

## Product Information

### TRIZMA<sup>®</sup> Pre-set crystals Cell Culture Tested

Product Number **T 0194**  
Store at Room Temperature

#### Product Description

This product is cell culture tested (1.82 mg/ml) and is designated as Biotechnology Performance Certified. It has been tested for endotoxin levels and analyzed for the absence of nucleases and proteases.

This product is a pre-mixed combination of TRIZMA<sup>®</sup> base and TRIZMA HCl in convenient foil pouches. When dissolved in 1 L of deionized water, this product gives a 0.1 M TRIZMA solution with a pH of 7.2 at 25 °C. TRIZMA is the registered trademark for tris(hydroxymethyl) aminomethane, commonly called Tris.

Sigma Technical Bulletin 106B contains additional information on temperature and concentration effects, and on the use of pH electrodes with TRIZMA buffers.

Tris is an established basimetric standard and buffer used in biochemistry and molecular biology.<sup>1</sup> It may be used by itself as a buffer or as a component of mixed buffer formulations.<sup>2</sup> These different buffer formulations include:

- Tris-EDTA (TE) buffer
- Tris magnesium buffer
- Tris-acetate-EDTA (TAE) buffer
- Tris-borate-EDTA (TBE) buffer
- Tris-buffered saline (TBS)
- Tris-buffered saline with dextrose (TBS-D)
- Tris-glycine buffer
- Tris-phosphate EDTA buffer
- Tris-SDS buffer
- Tris-sucrose
- Tris-Tricine-SDS buffer

Tris salts are used in protein crystallization at various pH values (Product Nos. 82009, 70437, 75403, 86684, 73513).<sup>3,4,5,6</sup> The use of low-ionic strength Tris buffers in the formation of intermediate filaments of lamin from *Caenorhabditis elegans* has been described.<sup>7</sup>

Tris has been utilized in studies of double stranded complexes of peptide nucleic acids (PNA) and their complementary DNA sequences, by use of anion exchange HPLC.<sup>8</sup> The use of Tris in capillary electrochromatography and UV analysis of tocopherols and tocotrienols has been reported.<sup>9</sup>

#### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

#### Preparation Instructions

This product is soluble in water (666 mg/ml), yielding a clear, colorless solution.

#### Storage/Stability

TRIZMA solutions can be autoclaved. Tris has a significant temperature coefficient:

- From 5 °C to 25 °C, the pH decreases an average of 0.03 pH units per °C.
- From 25 °C to 37 °C, the pH decreases an average of 0.025 pH units per °C.

Thus it is necessary to choose the proper mixture to give the desired final pH at the desired temperature. The pH of 0.05 M solutions of this product at various temperatures is as follows:

5 °C = pH 7.76  
25 °C = pH 7.20  
37 °C = pH 6.91

#### References

1. Gomori, G., Preparation of Buffers for Use in Enzyme Studies. *Methods Enzymol.*, **1**, 138-146 (1955).
2. Molecular Cloning: A Laboratory Manual, 3rd ed., Sambrook, J. and Russell, D.W., CSHL Press (Cold Spring Harbor, NY: 2001), pp. 5.8, 5.30, 5.43, 5.60, 5.76, 10.25-10.26, 12.75, 12.84, 12.87, 13.52, 16.29-16.31, A1.2-1.3, A1.7-A1.8, A1.17-A1.18, A1.22, A8.42-A8.43.

3. Brzozowski, A. M., et al., Structural analysis of a chimeric bacterial  $\alpha$ -amylase. High-resolution analysis of native and ligand complexes. *Biochemistry*, **39(31)**, 9099-9107 (2000).
4. Knapp, S., et al., Crystallization and preliminary crystallographic analysis of an amylopullulanase from the hyperthermophilic archaeon *Pyrococcus woesei*. *Proteins*, **23(4)**, 595-597 (1995).
5. Andrykovitch, M., et al., Crystallization and preliminary X-ray diffraction studies of NusG, a protein shared by the transcription and translation machines. *Acta Crystallogr. D Biol. Crystallogr.*, **58(Pt 12)**, 2157-2158 (2002).
6. Campos, A., et al., Crystallization and preliminary X-ray analysis of FlhD from *Escherichia coli*. *J. Struct. Biol.*, **123(3)**, 269-271 (1998).
7. Karabinos, A., et al., The single nuclear lamin of *Caenorhabditis elegans* forms *in vitro* stable intermediate filaments and paracrystals with a reduced axial periodicity. *J. Mol. Biol.*, **325(2)**, 241-247 (2003).
8. Lesignoli, E., et al., Recognition and strand displacement of DNA oligonucleotides by peptide nucleic acids (PNAs). High-performance ion-exchange chromatographic analysis. *J. Chromatogr. A.*, **922(1-2)**, 177-185 (2001).
9. Abidi, S. L., and Rennick, K. A., Capillary electrochromatographic evaluation of vitamin E-active oil constituents: tocopherols and tocotrienols. *J. Chromatogr. A.*, **913(1-2)**, 379-386 (2001).

TRIZMA is a registered trademark of Sigma-Aldrich Biotechnology.

GCY/RXR 5/03

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.