



SIGMA-ALDRICH

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Product Information

Ethylene glycol-bis(2-aminoethylether)-N,N,N',N'-tetracetic acid

Product Number **E0396**
Store at Room Temperature

Product Description

Molecular Formula: $C_{14}H_{24}N_2O_{10}$
Molecular Weight: 380.4
CAS Number: 67-42-5
 pK_a : < 2, 2.7, 8.8, and 9.5¹
Melting Point: 241 °C, with decomposition
Synonym: EGTA

Trace elemental analyses have been performed on the SigmaUltra EGTA. The certificate of analysis provides lot-specific results. SigmaUltra EGTA is for applications which require tight control of elemental content.

EGTA is a reagent that is used to chelate Ca^{2+} in the presence of Mg^{2+} .² EGTA chelates Ca^{2+} at a ratio of 1:1. The log (stability constants) for several cations are as follows:¹

Mg^{2+} = 5.2
 Ca^{2+} = 11.0
 Mn^{2+} = 12.1
 Fe^{2+} = 11.8
 Co^{2+} = 12.3
 Ni^{2+} = 11.8
 Cu^{2+} = 17.7
 Zn^{2+} = 12.9

A protocol for the determination of free calcium in calcium-EGTA solutions has been reported.³ A procedure for making a calibration standard for calcium ion concentration, with detection accurate to 10 μ M in a mixture of EGTA, HEDTA, and NTA has been reported.⁴

EGTA can be used as an anti-coagulant when dissolved at 1 g per 100 ml of blood. EDTA is more commonly used for the same purpose; either agent chelates the calcium ion from blood.

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in 1 M NaOH (38 mg/ml, or 0.1 M), yielding a clear, colorless solution. A saturated solution at room temperature was found to be 2 mM in EGTA and had a pH of 2.72. This product has the following maximal solubilities in aqueous media at the respective pH values:

pH 8.48 > 0.52 M
pH 5.4 > 0.48 M
pH 4.5 = 0.45 M
pH 4.2 = 0.42 M
pH 4.0 = 0.31 M

References

1. Data for Biochemical Research, 3rd ed., Dawson, R.M.C., et al., Oxford University Press (New York, NY: 1986), pp. 404-405.
2. Schmid, R.W., and Reilley, C.N., New Complexon for Titration of Calcium in the Presence of Magnesium. *Anal. Chem.*, **29**, 264 (1957).
3. Bers, D.M., A simple method for the accurate determination of free [Ca] in Ca-EGTA solutions. *Am. J. Physiol.*, **242**, C404-408 (1982).
4. May, P.M., et al., Calibration of ionized calcium and magnesium with ligand mixtures for intracellular ion-selective electrode measurements. *Anal. Chem.*, **57**, 1511-1517 (1985).

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