



PO Box 600 San Felipe, Texas 77473  
(979) 885-0005 Fax: (979) 885-3208

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### BOARD OF DIRECTORS MEETING

Prior Notice was waived and a meeting of the Directors was held on August 15, 2014. The following resolution was adopted in respects to the official signing of bids on behalf of Pencco, Inc.

BE IT RESOLVED by the Board of Directors of Pencco, Inc. in a meeting duly assembled that Monica Avila, former Bid Secretary of the Corporation, no longer has authority to negotiate for and sign any bid proposals and/or contracts on behalf of the Corporation.

BE IT FURTHER RESOLVED that Sarah Duffy, Bid Secretary, of the Corporation has authority to negotiate for and sign any bid proposals and/or contracts which the Corporation might enter into for the furnishing of services for the Corporation under such terms, conditions, and stipulations, and for such consideration as she may deem to be in the best interest of the Corporation.

No further business was necessary and the meeting was concluded.

Ron L. Horne, President



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## AFFIDAVIT OF COMPLIANCE

This is to certify that the Liquid Ferric Chloride supplied by our company meets AWWA Standard B407-18 or the latest revision and is certified to NSF/ANSI Standard NSF-60.

A handwritten signature in black ink, appearing to read "R. L. Horne", written over a horizontal line.

Signature

R. L. Horne, President

Name and Title of Official

4/25/2023

Date

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The Public Health and Safety Organization

## NSF Product and Service Listings

These NSF Official Listings are current as of **Tuesday, February 20, 2024** at 12:15 a.m. Eastern Time. Please [contact NSF](#) to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information:

<http://info.nsf.org/Certified/PwsChemicals/Listings.asp?CompanyName=penco&>

## NSF/ANSI/CAN 60 Drinking Water Treatment Chemicals - Health Effects

### PENCCO, Inc.

831 Bartlett Road

Sealy, TX 77474

United States

800-864-1742

979-885-0005

[Visit this company's website \(http://www.penco.com\)](http://www.penco.com)

**Facility :** Distribution Center - Birmingham, AL

#### Ferric Sulfate

##### *Trade Designation*

50% Ferric Sulfate

60% Ferric Sulfate

Ferric Sulfate

Ferric Sulfate Solution

Poly Ferric Sulfate

##### *Product Function*

Coagulation & Flocculation

Coagulation & Flocculation

Coagulation & Flocculation

Coagulation & Flocculation

Coagulation & Flocculation

##### *Max Use*

650mg/L

650mg/L

650mg/L

650mg/L

650mg/L

**Facility :** Distribution Center - Stockton, CA

#### Ferric Chloride

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride	Coagulation & Flocculation	600mg/L

**Hydrofluosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Fluorosilicic Acid	Fluoridation	5mg/L
Fluosilicic Acid	Fluoridation	5mg/L
HFS	Fluoridation	5mg/L
HFSA	Fluoridation	5mg/L
Hydrofluorosilicic Acid	Fluoridation	5mg/L
Hydrofluosilicic Acid	Fluoridation	5mg/L

**Facility : Vernon, CA**

**Ferric Chloride**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride	Coagulation & Flocculation	600mg/L

**Ferrous Chloride**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferrous Chloride	Coagulation & Flocculation	500mg/L

**Facility : Distribution Center - Willow Springs, IL**

**Hydrofluosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Fluorosilicic Acid	Fluoridation	5mg/L
Fluosilicic Acid	Fluoridation	5mg/L
Hydrofluosilicic Acid	Fluoridation	5mg/L

**Facility : Distribution Center - Whippany, NJ**

**Hydrofluosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Hydrofluosilicic Acid	Fluoridation	5mg/L

**Facility : Distribution Center - Morganton, NC**

**Fluorosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Fluorosilicic Acid	Fluoridation	5mg/L
Fluosilicic Acid	Fluoridation	5mg/L
HFS	Fluoridation	5mg/L
HFSA	Fluoridation	5mg/L
Hydrofluorosilicic Acid	Fluoridation	5mg/L
Hydrofluosilicic Acid	Fluoridation	5mg/L

**Facility : Middlesex, NC**

**Ammonium Sulfate**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ammonium Sulfate	Chloramination	60mg/L
LAS	Chloramination	60mg/L
Liquid Ammonium Sulfate	Chloramination	60mg/L

**Ferric Sulfate**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
50% Ferric Sulfate	Coagulation & Flocculation	650mg/L
60% Ferric Sulfate	Coagulation & Flocculation	650mg/L
Ferric Sulfate	Coagulation & Flocculation	650mg/L
Penn 3202	Coagulation & Flocculation	650mg/L
Poly Ferric Sulfate	Coagulation & Flocculation	650mg/L

**Hydrofluosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Hydrofluorosilicic Acid	Fluoridation	5mg/L

**Facility : Distribution Center - Bardwell, TX**

**Ferric Chloride**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Ferric Chloride	Coagulation & Flocculation	600mg/L
Pencoco 3012	Coagulation & Flocculation	600mg/L

**Ferric Sulfate**

<b>Trade Designation</b>	<b>Product Function</b>	<b>Max Use</b>
Ferric Sulfate Solution	Coagulation & Flocculation	650mg/L
<b>Ferrous Chloride</b>		
<b>Trade Designation</b>	<b>Product Function</b>	<b>Max Use</b>
Ferrous Chloride	Corrosion Control	500mg/L
	Coagulation & Flocculation	
Pencco 0210	Corrosion Control	500mg/L
	Coagulation & Flocculation	
<b>Hydrofluosilicic Acid</b>		
<b>Trade Designation</b>	<b>Product Function</b>	<b>Max Use</b>
Hydrofluorosilicic Acid	Fluoridation	5mg/L

**Facility : Ennis, TX**

<b>Ferric Chloride</b>	<b>Product Function</b>	<b>Max Use</b>
<b>Trade Designation</b>		
Ferric Chloride	Coagulation & Flocculation	600mg/L
Pencco 3012	Coagulation & Flocculation	600mg/L
<b>Ferric Sulfate</b>		
<b>Trade Designation</b>	<b>Product Function</b>	<b>Max Use</b>
50% Ferric Sulfate	Coagulation & Flocculation	650mg/L
60% Ferric Sulfate	Coagulation & Flocculation	650mg/L
Ferric Sulfate	Coagulation & Flocculation	650mg/L
Ferric Sulfate Solution	Coagulation & Flocculation	650mg/L
Poly Ferric Sulfate	Coagulation & Flocculation	650mg/L
<b>Ferrous Chloride</b>		
<b>Trade Designation</b>	<b>Product Function</b>	<b>Max Use</b>
Ferrous Chloride	Corrosion Control	500mg/L
	Coagulation & Flocculation	
Pencco 0210	Corrosion Control	500mg/L
	Coagulation & Flocculation	
<b>Ferrous Sulfate[1]</b>		
<b>Trade Designation</b>	<b>Product Function</b>	<b>Max Use</b>
Ferrous Sulfate	Coagulation & Flocculation	150mg/L
GreenIron	Coagulation & Flocculation	150mg/L
SafeIron	Coagulation & Flocculation	150mg/L

[1] Only products bearing the NSF Mark on the product, product packaging, and/or documentation shipped with the product are Certified.

**Hydrofluosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Hydrofluorosilicic Acid	Fluoridation	5mg/L

**Facility : Sealy, TX**

**Ferric Sulfate**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
50% Ferric Sulfate	Coagulation & Flocculation	650mg/L
60% Ferric Sulfate	Coagulation & Flocculation	650mg/L
Ferric Sulfate	Coagulation & Flocculation	650mg/L
Ferric Sulfate Solution	Coagulation & Flocculation	650mg/L
Penn 3202	Coagulation & Flocculation	650mg/L
Poly Ferric Sulfate	Coagulation & Flocculation	650mg/L

**Hydrofluosilicic Acid**

<i>Trade Designation</i>	<i>Product Function</i>	<i>Max Use</i>
Fluorosilicic Acid	Fluoridation	5mg/L
Fluosilicic Acid	Fluoridation	5mg/L
Hydrofluosilicic Acid	Fluoridation	5mg/L

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Number of matching Manufacturers is 1

Number of matching Products is 61

Processing time was 0 seconds



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## Safety Data Sheet (SDS) Ferric Chloride Solution

### SECTION 1 – Chemical Identification and Supplier's Information

**Product ID:** Ferric Chloride Solution  
**Product Use:** Water Treatment Chemical  
**Product Formula:** FeCl<sub>3</sub>  
**Chemical Family:** Inorganic Iron Salts  
**CAS #:** 7705-08-0

**Supplier's Name and Address:**

Penco, Inc.  
P.O. Box 600  
San Felipe, TX 77473

**Emergency Phone Number:**

PENCCO (979) 885-0005  
CHEMTREC (800) 424-9300 – 24 hours a day

### SECTION 2 – Hazard Identification

#### GHS Information

**Signal Word:** **Warning**

**Hazard Class:** Corrosive to Metals (H290)

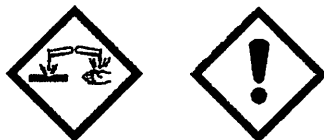
**Hazard Category:** 1

**Hazard Statement:** Toxic if Swallowed (H301)  
Causes severe skin damage and eye damage. (H314)

**Appearance and Odor:** Reddish-brown liquid with a slightly acidic odor.

**Emergency Overview:** A corrosive chemical. Harmful or fatal if swallowed. Harmful if inhaled. Eye or skin contact may cause irritation. Contact with liquid or vapor form of this chemical may cause severe injury. Avoid overexposure.

**Pictograms:**



#### Health Hazards

**Acute Toxicity, Oral** – Category 4. Toxic if ingested. May cause irritation to the mouth and stomach. Higher doses may lead to abnormal liver function with nausea or vomiting, stomach pain, diarrhea, fast and weak pulse, lethargy, pallor, shock, hypertension, dilated pupils, fever, coma, and even death. Individuals with pre-existing liver diseases may have increased susceptibility to the toxicity of exposure.

**Acute Toxicity, Dermal** – Category 4. Prolonged contact may cause irritation and, possibly, burns.

**Eye Contact** – Irritation and, possibly, burns.

**Inhalation** – May cause irritation of the upper respiratory tract, resulting in difficulty breathing.

#### Precautionary Statements

##### Prevention

- Wash skin thoroughly after handling. (P264)
- Do not eat, drink, or smoke when using this product. (P270)





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- Avoid release to the environment. (P273)

Response

- If swallowed: Rinse mouth. (P301+P330)
  - Call a POISON CENTER/doctor/physician. (P312)
  - Collect spillage (P391)

Disposal Considerations

- Dispose of this material and its container to hazardous or special waste collection point in accordance with local, regional, national, and/or international regulation. (P501)

**Carcinogenicity:** None of the components of this material are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

**Fire and Explosion Hazards:** Substance itself does not burn, but may decompose upon heating to produce corrosive and/or toxic fumes. Not considered a fire or explosion hazard.

	NFPA Rating	HMIS Rating	4 = Extreme / Severe
Health	2	2	3 = High / Serious
Reactivity	0	0	2 = Moderate
Flammability	0	0	1 = Slight

**SECTION 3 – Composition/Information on Ingredients**

**Chemical Identity:** FeCl<sub>3</sub>

**Common Name and Synonyms:** Ferric chloride; no known synonyms

Ingredient	CAS #	Weight Percentage	ACGIH TLV	OSHA PEL	STEL
Water	7732-18-5	58 – 72%	N/A	N/A	N/A
Ferric Chloride	7705-08-0	28 – 42%	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	N/A
Ferrous Chloride	7758-94-3	<0.5%	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	N/A
Hydrochloric Acid	7647-01-0	<0.5%	5 ppm	5 ppm	N/A

**Section 313 Supplier Notification:** The hydrochloric acid mentioned above is subject to the reporting requirements of SARA TITLE III Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). This notification must be included in all MSDS's that are copied and distributed for this material.

**SECTION 4 – First Aid Measures**

**Eye Contact First Aid:** Immediately flush eyes for 15 minutes with large amounts of water while holding eyelids apart. Washing within one minute is essential to achieve maximum effectiveness. Obtain medical attention IMMEDIATELY after flushing.

**Skin Contact First Aid:** Flush skin with water. Remove contaminated clothing; wash before reuse. If irritation is still present, seek medical attention IMMEDIATELY.

**Inhalation First Aid:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Obtain medical attention IMMEDIATELY.

**Ingestion First Aid:** DO NOT INDUCE VOMITING. Give 1 or 2 glasses of water or milk. Never give anything by mouth to an unconscious individual. Obtain medical attention IMMEDIATELY.



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## SECTION 5 – Fire Fighting Measures

**Flash Point:** Not applicable.

**Upper/Lower Explosion Limits in Air:** Not applicable.

**Auto Ignition Temperature:** Not applicable.

**Extinguishing Media:** Will not burn; use materials appropriate for surrounding fire.

**Fire and Explosion Hazards:** Substance itself does not burn, but may decompose upon heating to produce corrosive and/or toxic fumes, such as hydrogen chloride and phosgene gas. Ferric chloride can react with metals to form flammable and potentially explosive hydrogen gas.

**Fire Fighting Instructions:** Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face-piece operated in a positive pressure mode. Move exposed containers from fire area if it can be done without risk. Use water to keep fire-exposed containers and tanks cool.

**Hazardous Product of Decomposition or Combustion:** Hydrogen chloride, hydrogen, phosgene.

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## SECTION 6 – Accidental Release Measures

Review safety precautions before proceeding with cleanup. Use appropriate personal protection equipment. Do not touch spilled material. Neutralize spill with lime (calcium hydroxide), limestone (calcium carbonate), or soda ash (sodium carbonate). Restrict access to area until completion of clean up.

**Caution:** limestone and soda ash will evolve CO<sub>2</sub>; ventilation should be provided in enclosed areas. Dike area around spill to prevent spreading, and use absorbent material to pick up spill.

**CERCLA Reportable Discharge (RQ):** 1000 lbs. (454 kg), Based on anhydrous ferric chloride. Divide by solution concentration to obtain solution weight.

**Disposal:** Under the Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine whether a substance should be classified as a hazardous waste at the time of disposal. This is due to the fact that product use, transformation, synthesis, mixtures, etc. may change the nature of the product. Dispose of waste in accordance with applicable federal, state, and local laws.

**RCRA:** Test waste material for corrosivity, D002, prior to disposal.

**Steps To Be Taken In Case Material Is Released Or Spilled:** Notify the appropriate environmental authorities. Note that spills may need to be reported to the National Response Center ((800) 424-8802)

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## SECTION 7 – Handling and Storage

**Handling:** Store and handle in corrosion-proof materials (and area). Use FRP or PVC pipes. Be cautious of substance residue in empty containers. Act according to precautions and warnings set forth.



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**Storage:** Store in a tightly closed container. Do not store in metal containers. Fiberglass, plastic, or rubber-lined tanks may be used for storage. Protect from damage and keep separated from incompatible substances.

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## SECTION 8 – Exposure and Personal Protection

**Respiratory Protection:** Adequate general ventilation should be provided to keep vapor and mists below exposure limits. The exposure limits for some components are listed in Section 2. Wear a NIOSH/OSHA approved respirator with a dust/mist cartridge if there is potential of exposure to mists in excess of applicable limits, in any situation where product vapor or mists may be present, such as in confined spaces.

**Eye Protection:** Wear splash resistant goggles and/or safety glasses with side shields. Wear a full face shield if possibility of material splashing or spraying exists. Maintain eye wash fountain. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

**Skin Protection:** Where there is possibility of skin contact, use the following as appropriate, to avoid skin contact: gloves impervious to material, apron, boots, hood, pants, and jacket. Maintain a safety shower with quick opening valves. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

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## SECTION 9 – Physical and Chemical Properties

<b>Boiling Point:</b>	106°C (223°F)	<b>pH:</b>	< 2.0
<b>Melting Point:</b>	N/A	<b>Solubility in Water:</b>	Complete
<b>Specific Gravity:</b>	1.2 – 1.6	<b>Vapor Pressure:</b>	40 mm Hg @ 20°C
<b>% Volatile:</b>	60 – 75 (Water)	<b>Evaporation Rate:</b>	N/A
<b>Vapor Density (Air = 1):</b>	N/A	<b>Molecular Weight:</b>	162.2
<b>Appearance:</b>	Red/Brown Colored Liquid	<b>Odor:</b>	Slightly acrid

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## SECTION 10 – Stability and Reactivity

**Stability:** Stable at normal conditions

**Polymerization:** Will not occur.

**Decomposition:** Decomposes upon heating to produce corrosive and/or toxic fumes, such as hydrogen chloride. Contact with metals may evolve flammable hydrogen gas.

**Incompatibility:** Rapidly corrodes most metals (titanium is one exception); may generate flammable, potentially explosive hydrogen gas. Avoid contact with nylon, aluminum/aluminum alloys, carbon steel, stainless steel, and copper / copper alloys. Metals, bases, halocarbons, acids, and combustible materials can be considered incompatible.

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## SECTION 11 – Toxicological Information

**Chronic Effects:** Repeated dosage may cause hemosiderosis, including possible damage to liver and pancreas.

**Toxicological Data:** Anhydrous Ferric Chloride Solid Oral LD<sub>50</sub> (rat) = 450 mg/kg

**Carcinogenicity:** None of the components of this material are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

**Reproductive Effects:** TDLo Rat 1 day (intratesticular) 12976 mg/kg; TDLo Rat 1 day (intravaginal) 29 mg/kg pre-pregnancy continuous.

**Target Organs:** No data available.

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## SECTION 12 – Ecological Information

**Ecotoxicological Information:** TLm Daphnia 15 ppm/96 hr fresh water/conditions of bioassay not specified.

**Persistence and Degradation:** No data available

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## SECTION 13 – Disposal Considerations

Under the Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine whether a substance should be classified as a hazardous waste at the time of disposal. This is due to the fact that product use, transformation, synthesis, mixtures, etc. may change the nature of the product. Product containers should be thoroughly emptied before disposal. Dispose of waste in accordance with applicable federal, state, and local laws.

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## SECTION 14 – Transportation Information

**DOT Shipping Name:** Ferric Chloride Solution

**Hazard Class:** 8 – Corrosive Material

**UN Number:** UN 2582

**Packing Group:** III

**Reportable Quantity:** 1000 lbs (454 kg)

**Shipping Containers:** Rubber-lined steel tank cars/trucks; polyethylene drums, bottles.

**Storage Conditions:** Keep containers closed.

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## SECTION 15 – Regulatory Information

**OSHA:** Hazardous Corrosive Liquid – 29 CFR 1920.1200

OSHA Process Safety (29 CFR 1910.119): No

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**CERCLA:** Hazardous Substance – Reportable Quantity (RQ) = 1000 lbs (454 kg)

**SARA Regulations:** 313 and 40 CFR 372: No

**SARA Hazard Categories, SARA Sections 311/312 (40 CFR 370.21):**

Acute: Yes; Chronic: No; Fire: No; Reactive: No; Sudden Release: No

**Clean Water Act:** Designated as a hazardous substance under Section 311(b)(2)(A) of the Federal Water Pollution Control Act; ferric chloride is also regulated by the Clean Water Act Amendments of 1977 and 1978. This chemical is subject to regulations regarding its discharge.

**TSCA Inventory Status:** Yes

**California Proposition 65:** No

**Right-To-Know Lists:** Massachusetts, California, Pennsylvania, New Jersey. This substance does not contain nor is manufactured with ozone-depleting substances.

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## SECTION 16 – Other Information

**IMPORTANT! Read this MSDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure.**

**Revision Date:** March 30, 2022

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PO Box 600  
 San Felipe, TX 77473  
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## Product Data Sheet Ferric Chloride Solution

Revision Date 07/21/2020

### Description

Penco's Ferric Chloride is a dark maroon aqueous solution of soluble ferric iron, manufactured to strict specifications from high quality raw materials. Penco's unique manufacturing process renders a Ferric Chloride that is stable at concentrations up to 15% ferric iron. Penco's Ferric Chloride has a low ferrous iron content, reducing the likelihood of iron carryover throughout the system.

### Application

Ferric Chloride is manufactured for both municipal and industrial water treatment. Being an iron based coagulant and having only trace amounts of aluminum, it is widely used for the clarification of drinking water. Ferric Chloride is very effective as a coagulant in oily water clarification. It is excellent for turbidity control, as well as the removal of phosphorus, color, and suspended solids. Ferric Chloride is widely used for sludge dewatering as well, resulting in volume reduction. It is very effective at removing metals, especially arsenic and selenium.

### Typical Analysis

Concentration (%FeCl <sup>+3</sup> ) .....	39-41%
Concentration (%Fe <sup>+3</sup> ) .....	13%-15%
Concentration (%Fe <sup>+2</sup> ) .....	<0.5%
Specific Gravity.....	1.39 to 1.43
Free Acid .....	<0.5%
Ph.....	<2.0
Appearance .....	Dark Maroon
Freezing Point .....	<0 °F

### Metals

	Maximum	Average
Arsenic .....	< 5 ppm	< 2 ppm
Cadmium .....	<1 ppm	< .5 ppm
Copper .....	<50 ppm	< 25 ppm
Chrome .....	< 50 ppm	< 10 ppm
Lead .....	< 10 ppm	< 5 ppm
Mercury .....	< .02 ppm	< .001 ppm
Nickel .....	< 50 ppm	< 10 ppm
Selenium .....	< 5 ppm	< 2 ppm
Zinc .....	< 50 ppm	< 20 ppm

### Health and Safety

Ferric Chloride can cause irritation and burns to the skin and eyes. Ensure that individuals handling Ferric Chloride have been fully trained regarding the SDS, along with PPE requirements and specific operational procedures. In the event of an emergency, call 24 hr. CHEMTREC 800-424-9300

### Certifications

Ferric Chloride is NSF/ANSI Standard 60 certified for use in potable water treatment and also meets or exceeds all AWWA Standards.

### Product Handling and Shipping

Ferric Chloride is shipped in railcars, tank trucks, totes and drums. Suitable materials of construction include fiberglass, PVC, polypropylene, polyethylene, and stainless steel. It can be used with diaphragm metering pumps, providing the materials of construction are compatible. No dilution or preparation necessary.

DOT Classification: Corrosive Liquid, Acidic, Inorganic, N.O.S. (Contains Ferric Chloride)  
 Hazard Class: 8      DOT ID Number: UN 2582      Packing Group: III      RQ = 1000 lbs

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 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Ralph Gessler  
Pencco  
4921 Gifford Avenue  
Vernon, California 90058  
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**JOB DESCRIPTION**

41% Ferric Chloride

**JOB NUMBER**

570-124294-1

# Eurofins Calscience

## Job Notes

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(657)210-6362



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# Definitions/Glossary

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Qualifiers

### Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

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**Job ID: 570-124294-1**

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**Laboratory: Eurofins Calscience**

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**Narrative**

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**Job Narrative**  
**570-124294-1**

**Comments**

No additional comments.

**Receipt**

The sample was received on 1/16/2023 1:36 PM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 21.1° C.

**Metals**

Method 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision of Barium, Calcium, Iron, Manganese, Lead, Antimony, Titanium, Vanadium and Zinc for preparation batch 570-296964 and analytical batch 570-297696 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**General Chemistry**

Lab was not able to run pH due to high acidity level.

No other analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



# Detection Summary

Client: Pencco  
 Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

**Client Sample ID: 41% Ferric Chloride**

**Lab Sample ID: 570-124294-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	55		51		mg/Kg	10		6010B	Total/NA
Chromium	2.9		2.0		mg/Kg	10		6010B	Total/NA
Cobalt	18		2.0		mg/Kg	10		6010B	Total/NA
Iron	120000		51		mg/Kg	10		6010B	Total/NA
Manganese	61		4.1		mg/Kg	10		6010B	Total/NA
Nickel	28		4.1		mg/Kg	10		6010B	Total/NA
Titanium	140		4.1		mg/Kg	10		6010B	Total/NA
Vanadium	280		2.0		mg/Kg	10		6010B	Total/NA
Specific Gravity	1.4		0.020		NONE	1		SM 2710F	Total/NA



This Detection Summary does not include radiochemical test results.

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# Client Sample Results

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

**Client Sample ID: 41% Ferric Chloride**

**Lab Sample ID: 570-124294-1**

Date Collected: 01/16/23 10:30

Matrix: Waste

Date Received: 01/16/23 13:36

**Method: SW846 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		20		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Arsenic	ND		6.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Barium	ND		6.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Beryllium	ND		1.0		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Boron	ND		10		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Cadmium	ND		1.0		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Calcium</b>	<b>55</b>		51		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Chromium</b>	<b>2.9</b>		2.0		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Cobalt</b>	<b>18</b>		2.0		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Copper	ND		4.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Iron</b>	<b>120000</b>		51		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Lead	ND		4.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Manganese</b>	<b>61</b>		4.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Molybdenum	ND		4.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Nickel</b>	<b>28</b>		4.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Selenium	ND		6.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Silver	ND		3.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Thallium	ND		20		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Titanium</b>	<b>140</b>		4.1		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
<b>Vanadium</b>	<b>280</b>		2.0		mg/Kg		01/19/23 06:43	01/20/23 23:07	10
Zinc	ND		10		mg/Kg		01/19/23 06:43	01/20/23 23:07	10

**Method: SW846 7471A - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.082		mg/Kg		01/18/23 18:38	01/20/23 17:53	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Specific Gravity (SM 2710F)</b>	<b>1.4</b>		0.020		NONE			01/24/23 14:45	1



# QC Sample Results

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 570-296964/1-A ^5**  
**Matrix: Waste**  
**Analysis Batch: 297696**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 296964**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		10		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Arsenic	ND		3.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Barium	ND		3.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Beryllium	ND		0.50		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Boron	ND		5.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Cadmium	ND		0.50		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Calcium	ND		25		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Chromium	ND		1.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Cobalt	ND		1.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Copper	ND		2.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Iron	ND		25		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Lead	ND		2.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Manganese	ND		2.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Molybdenum	ND		2.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Nickel	ND		2.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Selenium	ND		3.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Silver	ND		1.5		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Thallium	ND		10		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Titanium	ND		2.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Vanadium	ND		1.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5
Zinc	ND		5.0		mg/Kg		01/19/23 06:43	01/20/23 22:21	5

**Lab Sample ID: LCS 570-296964/2-A ^5**  
**Matrix: Waste**  
**Analysis Batch: 297696**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 296964**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	50.0	56.9		mg/Kg		114	80 - 120
Arsenic	50.0	50.4		mg/Kg		101	80 - 120
Barium	50.0	50.1		mg/Kg		100	80 - 120
Beryllium	50.0	49.7		mg/Kg		99	80 - 120
Boron	50.0	47.1		mg/Kg		94	80 - 120
Cadmium	50.0	49.7		mg/Kg		99	80 - 120
Calcium	250	245		mg/Kg		98	80 - 120
Chromium	50.0	50.4		mg/Kg		101	80 - 120
Cobalt	50.0	49.8		mg/Kg		100	80 - 120
Copper	50.0	50.3		mg/Kg		101	80 - 120
Iron	50.0	51.4		mg/Kg		103	80 - 120
Lead	50.0	50.1		mg/Kg		100	80 - 120
Manganese	50.0	50.1		mg/Kg		100	80 - 120
Molybdenum	50.0	51.0		mg/Kg		102	80 - 120
Nickel	50.0	50.7		mg/Kg		101	80 - 120
Selenium	50.0	47.3		mg/Kg		95	80 - 120
Silver	25.0	24.5		mg/Kg		98	80 - 120
Thallium	50.0	49.2		mg/Kg		98	80 - 120
Titanium	50.0	49.6		mg/Kg		99	80 - 120
Vanadium	50.0	49.8		mg/Kg		100	80 - 120
Zinc	50.0	49.5		mg/Kg		99	80 - 120

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# QC Sample Results

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCSD 570-296964/3-A ^5  
Matrix: Waste  
Analysis Batch: 297696

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 296964

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Antimony	49.5	55.8		mg/Kg		113	80 - 120	2	20	
Arsenic	49.5	49.2		mg/Kg		99	80 - 120	2	20	
Barium	49.5	49.6		mg/Kg		100	80 - 120	1	20	
Beryllium	49.5	49.4		mg/Kg		100	80 - 120	1	20	
Boron	49.5	47.0		mg/Kg		95	80 - 120	0	20	
Cadmium	49.5	49.3		mg/Kg		100	80 - 120	1	20	
Calcium	248	244		mg/Kg		98	80 - 120	0	20	
Chromium	49.5	50.2		mg/Kg		101	80 - 120	0	20	
Cobalt	49.5	49.5		mg/Kg		100	80 - 120	1	20	
Copper	49.5	50.0		mg/Kg		101	80 - 120	1	20	
Iron	49.5	51.2		mg/Kg		103	80 - 120	1	20	
Lead	49.5	49.9		mg/Kg		101	80 - 120	0	20	
Manganese	49.5	49.5		mg/Kg		100	80 - 120	1	20	
Molybdenum	49.5	50.1		mg/Kg		101	80 - 120	2	20	
Nickel	49.5	49.7		mg/Kg		100	80 - 120	2	20	
Selenium	49.5	47.3		mg/Kg		96	80 - 120	0	20	
Silver	24.8	24.4		mg/Kg		99	80 - 120	1	20	
Thallium	49.5	49.4		mg/Kg		100	80 - 120	0	20	
Titanium	49.5	48.7		mg/Kg		98	80 - 120	2	20	
Vanadium	49.5	49.6		mg/Kg		100	80 - 120	1	20	
Zinc	49.5	49.1		mg/Kg		99	80 - 120	1	20	

Lab Sample ID: 570-124273-A-5-C MS ^5  
Matrix: Waste  
Analysis Batch: 297696

Client Sample ID: Matrix Spike  
Prep Type: Total/NA  
Prep Batch: 296964

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec	
									Limits	RPD
Antimony	ND	F2 F1	49.8	39.0		mg/Kg		78	75 - 125	
Arsenic	ND		49.8	48.7		mg/Kg		98	75 - 125	
Barium	64	F1 F2	49.8	75.9	F1	mg/Kg		24	75 - 125	
Beryllium	ND		49.8	49.1		mg/Kg		98	75 - 125	
Boron	ND		49.8	47.0		mg/Kg		91	75 - 125	
Cadmium	ND		49.8	47.8		mg/Kg		96	75 - 125	
Calcium	5100	F2	249	2590	4	mg/Kg		-1001	75 - 125	
Chromium	21		49.8	58.0		mg/Kg		75	75 - 125	
Cobalt	7.2		49.8	50.2		mg/Kg		86	75 - 125	
Copper	13		49.8	55.1		mg/Kg		85	75 - 125	
Iron	18000	F2	49.8	7280	4	mg/Kg		-2062	75 - 125	
Lead	22	F1	49.8	58.9	F1	mg/Kg		73	75 - 125	
Manganese	270	F2	49.8	171	4	mg/Kg		-201	75 - 125	
Molybdenum	ND		49.8	49.3		mg/Kg		99	75 - 125	
Nickel	11		49.8	52.3		mg/Kg		82	75 - 125	
Selenium	ND		49.8	47.7		mg/Kg		93	75 - 125	
Silver	ND		24.9	24.1		mg/Kg		97	75 - 125	
Thallium	ND		49.8	49.0		mg/Kg		93	75 - 125	
Titanium	1200	F2	49.8	675	4	mg/Kg		-1094	75 - 125	
Vanadium	34	F1 F2	49.8	63.7	F1	mg/Kg		60	75 - 125	
Zinc	75	F1 F2	49.8	78.2	F1	mg/Kg		7	75 - 125	

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# QC Sample Results

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Method: 6010B - Metals (ICP)

Lab Sample ID: 570-124273-A-5-D MSD ^5  
Matrix: Waste  
Analysis Batch: 297696

Client Sample ID: Matrix Spike Duplicate  
Prep Type: Total/NA  
Prep Batch: 296964

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	
Antimony	ND	F2 F1	49.8	26.5	F1 F2	mg/Kg		53	75 - 125	38	20
Arsenic	ND		49.8	47.3		mg/Kg		95	75 - 125	3	20
Barium	64	F1 F2	49.8	110	F2	mg/Kg		93	75 - 125	37	20
Beryllium	ND		49.8	47.1		mg/Kg		94	75 - 125	4	20
Boron	ND		49.8	46.1		mg/Kg		89	75 - 125	2	20
Cadmium	ND		49.8	45.3		mg/Kg		91	75 - 125	5	20
Calcium	5100	F2	249	5340	4 F2	mg/Kg		104	75 - 125	69	20
Chromium	21		49.8	64.5		mg/Kg		88	75 - 125	11	20
Cobalt	7.2		49.8	51.3		mg/Kg		89	75 - 125	2	20
Copper	13		49.8	59.6		mg/Kg		94	75 - 125	8	20
Iron	18000	F2	49.8	15900	4 F2	mg/Kg		-3377	75 - 125	74	20
Lead	22	F1	49.8	65.6		mg/Kg		87	75 - 125	11	20
Manganese	270	F2	49.8	297	4 F2	mg/Kg		52	75 - 125	54	20
Molybdenum	ND		49.8	46.9		mg/Kg		94	75 - 125	5	20
Nickel	11		49.8	55.4		mg/Kg		89	75 - 125	6	20
Selenium	ND		49.8	45.0		mg/Kg		87	75 - 125	6	20
Silver	ND		24.9	23.0		mg/Kg		92	75 - 125	5	20
Thallium	ND		49.8	48.3		mg/Kg		92	75 - 125	1	20
Titanium	1200	F2	49.8	1310	4 F2	mg/Kg		187	75 - 125	64	20
Vanadium	34	F1 F2	49.8	78.6	F2	mg/Kg		90	75 - 125	21	20
Zinc	75	F1 F2	49.8	112	F2	mg/Kg		75	75 - 125	36	20

## Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-296895/1-A  
Matrix: Waste  
Analysis Batch: 297534

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 296895

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.082		mg/Kg		01/18/23 18:38	01/20/23 17:12	1

Lab Sample ID: LCS 570-296895/2-A  
Matrix: Waste  
Analysis Batch: 297534

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 296895

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits

Lab Sample ID: LCSD 570-296895/3-A  
Matrix: Waste  
Analysis Batch: 297534

Client Sample ID: Lab Control Sample Dup  
Prep Type: Total/NA  
Prep Batch: 296895

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
								RPD	
Mercury	0.408	0.430		mg/Kg		105	80 - 120	7	10



# QC Sample Results

Client: Pencco  
 Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Method: 7471A - Mercury (CVAA) (Continued)

**Lab Sample ID: 570-124123-A-1-K MS**  
**Matrix: Waste**  
**Analysis Batch: 297534**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 296895**  
 %Rec

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	ND		0.392	0.394		mg/Kg		80	80 - 120

**Lab Sample ID: 570-124123-A-1-L MSD**  
**Matrix: Waste**  
**Analysis Batch: 297534**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 296895**  
 %Rec

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	ND		0.392	0.407		mg/Kg		83	80 - 120	3	20



# QC Association Summary

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Metals

### Prep Batch: 296895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-124294-1	41% Ferric Chloride	Total/NA	Waste	7471A	
MB 570-296895/1-A	Method Blank	Total/NA	Waste	7471A	
LCS 570-296895/2-A	Lab Control Sample	Total/NA	Waste	7471A	
LCSD 570-296895/3-A	Lab Control Sample Dup	Total/NA	Waste	7471A	
570-124123-A-1-K MS	Matrix Spike	Total/NA	Waste	7471A	
570-124123-A-1-L MSD	Matrix Spike Duplicate	Total/NA	Waste	7471A	

### Prep Batch: 296964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-124294-1	41% Ferric Chloride	Total/NA	Waste	3050B	
MB 570-296964/1-A ^5	Method Blank	Total/NA	Waste	3050B	
LCS 570-296964/2-A ^5	Lab Control Sample	Total/NA	Waste	3050B	
LCSD 570-296964/3-A ^5	Lab Control Sample Dup	Total/NA	Waste	3050B	
570-124273-A-5-C MS ^5	Matrix Spike	Total/NA	Waste	3050B	
570-124273-A-5-D MSD ^5	Matrix Spike Duplicate	Total/NA	Waste	3050B	

### Analysis Batch: 297534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-124294-1	41% Ferric Chloride	Total/NA	Waste	7471A	296895
MB 570-296895/1-A	Method Blank	Total/NA	Waste	7471A	296895
LCS 570-296895/2-A	Lab Control Sample	Total/NA	Waste	7471A	296895
LCSD 570-296895/3-A	Lab Control Sample Dup	Total/NA	Waste	7471A	296895
570-124123-A-1-K MS	Matrix Spike	Total/NA	Waste	7471A	296895
570-124123-A-1-L MSD	Matrix Spike Duplicate	Total/NA	Waste	7471A	296895

### Analysis Batch: 297696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-124294-1	41% Ferric Chloride	Total/NA	Waste	6010B	296964
MB 570-296964/1-A ^5	Method Blank	Total/NA	Waste	6010B	296964
LCS 570-296964/2-A ^5	Lab Control Sample	Total/NA	Waste	6010B	296964
LCSD 570-296964/3-A ^5	Lab Control Sample Dup	Total/NA	Waste	6010B	296964
570-124273-A-5-C MS ^5	Matrix Spike	Total/NA	Waste	6010B	296964
570-124273-A-5-D MSD ^5	Matrix Spike Duplicate	Total/NA	Waste	6010B	296964

## General Chemistry

### Analysis Batch: 338271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-124294-1	41% Ferric Chloride	Total/NA	Waste	SM 2710F	

# Lab Chronicle

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

**Client Sample ID: 41% Ferric Chloride**

**Lab Sample ID: 570-124294-1**

Date Collected: 01/16/23 10:30

Matrix: Waste

Date Received: 01/16/23 13:36

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			1.96 g	50 mL	296964	01/19/23 06:43	GYR8	EET CAL 4
Total/NA	Analysis	6010B		10			297696	01/20/23 23:07	VZOK	EET CAL 4
		Instrument ID: ICP11								
Total/NA	Prep	7471A			0.51 g	50 mL	296895	01/18/23 18:38	CS5Z	EET CAL 4
Total/NA	Analysis	7471A		1			297534	01/20/23 17:53	C0YH	EET CAL 4
		Instrument ID: HG7								
Total/NA	Analysis	SM 2710F		1			338271	01/24/23 14:45	DI9Q	ELLE
		Instrument ID: NOEQUIP								

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Accreditation/Certification Summary

Client: Penco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Laboratory: Eurofins Calscience

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	3082	07-31-23

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alaska	State	PA00009	06-30-23
Alaska (UST)	State	17-027	02-28-23
Arizona	State	AZ0780	03-12-23
Arkansas DEQ	State	88-00660	08-09-23
California	State	2792	11-30-22 *
Colorado	State	PA00009	06-30-23
Connecticut	State	PH-0746	06-30-23
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-23
Delaware (DW)	State	N/A	01-31-23
Florida	NELAP	E87997	07-02-23
Georgia (DW)	State	C048	01-31-23
Hawaii	State	N/A	01-31-23
Illinois	NELAP	200027	01-31-23
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-23
Kentucky (DW)	State	KY90088	12-31-22 *
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-23
Louisiana (All)	NELAP	02055	06-30-23
Maine	State	2019012	03-12-23
Maryland	State	100	06-30-23
Massachusetts	State	M-PA009	06-30-23
Michigan	State	9930	01-31-23
Minnesota	NELAP	042-999-487	12-31-23
Mississippi	State	022	01-31-23
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-24
Montana (UST)	State	<cert No.>	02-01-23
Nebraska	State	NE-OS-32-17	01-31-23
New Hampshire	NELAP	2730	01-10-24
New Jersey	NELAP	PA011	06-30-23
New York	NELAP	10670	04-01-23
North Carolina (DW)	State	42705	07-31-23
North Carolina (WW/SW)	State	521	12-31-23
North Dakota	State	R-205	01-31-23
Oklahoma	NELAP	R-205	08-31-23
Oregon	NELAP	PA200001	09-11-23
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-24
Rhode Island	State	LAO00338	12-30-22 *
South Carolina	State	89002	01-31-23
Tennessee	State	02838	01-31-23

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



# Accreditation/Certification Summary

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Texas	NELAP	T104704194-22-45	08-31-23
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-23
Virginia	NELAP	460182	06-14-23
Washington	State	C457	04-11-23
West Virginia (DW)	State	9906 C	12-31-23
West Virginia DEP	State	055	07-31-23
Wyoming	State	8TMS-L	01-31-23
Wyoming (UST)	A2LA	0001.01	11-30-24



# Method Summary

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	EET CAL 4
7471A	Mercury (CVAA)	SW846	EET CAL 4
SM 2710F	Specific Gravity	SM	ELLE
3050B	Preparation, Metals	SW846	EET CAL 4
7471A	Preparation, Mercury	SW846	EET CAL 4

**Protocol References:**

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

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# Sample Summary

Client: Pencco  
Project/Site: 41% Ferric Chloride

Job ID: 570-124294-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
570-124294-1	41% Ferric Chloride	Waste	01/16/23 10:30	01/16/23 13:36

1

5

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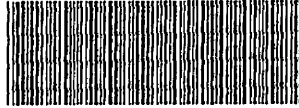
12

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eurofins

Calscience



570-124294 Chain of Custody

Loc: 570  
124294

CHAIN OF CUSTODY RECORD

DATE: 1/16/2023

PAGE: \_\_\_\_\_ OF \_\_\_\_\_

2841 Dow Avenue, Suite 100, Tustin, CA 92780-7211 • (714) 895-8484

LABORATORY CLIENT: <u>Penco, Inc</u>		CLIENT PROJECT NAME / NUMBER: <u>4% Ferric chloride</u>		P.O. NO.:	
ADDRESS: <u>4921 Gifford Ave</u>		PROJECT CONTACT: <u>Jennifer Moffatt</u>		SAMPLER(S): (PRINT) <u>Ralph Gessler</u>	
CITY: <u>Vernon</u>		STATE: <u>Ca</u>		ZIP: <u>90058</u>	

TEL: (909) 917-4501 E-MAIL: rgessler@penco.com

TURNAROUND TIME (Rush surcharges may apply to any TAT not "STANDARD"):  
 SAME DAY  24 HR  48 HR  72 HR  5 DAYS  STANDARD

COELT EDF

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING		MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	ANALYSES																			
		DATE	TIME						Arsenic	Barium/Beryllium	Boron/Calcium	Calcium/Chromium	Cobalt/Copper	Lead/Manganese	Molybdenum	Nickel/Selenium	Silver/Thallium	Titanium/Vanadium	Zinc/Li/Pb	Mercury	Specific Gravity	%HCl						
<del>✓</del>	<del>4% Ferric chloride</del>	<del>1/16/23</del>	<del>10:30 AM</del>	<del>G</del>	<del>1</del>				<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>	<del>✓</del>
	4% Ferric chloride	1/16/23	10:30 AM	G	1				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>1-16-23</u>	Time: <u>12:36</u>
Received by: (Signature/Affiliation) <u>[Signature] EC</u>	Date: _____	Time: _____
Relinquished by: (Signature)	Date: _____	Time: _____
Received by: (Signature/Affiliation)	Date: _____	Time: _____
Relinquished by: (Signature)	Date: _____	Time: _____
Received by: (Signature/Affiliation)	Date: _____	Time: _____

21-1/21-1 sc11 some day collection 1/28/22 Revision

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1/24/2023

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**Eurofins Calscience**  
 2841 Dow Avenue, Suite 100  
 Tustin, CA 92780  
 Phone: 714-895-5484

**Chain of Custody Record**



**eurofins** Environment Testing

<b>Client Information (Sub Contract Lab)</b>		Sampler: <b>Lab PM: Moffatt, Jennifer</b>		Corner Tracking No(s)		COC No: <b>570-204608.1</b>	
Client Contact: <b>Shipping/Receiving</b>		Phone:		E-Mail: <b>Jennifer.Moffatt@eurofins.com</b>		State of Origin: <b>California</b>	
Company: <b>Eurofins Lancaster Laboratories Environ</b>		Address: <b>2425 New Holland Pike, Lancaster, PA 17601</b>		Due Date Requested: <b>1/25/2023</b>		TAT Requested (days):	
Phone: <b>717-656-2300(Tel)</b>		Project Name: <b>41% Ferric Chloride</b>		Project #: <b>44007856</b>		SSOWs	
Email:		PO #		WO #		Preservation Codes:	
Project Name: <b>41% Ferric Chloride</b>		Project #: <b>44007856</b>		SSOWs		A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsH <sub>3</sub> O <sub>2</sub> D - Nitric Acid P - Na <sub>2</sub> O <sub>4</sub> E - NaHSO <sub>4</sub> Q - Na <sub>2</sub> SO <sub>3</sub> F - NaOH R - Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> G - Amchlor S - H <sub>2</sub> SO <sub>4</sub> H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-S L - EDA Y - Trizma Z - other (specify)	
Special Instructions/Note:		Analysis Requested		Total Number of Containers			
Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=comp, G=grab)	
41% Ferric Chloride (570-124294-1)		1/18/23		10:30 Pacific		Waste	
Matrix (Invert, Invert, Invert, Invert, Invert)		Perform Analysis (Yes or No)		SUS/HS_Cat		Total Number of Containers	
Preservation Code:		X				1	

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody stating to said compliance to Eurofins Calscience.

<b>Possible Hazard Identification</b>		<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>	
Unconfirmed		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	
Empty Kit Requisitioned by:		Special Instructions/OC Requirements:	
Date/Time: <b>01/19/23 12:07</b>		Date/Time: <b>1-20-23 09:30</b>	
Company: <b>EC</b>		Company: <b>ECLE</b>	
Custody Seal No:		Cooler Temperature(s) °C and Other Remarks: <b>1.0</b>	

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## Login Sample Receipt Checklist

Client: Pencco

Job Number: 570-124294-1

Login Number: 124294

List Source: Eurofins Calscience

List Number: 1

Creator: Moffatt, Jennifer

Question	Answer	Comment
Radioactivity wasn't checked or is $\neq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Received same day of collection; chilling process has begun.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Login Sample Receipt Checklist

Client: Pencco

Job Number: 570-124294-1

**Login Number: 124294**  
**List Number: 2**  
**Creator: McBeth, Jessica**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**  
**List Creation: 01/20/23 01:17 PM**

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (<math>\leq 6^{\circ}\text{C}</math>, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	