ProductInformation

BIS-TRIS
Sigma Prod. Nos. B9754, B7535 and B6032

STRUCTURE for free base: $(HOCH_2CH_2)_2$-N-C-$(CH_2OH)_3$
SYNONYMS: bis(2-Hydroxyethyl)iminotris(hydroxymethyl)methane

PHYSICAL PROPERTIES:

pK_a = 6.5 at pH 25°C; $\Delta pK/\Delta T$ = -0.03.[1,2]
The useful pH range for the buffer is 5.8-7.2.
E^M(259nm) = 10 (water)[3]
E^M(277nm) = 10 (water)[3]

PRODUCT NUMBER	B9754	B7535	B6032
CAS NUMBER	free base 6976-37-0	free base 6976-37-0	hydrochloride 124763-51-5
MOLECULAR FORMULA	$C_8H_{19}NO_5$	$C_8H_{19}NO_5$	$C_8H_{19}NO_5 \cdot HCl$
DESCRIPTIVE NAME	Reagent	SigmaUltra	Reagent
APPEARANCE OF SOLID[1]	white crystalline powder	white powder	white powder
SOLUTION APPEARANCE	25 g/50 mL water clear colorless to faint yellow	1.0 M in water clear colorless	25 g/ 50 mL water clear colorless to faint yellow
TYPICAL pH VALUE[1]	9-11 (33% w/w)	9-11 (specification) (1.0 M)	3-4 (0.1 M)

STABILITY / STORAGE AS SUPPLIED:

These products are stable at room temperature. They should be evaluated for continued suitability in user application every three to five years.

SOLUBILITY / STABILITY:

Aqueous solutions may be sterile-filtered, but are stable to autoclaving.[3] The solutions should be stable for months at 2-8°C.

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GENERAL REMARKS:

Bis-Tris is an amine buffer very similar to Trizma ("Tris") in structure. Its common name is derived from the structure.

Sigma offers the standard reagent Bis-Tris, B9754, as well as Bis-Tris SigmaUltra, B7535, which has been tested for trace elements. For convenience in preparing a standard buffer, Sigma also offers B6032, Bis-Tris Hydrochloride. Buffers can be prepared by adding hydrochloric acid to a solution of the free base to the desired pH, or by mixing equimolar solutions of B9754 and B6032 to achieve the desired pH.

Additional references about buffers in general are listed below.

REFERENCES:

1. Sigma quality control or production data.
2. *Methods in Enzymology*, 182, 27-28 (1992).
3. Lewis, J.C., *Analytical Biochemistry*, 14, 495 (1986).

SUGGESTED REFERENCES FOR FURTHER READING:

Enzyme Assays: A Practical Approach, Eds. Eisenthal and Danson (IRL Press, 1992), Chapter 11, p 317. Excellent discussion of buffer chemistry in clear terms.

Data for Biochemical Research, 3rd Ed., eds. Dawson, Elliott, et al., (Oxford Press, 1986). Contains pK tables for common buffers, recipes for mixing buffers.

Molecular Cloning: A Laboratory Manual, 2nd Ed., eds. Sambrook et al., (Cold Spring Harbor Press, 1989). Appendices contain recipes for many commonly used buffer formulations, particularly in molecular biology applications.

"Guide to Protein Purification" in *Methods in Enzymology*, 182, pp 24-38 (1990). Review article about buffers and their properties, particularly in protein isolation applications.

Methods in Enzymology, 87, 405 (1982). Review article about buffers, with emphasis on the mathematics of buffers and variables affecting ionic strength.