

Product Name

Name: Ethylenediaminetetraacetic Acid (EDTA) Disodium Salt Solution, 0.05% in DPBS

Cat. No.: C3550-0100

Size: 100 mL

Product Description

EDTA is a polyaminocarboxylic acid (PACA) and 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 Ca^{2+} and Fe^{3+} . After being bound by EDTA, metal ions remain in solution while exhibiting diminished capacity as they are extensively enveloped, and as consequence catalytic properties of enzymes 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 multi-dentate ligand. 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.

EDTA is able to form principally stalwart complexes with manganese, copper, iron, lead, and cobalt. Since complexes of 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 they are crucial to the proper functioning of certain enzymes but also are of great importance in cellular metabolic processes. Some obvious and prolific relationships are iron and hemoglobin (i.e., a transport protein that transports oxygen in the blood), and cobalt in vitamin B₁₂. 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 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 bind to calcium and other ions and thus prevent 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 added to trypsin solution where it binds calcium and magnesium ions and inhibits the trypsin activity. Trypsin hydrolyzes the intercellular bonds either 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 (CBCs).

Predominant Characteristics

- Widely used for complexing inhibitory heavy metals
- Cell culture tested
- Suitable for cell culture, molecular biology & biochemistry applications
- Long-term storage when handled properly under defined conditions

Procedure

- Remove the EDTA solution from a -20 °C freezer and place in a 2 - 8 °C freezer to dissolve.
- Shake evenly during the dissolution process, and store it in aliquots or use it directly as needed after all dissolved.
- If it is needed in a short period of time, store it in a 2 - 8 °C freezer and use it up within 1 - 2 weeks.

Storage & Stability

The product should be kept at **15 - 30°C**.

The product is **light-sensitive** and therefore should not be left in the light.

Shelf life: 24 months from date of manufacture.

Precaution and Disclaimer

For research use only, not for clinical diagnosis, and treatment.