LEAD (Heavy Metal)** : NMT 0.0001% (1 PPM)
12. **SULFATE** : NMT 0.001% (10 PPM)
13. **CHLORIDE** : NMT 0.0003% (3 ppm)
14. **Ultraviolet absorbance
(40% aq.) (280 nm)** : NMT 0.07
15. **ASSAY (ODB)** : 99.8%

Solubility of TRIS Buffer

Sr No.	Solvent	Solubility (mg / ml)
1.	Water	550
2.	Ethylene Glycol	79.10
3.	Methanol	26.00
4.	Ethanol (Anhy)	14.60
5.	Ethanol (95%)	22.00
6.	DMF	14.00
7.	Acetone	02.00
8.	Ethyl Acetate	00.50
9.	Olive oil	00.40
10	Chloroform	00.05

pH v/s Temp. (TRIS Buffer)
pH of TRIS Buffer (0.05 M)

5°C (Temp.)	25°C (Temp.)	37°C (Temp.)
7.76	7.20	6.91
7.89	7.30	7.02
7.97	7.40	7.12
8.07	7.50	7.22
8.18	7.60	7.30
8.26	7.70	7.40
8.37	7.80	7.52
8.48	7.90	7.62
8.58	8.00	7.71
8.68	8.10	7.80
8.78	8.20	7.91
8.88	8.30	8.01
8.98	8.40	8.10
9.09	8.50	8.22
9.18	8.60	8.31
9.28	8.70	8.42
9.36	8.80	8.51
9.47	8.90	8.62
9.56	9.00	8.70

Notes :

1. Effects of Temp. on pH:

As TRIS solutions decrease in Temp. from 25°C to 5°C, the pH value increases an average of 0.03 units per °C. As the solution increases in Temp. from 25°C to 37°C, the pH decreases an average of 0.025 units per °C.

2. Effects of Concentration on pH:

Increasing the total TRIS concentration

from 0.05 M to 0.5 M will increase the pH by about 0.05.

Decreasing the concentration from 0.05 M to 0.005 M will decrease the pH by about 0.05.

TRIS buffer and Biological Buffers www.bimalpha.com

Sr. No.	Product Name	CAS No.	Molecular Formula	Appearance
1.	[TRIS (Hydroxy Methyl Amino Methane)] TRSI Buffer (Tromethamine)	77-86-1	C ₄ H ₁₁ NO ₃	White crystalline powder, Free Flowing. Highly soluble in water.
2.	[TRIS (hydroxy Methyl Amino Methane) Hydrochloride] (TRIS HCL)	1185-53-1	C ₄ H ₁₁ NO ₃ · HCL	White crystalline powder, Free Flowing. Highly soluble in water
3.	3- (4- Morpholino) propane Sulfonic Acid , Sodium Salt (MOPS, Sodium salt)	71119-22-7	C ₇ H ₁₄ NNaO ₄ S	White Crystalline Powder
4.	3-(4-Morpholino) propane Sulfonic Acid (MOPS)	1132-61-2	C ₇ H ₁₅ NO ₄ S	White Crystalline Powder
5.	N-(2-Hydroxyethyl) piperazine-N' – (2-ethane Sulfonic Acid) [HEPES]	7365-45-9	C ₈ H ₁₈ N ₂ O ₄ S	White Crystalline Powder
6.	3-(Cyclohexylamino)- propane Sulfonic Acid [CAPS]	1135-40-6	C ₉ H ₁₉ O ₃ S	White Crystalline Powder
7.	Bis (2-hydroxyethyl) iminotris (hydroxymethyl) Methane [BIS –TRIS]	6976-37-0	C ₈ H ₁₉ NO ₅	Almost White or Slightly Yellow Crystalline Powder .
8.	3-[(3-Cholamido Propyl)-Dimethyl Ammonio] propane sulfonate (CHAPS)	75621-03-3	C ₃₂ H ₅₈ N ₂ O ₇ S	White Crystalline Powder
9.	2-[(2-Amino-2-oxoethyl)amino]ethanesulfonic acid [ACES]	7365-82-4	C ₄ H ₁₀ N ₂ O ₄ S	White Crystalline Powder
10	1,3-bis(tris[hydroxymethyl]methylamino) propane [BIS-TRIS Propane]	64431-96-5	C ₁₁ H ₂₆ N ₂ O ₆	White Crystalline Powder