ORCO

ORGANIC DYESTUFFS CORPORATION

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TECHNICAL BULLETIN

ORCO FERROSOL F-80 LIQUID®

Description: **Orco Ferrosol F-80 Liquid** is a highly efficient product for use when slightly higher metal chelate stability is required. This is particularly useful in peroxide bleach systems.

Properties:

Appearance -	Clear, pale straw liquid
Solubility -	Miscible in water
Active content -	Approximately 40% total dissolved solids
33% as DPTA NA5.	
pH -	11-12 of 1% solution @ 25° C(77°F)
Density -	10.3 lbs./gallon.
Chemical composition -	Diethylenetriaminepentaacetic acid pentasodium salt.
Chelating Activity @ pH 11 -	65 - 67 mg. Ca C03/gm.

Applications: Chelation of metal contaminates in dyeing, bleaching, and scouring procedures.

Procedures: General rules for efficient chelation:

When chelating common metal ions, except iron in alkaline solutions, use a chelating agent that is fully substituted with acetic acid groups (EDTA1, NTA2, DTPA3).

Although chelating agents for common metal ions work in acid solutions, they perform best and most economically in alkaline solutions. Therefore, whenever possible, use the chelating agent at the highest pH that the system will tolerate, except when chelating iron.

Iron is best complexed in acid solutions by EDTA, NTA or DTPA. In aklaline solutions, iron is best complexed by chelation agents containing both acetic acid and ethanol groups. (HEDTA4,EDG5, DEG6.)

Procedures: The larger the number of ethanol groups in such a *hybrid* chelate, the higher the pH at which the compound is effective in chelating iron. However, increasing the number of ethanol groups decreases the ability to chelate other metal ions, particularly calcium and magnesium.

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TECHNICAL BULLETIN CONTINUED

ORCO FERROSOL F-80 LIQUID®

For maximum efficiency and minimum cost, use EDTA or NTA to complex calcium, magnesium and other common metal ions and use the “hybrid” type chelate to complex the iron component in alkaline solutions.

When ferric hydroxide first precipitates, it is highly hydrated. It converts quite rapidly to a less hydrated form and ultimately to a hydrated iron oxide. The conversion is quite rapid and irreversible with the iron precipitate becoming more and more insoluble.

For maximum efficiency, ferric iron should be complexed before conditions favoring the precipitation of iron are created.

The chelating agent should be selected on the basis of the pH of the final solution which will contain the iron complex. Use the final pH of the formulation or the highest pH in the process to determine the amount and type of chelating agent needed.

Add the iron chelating agent to the ingredient or ingredients which contain the iron contamination before that ingredient is mixed with anything that increases pH.

If the addition of the iron sequestering agent to the ingredient containing the iron raises the pH to above 7, the chelating agent should be partially neutralized with a suitable acid such as oxalic or citric to avoid an excessive rise in pH.

Prior to removing absorbed iron from freshly precipitated lattices or pigments with chelating agents, be sure that the precipitate is never exposed (even in wash water) to a pH higher than 3.5 prior to treatment with a partially neutralized solution of chelating agent

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