

Membrane Caustic Soda 50% Specifications

<u>Characteristic</u>	<u>Parameter</u>	<u>Analysis</u>
NaOH, wt %	49.50-51.50	50.27
NA2O, wt %	38.30-39.90	38.95
Fe, ppm	3.0 Max	0.5
NaCl, ppm	100.00 Max	49
NaCO3, wt %	0.05 Max	<0.050

Sodium Hypochlorite 12.5 wt% Bacticide

<u>Characteristic</u>	<u>Unit</u>	<u>Value</u>	<u>Min</u>	<u>Max</u>
Sodium Hypochlorite, NaOCl, wt%	wt%	13.2	12.5	15.6
Available Chlorine, gpl	gpl	150.6	145	185
Total Alkalinity as NaOH, gpl	gpl	10.5	1.2	29
Total Alkalinity as NaOH, wt%	wt%	0.9	0.1	2.3
Actual Sodium Hydroxide, NaOH, wt%	wt%	0.4	0.1	1.5
Sodium Carbonate, Na ₂ CO ₃ , wt%	wt%	0.6		1.1
Density @ 20 C	g/ml	1.2		

SPECIFICATIONS

LIQUID FERRIC SULFATE

INTENT OF SPECIFICATIONS

1. The Material to be provided shall be Liquid Ferric Sulfate, approved for potable water treatment, listed/certified under the National Sanitation Foundation NSF Standard 60 and meeting all provisions of ANSI/AWWA STANDARD B406-92; "Standard for Liquid Ferric Sulfate", latest revision and the requirements contained within these specifications.

2. PRODUCT:

a. The Liquid Ferric Sulfate shall meet the physical and chemical properties listed below. The Liquid Ferric Sulfate shall be supplied as an aqueous solution containing not less than 12.8% ferric iron and not more than 14% ferric iron, all soluble.

b. The Liquid Ferric Sulfate shall be manufactured from a source of virgin mined iron ore and selected high purity components i.e. magnetite, hematite, ferrous sulfate, etc. - and a "water white" grade of sulfuric acid.

c. The Liquid Ferric Sulfate shall be free from extraneous material and shall be transported and delivered at such concentration and temperature that no freezing occurs. The liquid shall be suitable for feeding by means of metering pumps or other metering devices constructed of corrosion-resistant materials.

d. The Liquid Ferric Sulfate shall have the following chemical properties:

1. Ferric iron:	12.3 – 14.0%
2. Ferrous iron	0.15% max.
3. Free Acid (as % H ₂ SO ₄)	0.1% max.
4. % Insoluble:	0.1% max.

e. The Liquid Ferric Sulfate shall not contain specific impurities in excess of the following limits (by Weight).

1. Arsenic	1 mg/kg	Copper	25 mg/kg
2. Cadmium	1.0 mg/kg	Zinc	10 mg/kg
3. Chromium	7 mg/kg	Manganese	200 mg/kg
4. Lead	1.0 mg/kg	Barium	6 mg/kg
5. Mercury	0.2 mg/kg	Chloride	100 mg/kg
6. Selenium	5 mg/kg	Fluoride	60 mg/kg
7. Silver	11 mg/kg	Titanium	150 mg/kg
8. Nitrites (AS N)	75 mg/kg	Nitrates(AS N)	75 mg/kg
9. Total organic Carbon:	15 mg/kg	Sodium	1000 mg/kg
10. Nickel	40 mg/kg	Molybdenum	15 mg/kg

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11. Beryllium	1.0 mg/kg	Antimony	1.0 mg/kg
12. Thallium	10.0 mg/kg	Cyanide	1.0 mg/kg
13. Total Nitrate an Nitrite (AS N)	150 mg/kg		

f. The Liquid Ferric Sulfate material, as supplied under this bid, shall not contain any Impurities in sufficient quantities which causes or may cause a violation of any current, existing maximum contaminant level (MCL) or any newly regulated MCL which may be passed into law during the life of this contract. Should an MCL violation be determined to be directly attributable to the Liquid Ferric Sulfate material supplied for use by the BUYER, the vendor shall immediately take the necessary steps to remove or reduce the contaminant levels of its' material to levels satisfactory to the BUYER. The BUYER reserves the right to add or delete specific impurity listings and maximum impurity levels to the existing listings as is required to meet all USEPA, SDWA and FDEP water quality standards. The vendor shall comply with any and all such changes required to it's Liquid Ferric Sulfate material, by whatever process changes required, at no additional cost to the BUYER.

g. The BUYER, at his discretion has the right to have analyzed by a certified laboratory the delivered Liquid Ferric Sulfate material for compliance with the above specifications in their entirety. Failure to meet the above specifications may result in termination of contract to supply Liquid Ferric Sulfate under this Bid.

3. QUALITY CONTROL AND TESTING:

- a. Sampling and testing shall be conducted in accordance with all AWWA; ANSI and ASTM specifications.
- b. It shall be the vendor's responsibility to provide a Material Compliance Certificate of Analysis for each lot shipped to the BUYER. The Certified Analysis shall be signed by an employee of the vendor and specify: % total iron, % ferric iron, % ferrous iron, % free sulfuric acid, and liquid specific gravity. The Certificate of Compliance shall be in the possession of the Buyer at the time of delivery.
- c. It shall be the responsibility of the material transporter to provide a proper sample of the Liquid Ferric Sulfate being delivered for analysis, The Liquid Ferric Sulfate sample be shall prepared in accordance With AWWA. 8406-92. Each sample shall be labeled to identify its content, and the label shall be signed by the person actually collecting the sample.

4. MANUFACTURER:

- a. The Bidder shall state, in his proposal, the name of the manufacturer of the Liquid Ferric Sulfate, the bidder intends to supply. The Contractor shall provide proof that the Liquid Ferric Sulfate to be provided is approved for potable water treatment, and meets the National Sanitation Foundation Standard 60 and the

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specifications above..

- b. The Contractor may obtain certification and approval from NSF or other approved testing laboratories for compliance with this specification. Failure of the contractor to obtain the necessary certification may result in termination of contract to supply Liquid Ferric Sulfate under this Bid.