

SEQUESTERING AGENT – CONCLUDING PART

REF: TT/ JUNE 2020 / WK 5

Types of sequestering agent

- **Amino carboxylic acid based** – The sequestering agents of this category are EDTA (Ethylenediaminetetraacetic acid), NTA (Nitrilotriacetic acid) and DTPA (diethylenetriaminepentaacetic acid).

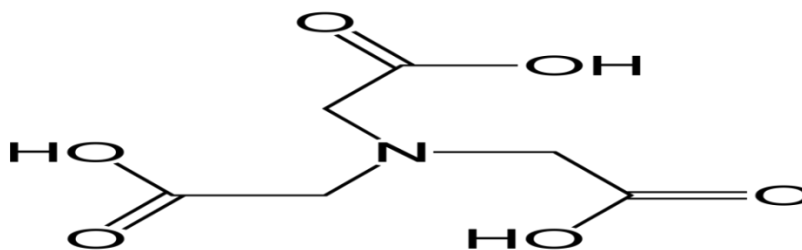


Fig 1.1 NTA

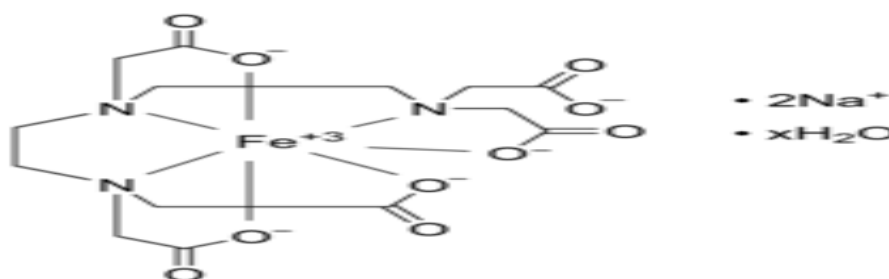


Fig 1.2 DTPA and metal ion

- **Phosphates and Phosphonates** - These sequestering agents are divided as following categories -
 - a) **Inorganic polyphosphates** - The sequestering agents of this category are sodium hexameta phosphate (SHMP), sodium polyphosphate, sodium tripolyphosphate, sodium trimeta phosphate, sodium pyrophosphates.



- b) **Phosphonates** - Phosphonates based sequestering agents have a high chelation ratio and also have better iron chelation than EDTA and NTA. The sequestering agents of this category are such as EDTMP, DETMP, ATMP, HEDP, DTPMP.
- **Hydroxy Carboxylic Acids** – These products have several hydroxylic groups having the property of preventing precipitation of bi and trivalent metal cationic in an alkaline medium. They are citric acid, Tartaric acid, Gluconic acid and Oxalic acid.
 - **Polyacrylates** - Polyacrylates are effective dispersants, with mild chelation values and protective colloid properties.
 - **Sugar Acrylates** - Sugar acrylates have sequestering values as high as amino polycarboxylates or the phosphonates. They are biodegradable and are recommended in pretreatment for Desizing, scouring and bleaching and as dyebath conditioners during the cellulosic dyeing.

Advantages of a sequestering agent

- Prevention of pinhole formation due to catalytic oxidation caused by iron during bleaching.
- During dyeing, it prevents spots, shade change and unevenness by chelating heavy metals and dispersing impurities.
- Improves washing off property.
- During fabric preparation sequestering agent provides iron chelating to prevent fabric / yarn damage and provides additional stabilizing effect on the hydrogen peroxide.
- Calcium and magnesium ions reduce the solubility of anionic dyes causing them to aggregate or even precipitate on the fiber. Aggregated and precipitated dyes cannot migrate or diffuse they remain on the fiber surface as particular deposits. Sequestering agents prevent precipitation of dyes.

Wishing you a great week ahead!

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