Iron in Brine – Ferric Thiocyanate Method

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Applications and Industries

Oil field brine; Petroleum.

References

D. F. Boltz and J. A. Howell, eds., Colorimetric Determination of Nonmetals, 2nd ed., Vol. 8, p. 304 (1978).

Carpenter, J.F. "A New Field Method for Determining the Levels of Iron Contamination in Oilfield Completion Brine", SPE International Symposium (2004).

Chemistry

In an acidic solution, hydrogen peroxide oxidizes ferrous iron. The resulting ferric iron reacts with ammonium thiocyanate to form ferric thiocyanate, a red-orange colored complex, in direct proportion to the iron concentration. The method reports total iron content in units of mg/L. By simply dividing the measured mg/L by the density of the brine reported in units of kg/L, the ppm value can be obtained in mg/kg.

Available Analysis Systems

Visual colorimetric: CHEMets®

Storage Requirements

Products should be stored in the dark and at room temperature.

Safety Information

Safety Data Sheets (SDS) are available upon request and at www.sdsfetch.com. Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.

Interference Information

- Hydrogen sulfide should not interfere as long as it leaves the sample cup as a gas or is oxidized to sulfuric acid before the ampoule is snapped.
- Zinc bromide does not interfere.
- Sodium erythorbate does not interfere if the sample is mixed well.
- Sodium thiocyanate may cause a slight positive interference.
- Ethylene Glycol Monobutyl Ether (EGMBE) will cause a false negative result at 2 vol%.
- Non-emulsifier, NO BLOK Z, does not interfere at 2 vol%.

Accuracy Statement

Statements of accuracy are based on laboratory tests performed under ideal testing conditions using standards of known concentration prepared in deionized water.

CHEMets® Kits: ± 1 color standard increment.