TECHNICAL DATA SHEET

Ferric Chloride 40%

Revised: 04/27/2026

PRODUCT IDENTIFICATION

Product Name: Ferric Chloride 40%
CAS Number: 7705-08-0
Molecular Formula: Cl_3Fe
Molecular Weight: 162.20 g/mol
Grade: Technical
Purity / Concentration: 40%
Synonyms: Iron(III) Chloride, Ferric Chloride Solution

PRODUCT OVERVIEW

Ferric Chloride 40% is a high-performance Technical grade solution widely utilized for its superior coagulant and etching properties. With a precise concentration of 40.5% and extremely low impurity levels, this dark brown liquid is a reliable industrial standard for water treatment and precision manufacturing.

Grade Significance: Technical grade indicates that the product is manufactured to meet industrial performance standards, ensuring consistency and reliability for large-scale applications where high purity is required for process efficiency.

CERTIFICATE OF ANALYSIS — TYPICAL VALUES

PARAMETER	UNIT	TYPICAL	MIN	MAX	TEST METHOD
Assay (wt%)	%	40.5	39	45	Titration
Specific Gravity (20°C)	g/mL	1.405	1.39	1.45	USP <841>
Ferrous Iron Fe2	ppm	15	—	50	Spectrophotometry
Heavy Metals (as Pb)	ppm	ND	—	10	ICP-OES
Nitrate (NO_3^-)	ppm	ND	—	10	Ion Chromatography
Phosphate (PO_4^{3-})	ppm	ND	—	10	Spectrophotometry
Sulfate (SO_4^{2-})	ppm	5	—	30	Turbidimetry
Free Chlorine Cl2	ppm	ND	—	10	Titration
Insoluble Matter	%	0.0010	—	0.01	Gravimetric

ND = Not Detected. Values are typical and may vary by lot.

PHYSICAL & CHEMICAL PROPERTIES

Appearance	Dark brown liquid, metallic luster, fuming	**Odor**	Slightly pungent
Form	Liquid solution	**Boiling Point**	280°C (536°F)
Melting / Freezing Point	37°C (98.6°F)	**Specific Gravity**	1.43
Solubility	Highly water soluble, compatible with alcohols	**Molecular Formula**	Cl_3Fe
Molecular Weight	162.20 g/mol	**Density (25°C)**	1.19 g/mL

APPLICATIONS

1. **Water Treatment** — It acts as a highly effective coagulant, neutralizing charges in suspended particles to clarify drinking water and municipal wastewater.
2. **Electronics Manufacturing** — This solution is a standard etchant used to remove unwanted copper from printed circuit boards during the fabrication process.
3. **Chemical Synthesis** — It serves as a versatile precursor for the production of specialized pigments and various iron-based chemical compounds.
4. **Laboratory Research** — The chemical is frequently employed as a reagent in diverse analytical procedures and controlled chemical reactions.

STORAGE & HANDLING

Due to its corrosive nature and potential for skin and eye damage, Ferric Chloride must be stored in a cool, well-ventilated area using compatible materials to prevent degradation. Proper containment is essential to avoid accidental contact and ensure the long-term stability of the solution.

- Store in a cool, dry place away from direct sunlight.
- Use HDPE or glass containers for storage to prevent reactions.
- Avoid contact with strong bases and reducing agents.
- Ensure proper ventilation when handling to avoid inhalation of vapors.
- Wear appropriate personal protective equipment (PPE) including gloves and goggles.

AVAILABLE PACKAGING

- 1 Quart
- 1 Gallon
- 5 Gallon
- 15 Gallon
- 55 Gallon
- 275 Gallon
- 330 Gallon

SAFETY SUMMARY (CROSS-REFERENCE TO SDS)

Signal Word: Danger

Hazard Statements:

- H302 (96.6%): Harmful if swallowed [Warning Acute toxicity, oral]
- H314 (75.4%): Causes severe skin burns and eye damage [Danger Skin corrosion/irritation]
- H315 (24.4%): Causes skin irritation [Warning Skin corrosion/irritation]
- H318 (24.5%): Causes serious eye damage [Danger Serious eye damage/eye irritation]
- H412 (72.4%): Harmful to aquatic life with long lasting effects [Hazardous to the aquatic environment, long-term hazard]

Emergency Contact: CHEMTEL - 800-255-3924 (24 Hours/Day, 7 Days/Week)

For complete safety information, refer to the Safety Data Sheet (SDS) for this product.

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