

## Product Information

### BIS-TRIS propane

Product Number **B 6755**  
Store at Room Temperature

#### Product Description

Molecular Formula:  $C_{11}H_{26}N_2O_6$

Molecular Weight: 282.3

CAS Number: 64431-96-5

pK<sub>a</sub>1: 6.8 (25 °C)

pK<sub>a</sub>2: 9.0 (25 °C)

$\Delta pK/\Delta T = -0.03$

Synonym: 1,3-bis[tris(hydroxymethyl)  
methylamino]propane

Bis-Tris propane is a zwitterionic buffer that is used in biochemistry and molecular biology. It has an unusually wide buffering range, from approximately pH 6 to 9.5, because its two pK<sub>a</sub> values are close in value.

A review of DNA polymerase fidelity and its role in the polymerase chain reaction (PCR) discusses the use of Bis-Tris propane as a suitable buffer.<sup>1</sup> The use of a Bis-Tris propane/HCl buffer for the stabilization of farnesyl diphosphate isolated from a mutant strain of *Saccharomyces cerevisiae* has been described.<sup>2</sup> Bis-Tris propane buffer has been used in a study of the effects of buffer identity on electric signals of light-excited bacteriorhodopsin.<sup>3</sup> An investigation of the MgATPase activity of the myosin subfragment 1 monomer in Bis-Tris propane buffer has been reported.<sup>4</sup> The effect of buffer identity on the kinetics of the restriction enzyme *EcoR* V has been studied in various buffers, including Bis-Tris propane.<sup>5</sup>

Bis-Tris propane has been used in protein crystallization, such as in the crystallization of glutamate dehydrogenase from *Thermotoga maritima* and of pullulanase type I from *Fervidobacterium pennivorans* Ven5.<sup>6,7</sup> The analysis of Langmuir and Langmuir-Blodgett monolayers of organophosphorus acid anhydrolase in different subphases, including Bis-Tris propane buffer, has been reported.<sup>8</sup> The preparation and phosphodiester hydrolysis activity of complexes of lanthanum and Bis-Tris propane have been investigated.<sup>9</sup>

#### Precautions and Disclaimer

For research or further manufacturing use only. Not intended for direct use in humans or animals. TSCA-exempt use only in US.

#### Preparation Instructions

This product is soluble in water (428 mg/ml), yielding a clear, colorless solution.

#### Storage/Stability

Solutions of this product are expected to be stable to autoclaving. Solutions stored at 2-8 °C are stable for months.

#### References

1. Eckert, K. A., and Kunkel, T. A., DNA polymerase fidelity and the polymerase chain reaction. *PCR Methods Appl.*, **1(1)**, 17-24 (1991).
2. Song, L., Detection of farnesyl diphosphate accumulation in yeast ERG9 mutants. *Anal. Biochem.*, **317(2)**, 180-185 (2003).
3. Toth-Boconadi, R., et al., Buffer effects on electric signals of light-excited bacteriorhodopsin. *Biophys. J.*, **78(6)**, 3170-3177 (2000).
4. Bachouchi, N., et al., MgATPase activity of myosin subfragment 1. The dimer is more active than the monomer. *J. Mol. Biol.*, **191(2)**, 247-254 (1986).
5. Wenner, J. R., and Bloomfield, V. A., Buffer effects on *EcoRV* kinetics as measured by fluorescent staining and digital imaging of plasmid cleavage. *Anal. Biochem.*, **268(2)**, 201-212 (1999).
6. Knapp, S., et al., Crystal structure of glutamate dehydrogenase from the hyperthermophilic eubacterium *Thermotoga maritima* at 3.0 Å resolution. *J. Mol. Biol.*, **267(4)**, 916-932 (1997).
7. Lebbink, J. H., et al., Crystallization and preliminary X-ray crystallographic studies of the thermoactive pullulanase type I, hydrolyzing alpha-1,6 glycosidic linkages, from *Fervidobacterium pennivorans* Ven5. *Acta Crystallogr. D Biol. Crystallogr.*, **56(Pt 11)**, 1470-1472 (2000).

8. Mello, S. V., et al., Langmuir and Langmuir-Blodgett films of organophosphorus acid anhydrolase. *Biomacromolecules*, **4(4)**, 968-973 (2003).
9. Gomez-Tagle, P., and Yatsimirsky, A. K., Phosphodiester hydrolysis by lanthanide complexes of bis-tris propane. *Inorg. Chem.*, **40(15)**, 3786-3796 (2001).

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