Components:

#147-50	pH Paper, pHydrion® Dispenser, pH 2-10, 1-11
#153-10	Automatic Burette with Bottle and Bulb, 10 mL
#153-12	Graduated Cylinder, Glass, 100 mL × 1 mL
#153-26	Titration Dish, Polyethylene
#153-28	Stirring Rod, Polyethylene
#153-34	Pipette, Glass, 1 mL × 1/100 mL

Reagents:

#200-10-1	Hydrogen Peroxide, 3% Solution, 2 oz (60 mL)
#205-00	Titration Solution (EDTA), 40 mg/L, 2 EPM, 16 oz (500 mL)
#205-12	Titration Solution (EDTA), 400 mg/L, 20 EPM, 16 oz (500 mL)
#270-00	*Nitric Acid, 3N, 8 oz (250 mL) **UN2031**
#275-00	*Hydrochloric Acid, 37%, Concentrated, 2 oz (60 mL) **UN1789**
#285-37	Iron Indicator Solution, 2 oz (60 mL)
#285-40	Iron Buffer Solution, 2 oz (60 mL)

Optional:

#168-01	Hot Plate, 115 Volt
#168-01-1	Hot Plate, 240 Volt

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Iron Count Test Kit

Item# 161-70

Instruction Manual

Updated 3/24/06
Ver. 1.2

OFI Testing Equipment, Inc.

Introduction:

In this procedure, Ferric Iron concentrations are determined by the oxidation of iron to the ferric state at a pH of 1 or less.

The sample is then titrated with a standard EDTA solution in the presence of a Salicylic Acid Indicator at a pH of approximately 2.4. Hydrogen Sulfide interferes with the complexing action of both the EDTA and the Salicylic Acid. The Hydrogen Sulfide can be removed by boiling the sample with Hydrochloric Acid at a pH below 1.

Results are reported as ppm Fe^{3+} or as epm Fe^{3+}.

Procedure:

1. Add 3 drops of concentrated Hydrochloric Acid (37%) solution to 100 mL of clear water (not filtrate). Check the pH with a pH meter or pH paper. The pH of the solution should be 1 to 2.

2. Add 0.5 mL of Hydrogen Peroxide solution. The color that develops (usually a pale yellow) will be the end point color.

3. Add 1.0 mL of Iron Indicator solution. A purple color will develop.

4. Add 0.5 mL of Iron Buffer solution. The pH should be between 2 and 3. Check the pH with a pH meter or pH paper and add additional Buffer solution, if necessary.

5. Titrate with Total Hardness Titrating (EDTA) solution (1 mL = 20 EPM Ca & Mg) back to the same color developed in step 2. If less than 1 mL of the 20 EPM Titrating solution is used to reach the end point, repeat steps 1 through 4 and use the weak Total Hardness Titrating solution (1 mL = 2 EPM Ca & Mg) instead.

Calculations:

For 100 mL sample of water:

ppm Fe^{3+}
= Total Hardness Titrating Solution, 20 EPM, mL × 5.6

ppm Fe^{3+}
= Total Hardness Titrating Solution, 2 EPM, mL × 0.56

If it is necessary to convert to EPM Iron:

$$\text{EPM Iron } Fe^{3+} = \frac{\text{ppm Iron Fe+++}}{18.6}$$