

### Product Profile

Product Name:	EDTA Solution, 0.05% in DPBS
Catalog Number	03-015-1-
Unit Size Availability:	(B)100ml
Formulation:	Liquid
Defined Storage Conditions:	15-30°C (Room Temperature)
Stability: (Under Defined Handling & Storage Conditions)	Please Refer To Product Label

**Important Note!** Please read the MSDS and Product Profile carefully in their entirety before using this material for possible safety precautions and potential hazards.

#### Product Description:

EDTA is a polyamino carboxylic acid (PACA) organic chelating agent (i.e. from the Greek χηλή, chele, claw) used in many enzyme buffers and, at higher concentrations, as an enzyme inactivator. It is not only used in metal chelation, ion exchange and antioxidation procedures, but also in spectrophotometric titration and other chemical procedures. Its prominence as a chelating agent arises from its ability to sequester di- and tri-cationic metal ions such as  $\text{Ca}^{2+}$  and  $\text{Fe}^{3+}$ . After being bound by EDTA, metal ions remain in solution while exhibiting diminished capacity as they are extensively enveloped and, as a consequence, their catalytic properties are often suppressed. A chelate is a water-soluble complex between a metal ion and a complexing agent. If Chelators are small molecules that bind very tightly to metal ions then Chelation is the process of binding or complexation of a bi- or multidentate ligand. Simple or complex, the key property of all chelators is that the metal ion bound to the chelator is chemically inert as they don't easily dissociate in solution. As a member of the PACA family of ligands, EDTA usually binds to a metal cation forming multiple bonds through its two amines and four carboxylates. Due to the aforementioned characteristic, many of the resulting coordination compounds adopt octahedral geometry. Although, and for the most part, they are of little consequence for many of its applications, these octahedral complexes are chiral. IUPAC has recommended the term complexane for EDTA and other aminopolycarboxylic acids.

EDTA is able to form principally stalwart complexes with Manganese, Copper, Iron, Lead and Cobalt. Since complexes of  $\text{EDTA}^{4-}$  are anionic, they have a tendency to be highly water-soluble and for this reason, EDTA has the ability to dissolve deposits of metal oxides and carbonates. While in labile complexes, the metal ion can be readily exchanged, but in metal complexes of transition elements (e.g. Fe, Cu, Zn, Co, Mn, Mo, V, Cr), chelation occurs within a much wider range of elements. Those chelating elements yielding soluble metal complexes are also known as sequestering agents and one of the most important roles of chelators is to detoxify metal ions and prevent poison intoxication. Some of the transition elements are essential to life, as elucidated previously, and are not only found in living systems and are crucial relative to the proper functioning of certain enzymes but also are of great import in cellular metabolic processes. Some obvious and prolific relationships are Iron and Hemoglobin (i.e., a transport protein which transports oxygen in the blood), and cobalt in vitamin  $\text{B}_{12}$ . Iron is also transported in the blood by a complex protein iron chelator known as transferrin.

In the laboratory, EDTA is widely utilized for scavenging metal ions. In such fields as Biochemistry and Molecular Biology, ion depletion is commonly used to deactivate metal-dependent enzymes, either as an assay for their reactivity or to suppress damage to DNA or proteins. In Cell Culture applications, EDTA is used for its chelating properties which binds to calcium and other ions and thus prevents adjoining of cadherins (i.e. the integral membrane proteins involved in calcium-dependent cell-adhesion) between cells, preventing the clumping of cells growing in liquid suspension or even detaching adherent cells for passaging. EDTA is also added to buffer solutions and Trypsin. EDTA is added to some Trypsin solutions as it binds calcium and magnesium ions that may otherwise inhibit the Trypsin activity which then hydrolyzes and gains access to the intercellular bonds being cell-cell and/or cell-substrate bonds. EDTA may be used to dislodge adherent cells when using gelatin microbeads as they are digested by Trypsin/EDTA. Last, but not least, EDTA is used extensively in the Hematology Lab as an anticoagulant for Complete Blood Counts (CBC's).

#### Predominant Characteristics of EDTA Solution include:

- § Widely used for complexing inhibitory heavy metals
- § Meets USP and EP Testing Specifications
- § Cell-Culture-Tested
- § Suitable for Cell-Culture, Molecular Biology & Biochemistry Applications
- § Long-Storage When Handled Properly Under Defined Conditions

**Storage & Stability:**

This product should be stored under specified conditions and used within the expiration date as specified on the label. Do not use after the expiry date as indicated. Deterioration of liquid media may be recognized by any of the following characteristics, among others including: (a). color change, (b). granulation/ clumping, (c). insolubility, (d). And/or decrease in expected performance parameters. Any material described above should not be used and therefore discarded. Do not expose to light for prolonged periods as it is light-sensitive. For prolonged storage, store in the dark.

**Quality Control\*(Please Note That Each Batch/Lot Will Differ as to the Final Specifications)**

Test	Specifications*
Appearance:	Clear Solution
Osmolality:	275-290 mOsm/kg
pH:	7.2-7.4
Sterility:	Sterile

**Auxiliary Products**

Product Name	Product Concentration	Catalog Number	Unit Size	Storage Temperature
TAE Electrophoresis Buffer(50X)	50X	01-870-1A	500ml	15-30°C
TBE Electrophoresis Buffer(5X)	5X	01-870-1A	500ml	15-30°C
SDS Solution (10%)	10%	01-890-1B	100ml	15-30°C
Hepes Buffer	1M	03-025-1B	100ml	15-30°C
Trypsin Solution A With Calcium And Magnesium Without Phenol Red	0.25%	03-045-1B	100ml	2-8°C
Trypsin Solution B Without Calcium And Magnesium Without Phenol Red	0.25%	03-046-1A	500ml	-20°C
		03-046-1B	100ml	-20°C
Trypsin Solution B Without Calcium And Magnesium Without Phenol Red 10x Concentrate	2.50%	03-046-5A	500ml	-20°C
		03-046-5B	100ml	-20°C
Crystalline Trypsin Solution Without Phenol Red	0.02%	03-047-1A	500ml	-20°C
				-20°C
		03-047-1B	100ml	-20°C
Soybean Trypsin Inhibitor 50x Conc., 5mg/ml		03-048-1C	20ml	-20°C
Trypsin EDTA Solution B EDTA (0.05%) With Phenol Red	0.25%	03-052-1A	500ml	-20°C
		03-052-1B	100ml	-20°C
Trypsin EDTA Solution C EDTA (0.02%) With Phenol Red	0.05%	03-053-1A	500ml	-20°C
<b>Note:</b> For a list of Antibiotics, Serum, other Reagents and Supplements, please refer to our Product Catalog/ Product Guides/Product Profiles and Internet Site.				

**References:**

- 1) Current Edition Merck Index
- 2) Biological Industries (BI) Specifications
- 3) Current Edition USP/E Ph
- 4) Martindale The Extra Pharmacopeia, 28<sup>th</sup> Edition, Royal Pharmaceutical Society: London, England
- 5) Darling, D. C. and Morgan, S. J. Animal Cells: Culture and Media, John Wiley & Sons: New York, 1994