CONTRACT DATA SHEET

Monroe County Division of Purchasing
200 County Office Building, Rochester NY 14614

TITLE: FERRIC CHLORIDE, LIQUID

CONTRACT #: 0908-23 (7700000187)

CONTRACT DATES: 11/1/2023 – 10/31/2025

BUYER: Sean Wilcox
PHONE: 585/753-1136
EMAIL: swilcox@monroecounty.gov

VENDOR(S): Kemira Water Solutions, Inc.
4321 W. 6th Street
Lawrence, KS 66049

Sean Wilcox
Buyer

XC: BP FILE
VENDOR

TERMS AND CONDITIONS

BID ITEM: FERRIC CHLORIDE

FOR: Department of Environmental Services

PURCHASING CONTACT: The Buyer, identified below, is the sole point of contact regarding this Bid from the date of issuance until the bids are opened and the results made public.

Sean Wilcox
Monroe County Division of Purchasing
39 West Main Street Room 200
Rochester, NY 14614
Email: swilcox@monroecounty.gov

All requests for bid clarification must be submitted in writing to the Buyer referenced above and received no later than close of business (5:00 PM Eastern Standard Time) on **Tuesday, September 19, 2023**.

All questions will be answered and documented in writing as an Addendum to the Bid. These will be sent out to all Bidders who received the original Bid no later than **Wednesday, September 20, 2023**.

DUPLICATE COPIES: **PLEASE SUBMIT YOUR BID IN DUPLICATE; THE ORIGINAL AND ONE (1) COPY.**

BID INFORMATION: At the time of bid, the bidder shall supply detailed specifications covering the item(s) contained herein and shall clearly indicate any areas in which item or items offered do not fully comply with the specifications contained herein.

SUBMITTAL OF FORMAL PROPOSAL: Bid proposal must be legible and submitted in the original form, bearing an original signature. **EMAILS AND FACSIMILES ARE NOT ACCEPTABLE.** All bidders must submit proof that they have obtained the required **Workers' Compensation** and **Disability Benefits Insurance** coverage or **PROOF** that they are exempt. **(Visit www.wcb.ny.gov for forms.)**

SPECIFICATION ALTERATIONS: Specifications will be construed to be complete and be considered the entire description of the goods or services upon which Monroe County is now seeking bids. **Only formal written addenda can materially alter this set of specifications**. No verbal statement made by a Monroe County employee or anyone else is binding nor shall such statement be considered an official part of this public bid proposal.

QUANTITIES: The quantities listed are the estimated annual requirements and should not be construed to represent either maximum or minimum quantities to be ordered during the contract term. **Estimates are based upon actual annual usage by County departments only.**

BRAND REFERENCE: References to a manufacturer's product by brand name or number are done solely to establish the minimum quality and performance characteristics required. Bidders may submit bids on alternates, but must attach two (2) copies of manufacturer specifications for any alternate at the time of the bid. Further, the bidder must demonstrate that the alternate proposed has a sufficient operating track record to show the equipment will perform per the specified brand. The acceptance of a bidder's alternate rests solely with Monroe County.

QUALIFIED BIDDER: Each bidder must be prepared to present satisfactory proof of his capacity and ability to perform this contract. Such proof may include, but is not limited to, an inspection of the bidder's facilities and equipment, financial statements, references and performance of similar contracts. **The Purchasing Manager reserves the right to reject any bid where the bidder cannot satisfy the County as to their ability to perform.** Monroe County reserves the right to reject any and all bids if the Monroe County Purchasing Manager deems said action to be in the best interests of Monroe County.

METHOD OF AWARD: Monroe County intends to award the bid to the lowest responsive and responsible bidder, based on the **TOTAL** . **Bidder must bid on all items in order to be considered. The County reserves the right to reject any and all bids** if the Purchasing Manager deems said action to be in the best interest of the County.

CONTRACT TERM: Contract will start with the date of the contract award and run through **October 31, 2024**, with the option to renew the contract up to four (4) additional twelve (12) month periods with the mutual consent of both parties.

PRICE CHANGES: Price changes may be proposed by either party no later than forty-five (45) days prior to contract extension, based upon manufacturer price changes which must be supported with documentation. Should price changes not be acceptable to both parties, the contract will not be extended. Prices may change only at the time of extension.

MINIMUM ORDER: No minimum order is specified for this contract. Agencies must be able to order as needed. **Political subdivisions and others authorized by law may participate in this contract**.

DELIVERY: All deliveries to be F.O.B. Monroe County to agency as specified by a Purchase Order. Delivery costs must be built into the unit prices bid. Deliveries must be made within **forty-eight (48) hours** after receipt of order. The County reserves the right to terminate the contract in the event the specified delivery time is not met.

PURCHASE ORDER ISSUANCE: Delivery of services may be directed by the receipt of a Purchase Order only. **Items that are not part of this bid will not be paid for by Monroe County**. As to all purchase orders issued by Monroe County, exceptions may only be authorized, in writing, by the Purchasing Manager or her authorized agent prior to delivery.

BILLING PROCEDURE: All invoices for items sold any authorized agency as a result of this contract must be billed in the following manner: Purchase Order #, Quantity, Description of Item Purchased, BP#, Item #, Extension and Total. **ALL INVOICES MUST BE MARKED WITH THE PURCHASE ORDER NUMBER. INVOICES WITHOUT THIS INFORMATION WILL NOT BE PROCESSED FOR PAYMENT.**

WARRANTY/ GUARANTEE: All warranties by manufacturer shall apply. Bidder shall, as part of its proposal, furnish its warranty/guarantee for all goods/services to be furnished hereunder. As a minimum, Bidder shall warrant all goods for a period of one (1) year from date of acceptance. Bidder shall be obligated to repair or replace all defects in material or workmanship, which are discovered or exist during said period. All labor, parts and transportation shall be at Bidder's expense.

UNCONTEMPLATED PURCHASES: Monroe County reserves the right to request separate bids for such quantities of items on this contract that may be best procured via separate public bid offering and to otherwise act in furthering its own best interests.

SUBCONTRACT: The Contractor shall not subcontract any work without first obtaining the written consent of the Monroe County Purchasing Manager.

RELATED ITEMS: The County reserves the right to add miscellaneous related items to this contract during the contract term upon agreement by both parties as to the price. Approval must be given in writing by the Purchasing Manager or her Designee.

REPORT OF PURCHASE: The Contractor must, upon request, provide the County Purchasing Manager with detailed information showing how much of each item was delivered to any and all agencies under this contract. This includes deliveries to not only the County but any other municipality or agency which orders from this contract.

OTHER AGENCIES:

The Contractor(s) **must** honor the prices, terms and conditions of this contract with political subdivisions or districts located in whole or in part within Monroe County. In addition, the contractor **may**, but is not required to, extend the prices, terms and conditions of this contract to any other political subdivision or district. Usage of this contract by any of these other political subdivisions or districts will have to be coordinated between that subdivision or district and the contractor. Orders placed against this contract between any subdivision or district will be contracts solely between the Contractor(s) and those entities. Monroe County will not be responsible for, nor will it have any liability or other obligation for, such contract between the Contractor(s) and any third party.

INDEMNIFICATION:

The Contractor agrees to defend, indemnify and save harmless the County, its officers, agents, servants and employees from and against any and all liability, damages, costs or expenses, causes of action, suits, judgments, losses and claims of every name not described, including attorneys' fees and disbursements, brought against the County which may arise, be sustained or occasioned directly or indirectly by any person, firm or corporation arising out of or resulting from the performance of the services by the Contractor, arising from any act, omission or negligence of the Contractor, its agents and employees or arising from any breach or default by the Contractor under this Agreement. Nothing herein is intended to relieve the County from its own negligence or misfeasance or to assume any such liability for the County by the Contractor.

EQUAL PAY CERTIFICATION:

Prior to the execution of this Agreement, the Contractor shall submit to the County an Equal Pay Certification ("Certification") affirming the Contractor's compliance with the Federal Equal Pay Act, 29 USC § 206 and New York State Labor Law §194, as amended from time to time ("Equal Pay Laws"). As set forth in the Certification, the Contractor's violation of one or more of the Equal Pay Laws or its filing of a false or misleading Certification during the term of this Agreement may constitute grounds for the County in its sole discretion to immediately terminate the Agreement and for determining the Contractor to be not qualified to participate in future Monroe County contracts.

BP#0908-23
FERRIC CHLORIDE
TECHNICAL SPECIFICATIONS
AND REQUIREMENTS

1.00 GENERAL:

1.01 SCOPE:

Monroe County is seeking bids for liquid ferric chloride to be used in wastewater treatment plants as an agent for phosphorous removal and sulfide control. The chemical product must be used under the supervision of the Plant Operator. The chemical must keep the final phosphate levels below one PPM (parts per million) and the H2S (Hydrogen Sulfide) levels under control as demonstrated utilizing the current chemical usage at the plant.

It is the responsibility of the bidder to verify suitability of the product to meet the intent of the specifications. Any additional equipment or service required, even if not mentioned herein, shall be provided by the bidder without claims for additional payment; it being understood that a "liquid ferric chloride", satisfactory to the County, is required.

1.02 LOCATIONS:

Frank E. Van Lare Water Resource Recovery Facility (FEV)
1574 Lake Shore Boulevard.
Rochester, NY 14617

North West Quadrant Water Resource Recovery Facility (NWQ)
170 Payne Beach Road
Hilton, NY 14468

Monroe County reserves the right to add locations as needed.

1.03 BIDDER:

Consideration will be given to suppliers of ferric chloride who can demonstrate that their product(s) and delivery methods comply with these specifications.

1.04 SUBMITTALS:

The bidder must include the following information with their bid for each product bid. Failure to provide this information may result in rejection of the bid.

A. Safety Data Sheet for the material, showing the CAS number of the material.

B. A description of the proposed product measurement method.

C. A written guarantee of product consistency throughout the term of the contract.

D. The name of the manufactured source of ferric chloride that would be provided under this contract.

E. A written guarantee that the source of the product will not change during the contract term without the written approval of the Monroe County Purchasing Manager or her designee.

2.00 PRODUCT:

Bid items are defined as follows.

2.01 FERRIC CHLORIDE MINIMUM SPECIFICATIONS:

Soluble iron	11.3 - 12.9%
Free acid as HCL	< 1.0%
Manganese	< 1363 ppm
Cadmium	< 4 ppm
Chromium	< 69 ppm
Copper	< 16 ppm
Lead	< 76 ppm
Nickel	< 13 ppm
Zinc	< 204 ppm
Titanium	< 9280 ppm
Arsenic	ND at 0.15
Selenium	< 12 ppm
Mercury	ND at 0.1
Specific gravity	1.26 - 1.48

2.04 FERRIC CHLORIDE QUANTITIES:

Shipments must be made in truckload lots. Estimated annual quantities are as follows based on previous contract use:

Frank E. Van Lare Water Resource Recovery Facility	613,000 gallons
Northwest Quadrant Water Resource Recovery Facility	180,000 gallons

Quantities are based on 1.26 pounds available iron/gallon product.

3.00 DELIVERY:

Delivery must be made within forty-eight (48) hours, 7 days a week after receiving an order from Monroe County personnel. Monroe County reserves the right to split shipments among several locations without penalty to the County.

All bills of lading must include:

A. Gallons desired

B. pH

C. Specific gravity

D. Pounds iron

Monroe County requires each load of product to be delivered to the site specified and if requested by the County, tested by the Contractor at no additional charge to the County. Testing could be requested for pH and specific gravity. A sample must be within 3% of the contract's minimum specifications for the County to accept the shipment. If the sample does not meet the specifications within 3%, the load must be removed and replaced at the Contractor's expense. The delivery representative must have equipment for discharging chemical into storage tanks through a 2" quick-coupling.

3.01 INCIDENTS/DAMAGES:

The Contractor must supply each facility with a twenty-four (24) hour emergency phone number in the event of a chemical incident. The Contractor must provide on-site facility assistance and technical expertise within two (2) hours of notification by County personnel, if required.

If the chemical delivered does not meet specifications and as a result, causes deterioration to County owned equipment, the Contractor will be responsible for replacement of said equipment and the labor costs involved with any repairs.

3.02 STORAGE TANKS AND FEED SYSTEMS:

Monroe County does have existing equipment that a Contractor is permitted to use with the condition that the Contractor properly cares for said equipment and is responsible for any damage to the equipment. The Contractor must make the equipment available to the County, within forty-eight (48) hours of request, if it is needed by the County for any other purpose. No equipment is required by the Contractor if the product bid is certified to be compatible with the County's existing equipment. If the product bid is not compatible with the existing equipment, and/or if the County wishes to test this product at any other location than those specified herein, the Contractor may be required to supply a temporary storage tank and feed system while the County takes the appropriate action to install a permanent compatible system. The temporary system would be made available at no additional cost to Monroe County.

4.00 QUALIFICATIONS AND RESPONSIBILITIES OF BIDDERS:

Consideration will be given to suppliers of ferric chloride who can demonstrate that their product(s) and delivery methods comply with these specifications.

Each bidder must submit the following with his bid:

- Safety Data Sheet(s).
- A Description of the proposed product measurement method.
- A written guarantee of product consistency throughout the term of the contract*****.
- The name of the manufactured source of ferric chloride that would be provided under this contract.
- A written guarantee that the source of the product will not change during the contract term without the written approval of the Monroe County purchasing manager or her designee.

4.01 TECHNICAL ASSISTANCE:

The Contractor must provide technical assistance with the use of the product as requested by the County. If on-site technical assistance is required, the successful bidder will provide said assistance within one (1) week of notification, and at no additional cost to Monroe County.

*****Monroe County reserves the right to request testing of the product at any time during the term of the contract at no additional cost to the County.

kemira

Where water
meets chemistry™

Technical Data Sheet
March 2018

American Water Works Association CERTIFIED

Kemira PIX-111

Ferric Chloride, 37- 42% Solution

KEMIRA PIX-111 is an effective primary coagulant in liquid form based on trivalent iron (Fe^{3+}). It functions very well for process and wastewater clarification and can be used for color removal, phosphate removal, heavy metal removal and lime softening applications. KEMIRA PIX-111 can also be used effectively for hydrogen sulfide control, struvite control and in sludge conditioning applications.

Typical Properties

Appearance	Dark brown liquid
Specific Gravity (20°C/ 68°F)	1.39 - 1.46
$FeCl_3$	37 - 42 wt.%
Fe_{TOT}	12.7 – 14.8 wt.%
Fe (III)	12.7 – 14.5 wt.%
Fe (II)	≤ 0.3 wt.%
Free Acid (HCl)	< 1.0 wt.%
Freezing Point	-25°C/ -13°F to -7°C/20°F

This TDS is a general representation of the product. Detailed product specification/ analysis is available upon request.

Certification / Approval

KEMIRA PIX-111 meets or exceeds all requirements of the current AWWA Standard B407 for liquid ferric chloride.

Dosing

KEMIRA PIX-111 should be fed straight. No dilution or preparation is required. A diaphragm, metering pump of non-corrosive material is suitable.

Storage

KEMIRA PIX-111 is highly corrosive and contact with metal equipment must be avoided. Storage tanks and piping should be constructed of suitable material such as fiberglass, or cross- linked polyethylene. KEMIRA PIX-111 has a recommended shelf life of minimum twelve (12) months in an appropriate storage environment. With this product, inspect the storage tank yearly, clean if necessary.

Handling / Safety

The handling of any chemical requires care. Anyone responsible for using or handling KEMIRA PIX-111 should familiarize themselves with the Safety Data Sheet.

Delivery

Shipping Instructions; UN 2582, FERRIC CHLORIDE SOLUTION, 8, P.G. III, FERRIC CHLORIDE SOLUTION 37 – 42%

Kemira

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Atlanta, GA 30339
USA
www.kemira.com

United States
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SAFETY DATA SHEET

KEMIRA PIX-111

Ref. /US/EN

Revision Date: 09/10/2019 Previous date: 07/31/2017 Print Date:08/10/2023

1. IDENTIFICATION

Product information

Product name
KEMIRA PIX-111

Recommended use of the chemical and restrictions on use

Use of the Substance/Mixture

Water treatment chemical

Recommended restrictions on use

Do not use for other purposes than the identified uses.

Supplier's details

Kemira Water Solutions, Inc.
1000 Parkwood Circle, Suite 500
30339 Atlanta USA
Telephone+17704361542, Telefax. +17704363432
us-customerservice@kemira.com

Emergency telephone number

CHEMTREC (24 Hours): 1-800-424-9300
CANUTEC (24 Hours): 1-613-996-6666

2. HAZARDS IDENTIFICATION

GHS Classification

Corrosive to metals , Category 1 , May be corrosive to metals.
Acute toxicity , Category 4 , Harmful if swallowed. , Oral
Skin irritation , Category 2 , Causes severe skin burns and eye damage.
Serious eye damage , Category 1 , Causes serious eye damage.

GHS-Labelling

Hazard pictograms :

Signal word: Danger

Hazard statements :

Hazard statements:

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.

Precautionary statements :

Prevention:

P234	Keep only in original container.
P264	Wash face, hands and any exposed skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P321	Specific treatment (see supplemental first aid instructions on this label).
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P390	Absorb spillage to prevent material damage.

Storage:

P405	Store locked up.
P406	Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501	Dispose of contents/container as special waste in compliance with local and national regulations.

Hazard(s) not otherwise classified (HNOC) or not covered/classified by GHS

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances /Mixtures

Hazardous components

Chemical name	CAS-No.	Concentration[%]
Iron trichloride	7705-08-0	35 - 45 %
Hydrochloric acid	7647-01-0	1 - 2 %

Further information

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

4. FIRST AID MEASURES

Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

Rinse mouth and nose with water. Move to fresh air.

Call a physician if symptoms occur.

Skin contact

Take off contaminated clothing and shoes immediately. Rinse with plenty of water. Obtain medical attention.

Eye contact

Important! Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If possible use lukewarm water. Consult a physician.

Ingestion

Do NOT induce vomiting. Rinse mouth with water. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Consult a physician.

Most important symptoms and effects, both acute and delayed

Symptoms : corrosive effects

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Not combustible.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

No special requirements.

Special hazards arising from the substance or mixture

Heating above the decomposition temperature can cause formation of hydrogen chloride.

Special protective actions for fire-fighters

Exposure to decomposition products may be a hazard to health. In the event of fire, wear self-contained breathing apparatus.
Splashproof protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing.

For personal protection see section 8.

Environmental precautions

Prevent product from entering the environment.

Restrict the spread of the spillage by using inert absorbent material (sand, gravel). Cover the drains. Must be disposed of in accordance with local and national regulations.

Methods and materials for containment and cleaning up

Clean-up methods - small spillage

Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations.
Clean-up methods - large spillage

Remove spill using a vacuum truck. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

Additional advice

For personal protection see section 8.

7. HANDLING AND STORAGE

Precautions for safe handling

For personal protection see section 8. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Avoid temperatures under 0°C. Hydrogen is released when product reacts with metals.
Avoid high temperatures. Avoid freezing.

Materials for packaging

Suitable material: plastic (PE, PP, PVC), polyester with fibreglass reinforcement, rubber-coated steel, titanium

Materials to avoid:

Metals, Bases

Stainless steel, leather, non-acid proof metals (for example aluminium, copper and iron), Reaction with some metals may evolve flammable hydrogen gas.

Storage stability:

Storage period 12 Months

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Appropriate engineering controls

Eye wash bottle or emergency eye-wash fountain must be found in the work place.

Individual protection measures, such as personal protective equipment
Industrial Hygiene

Handle in accordance with good industrial hygiene and safety practice.

Avoid contact with skin, eyes and clothing.Wash hands before breaks and at the end of workday.

Respiratory protection

Respiratory protection is not required under normal handling conditions. If aerosols or mist are formed, eg. when cleaning containers with a high pressure washer, use half mask with filter B2.

Hand protection

Glove material: PVC and neoprene gloves, Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the

specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.
Protective gloves complying with EN 374.
Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.

Skin and body protection
Wear protective clothing if necessary. Use rubber boots.

Eye protection
Tightly fitting safety goggles. Eye wash bottle with pure water .

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid
Colour	dark brown
Odour	slightly acidic
Odour Threshold	No data available
pH	< 1 (20 °C)
Freezing point/Melting point :	-20 °C
Initial boiling point and boiling range	Boiling point/boiling range 100 - 109 °C
Flash point	Not applicable, inorganic compound In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.
Evaporation rate	No data available
Flammability (solid, gas)	Not applicable
Explosive properties:	
Lower explosion limit	
Upper explosion limit	
Oxidizing properties	Not oxidizing
Vapour pressure	
Relative vapour density	No data available
Density	1.39 - 1.45 g/cm³
Relative density	

Solubility(ies):	
Water solubility	(20 °C) completely soluble, At dilution to less than 1% of FeCl3, precipitation of iron hydroxide occurs.
Partition coefficient: n-octanol/water	Not applicable, inorganic compound
Auto-ignition temperature	not auto-flammable
Decomposition temperature	572 °F
Viscosity:	
Viscosity, dynamic	5 - 15 mPa.s (20 °C)
Viscosity, kinematic	
Volatile organic content (VOC)	Not applicable
Surface tension	No data available

10. STABILITY AND REACTIVITY

Reactivity

Chemical stability

Possibility of hazardous reactions

Bases cause exothermic reactions.

Conditions to avoid

Avoid freezing.
Avoid storage at high temperatures.

Incompatible materials

Metals
Bases

Stainless steel
leather
non-acid proof metals (for example aluminium, copper and iron)
Reaction with some metals may evolve flammable hydrogen gas.

Hazardous decomposition products

Heating above the decomposition temperature can cause formation of hydrogen chloride.

572 °F

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity	Conclusion: Harmful if swallowed.
Acute oral toxicity	**Iron trichloride:** LD50/Rat/220 mg/kg/OECD Test Guideline 423 Remarks: Calculated as Fe
Acute inhalation toxicity	**Iron trichloride:** LC50 Remarks: Not applicable
Acute dermal toxicity	**Iron trichloride:** LD50/Rat/>/2,000 mg/kg/OECD Test Guideline 402 Remarks: Read-across (Analogy), CAS-No., 7758-94-3
	Iron trichloride: LD50/Rat/>/881 mg/kg/OECD Test Guideline 402 Remarks: Calculated as Fe
Skin corrosion/irritation	Conclusion: May cause skin irritation.
Skin corrosion/irritation	**Iron trichloride:**Rabbit Result: irritating /OECD Test Guideline 404/4 h/500 mgRemarks: Read-across (Analogy), CAS-No., 7720-78-7
Serious eye damage/eye irritation	Conclusion: Causes serious eye damage.
Serious eye damage/eye irritation	**Iron trichloride:** Rabbit Result: Corrosive/OECD Test Guideline 405 Remarks: Read-across (Analogy), CAS-No., 7758-94-3

Respiratory or skin sensitisation

Skin sensitisation	Conclusion: Contains, Nickel dichloride, May cause allergic skin reaction.
Skin sensitisation	**Iron trichloride:** Conclusion: According to experience sensitization is not expected.

Carcinogenicity

Carcinogenicity

Iron trichloride:

Not believed to be a carcinogen.

Reproductive toxicity

Toxicity for reproduction

Iron trichloride:

Conclusion: Not believed to be toxic for reproduction.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity

LC50/48 h/Pimephales promelas (fathead minnow)/Acute Fish toxicity/US EPA-821-R-02-012: >= 686 mg/l

LC50/48 h/Ceriodaphnia dubia (Water flea)/Short-term (acute) aquatic hazard/US EPA-821-R-02-012: >= 137 mg/l

Iron trichloride:
LC50/96 h/Lepomis macrochirus (Bluegill sunfish): 59 mg/l
Remarks: hydrated substance
NOEC/96 h/Lepomis macrochirus (Bluegill sunfish): > 1 mg/l
Remarks: hydrated substance
EC50/48 h/Daphnia magna (Water flea): 27 mg/l
NOEC/21 d/Daphnia magna (Water flea): > 1 mg/l
EC50/15 d/algae/rate of growth: 58 mg/l
Remarks: Test is not appropriate due to the flocculating characteristics of the product.,The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

Toxicity to other organisms

Iron trichloride:
Remarks: No data available

Persistence and degradability

Biological degradability:

The methods for determining the biological degradability are not applicable to inorganic substances.

Biological degradability:
Iron trichloride:

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

Partition coefficient: n-octanol/water: Not applicable, inorganic compound

Iron trichloride:
Partition coefficient: n-octanol/water: Not applicable, inorganic compound

Mobility in soil

Vapour pressure: 0.023 (20 °C)
Water solubility: completely soluble (20 °C)
Surface tension: No data available

Iron trichloride:

Other adverse effects

May lower the pH of water and thus be harmful to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Product	Classified as hazardous waste.Must be disposed of in accordance with local and national regulations. Thoroughly cleaned packaging material may be recycled.
Contaminated packaging	Classified as hazardous waste. Must be disposed of in accordance with local and national regulations.

14. TRANSPORT INFORMATION

UN number	2582
Land transport	
DOT:	
Description of the goods:	UN2582, FERRIC CHLORIDE SOLUTION
Proper shipping name	
Class:	8
Packaging group:	III
DOT-Labels	8
Reportable quantity	Ferric chloride
Sea transport	
IMDG:	
Description of the goods:	

UN proper shipping name	UN2582, FERRIC CHLORIDE SOLUTION
Class:	8
Packaging group:	III
IMDG-Labels:	8
Environmentally Hazardous	Not a Marine Pollutant

Air transport
ICAO/IATA:
Description of the goods:

UN proper shipping name	UN2582, Ferric chloride solution
Class:	8
Packaging group:	III
ICAO-Labels:	8

Special precautions for user

None known.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Title III Section 311 Categories

Corrosive to metals, Category 1,
Acute toxicity, Category 4, Oral
Skin irritation, Category 2,
Serious eye damage, Category 1,

SARA 313 - Specific Toxic Chemical Listings

Chemical name	CAS-No.	Concentration[%]
Hydrochloric acid	7647-01-0	

OSHA A. United States Occupational Safety and Health Administration Substances, 29 CFR 1910.1000, sub Part Z. B. National Institute for Occupational Safety and Health (NIOSH) 'Occupational Health Guidelines for Chemical Hazards' Substances.

CERCLA Hazardous substance (Reportable Quantities)
CERCLA Hazardous substance (Reportable Quantities)

Chemical name	CAS-No.	Reportable quantity
Iron trichloride	7705-08-0	1,000 lb

Chemical name	CAS-No.	Reportable quantity
Hydrochloric acid	7647-01-0	5,000 lb

California Proposition 65

Remarks: WARNING: This product contains a chemical(s) known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.
Nickel dichloride (7718-54-9) < 100 PPM

Other regulations : No restrictions identified other than those already covered in regulations.

Notification status

:

USA	:	All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
Canada	:	All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).
Australia	:	All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
China	:	All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
South Korea	:	All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.
Philippines	:	All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
Japan	:	All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
European Union	:	All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
New Zealand	:	All components of this product are included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory(NZIoC).
	:	This product's Taiwan Toxic Chemical Substances Control Act Inventory status has NOT been determined.

16. OTHER INFORMATION

HMIS Rating

Health: 3

Flammability: 0
Reactivity: 1

NFPA Rating

Health: 3
Fire: 0
Reactivity: 1

Training advice

Read the safety data sheet before using the product.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
This SDS is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI SDS Standard (Z400.1) by Kemira.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Revision Date: 09/10/2019

Description of Product Measurem
6 pages

1. Purpose

1.1. To determine the %free acid concentration, both hydrochloric and sulfuric, in iron-based solutions

2. Scope

2.1. This method will be utilized by The Americas Quality Lab (AQL) in the monitoring of Kemira products and raw materials.

3. References

3.1. AWWA B406-20

4. Responsibilities

4.1. Analytical data will be maintained by the AQL in the appropriate database. Data is imported into the database using the controlled document template.

5. Definitions

5.1. None

6. Instrumentation

6.1. Thermo Orion 5 Star Combination Benchtop Meter or equivalent
6.2. Orion Combination pH probe #8102BNUWP or equivalent
6.3. Orion Reference Electrode Filling Solution #810007 or equivalent
6.4. Thermo Orion Star ATC temperature electrode #927006MD or equivalent
6.5. Thermo Orion stirrer or equivalent
6.6. Calibrated analytical balance
6.7. 250 mL plastic beaker
6.8. PYREX Class A Buret with PTFE stopcock plug or equivalent that has been prepared using procedure KWS QL 5300
6.9. Fisherbrand Elite 0.5-5ml or 1-10ml Pipette or equivalent

7. Reagents

7.1. Potassium fluoride, 130g/L, LabChem Cat No. CC02602 or equivalent
7.2. Sodium hydroxide, 0.0500N (N/20), Ricca Cat No. 7330-1 or equivalent
7.3. Hydrochloric acid, 0.0500N (N/20), Ricca Cat No. 3597-1 or equivalent
7.4. Sulfuric acid, 0.0500N (N/20), Ricca Cat No. 8219-1 or equivalent
7.5. pH 7.0 Buffer, LabChem Cat No. 123804 or equivalent
7.6. pH 10.0 buffer, LabChem Cat No. 125104 or equivalent

8. Procedure

8.1. Calibrate the pH meter following the procedure listed in Figure 1 using pH 7 and 10 buffers. The acceptable slope range is 92% – 102%. Record the results in the pH calibration log.
8.2. Add 75ml of potassium fluoride solution into a 250 ml plastic beaker. Constantly measure the pH on a calibrated pH meter. Adjust to a pH of 8.25-8.35 using 0.05N sodium hydroxide or 0.05N acid (Hydrochloric acid for chloride products, sulfuric acid for sulfate products).

8.3. To guarantee the integrity of the sample, thoroughly mix the sample before withdrawing an aliquot. Accurately weigh approximately 0.5 g of sample into the plastic beaker containing the pH adjusted potassium fluoride and record the weight to 4 decimals. Swirl to mix.

8.4. For Chloride Products: After the addition of the sample, measure the pH of the solution after 15 seconds of stirring. If the pH of the solution is <8.30, proceed to section 8.4.1.; if the pH of the solution is ≥8.30, proceed to section 8.4.2.

8.4.1. With stirring, constantly measure the pH of the solution while titrating with 0.05N sodium hydroxide until the pH of ~8.30 is achieved. Record the volume of 0.05N sodium hydroxide titrated.

8.4.1.1.1. Calculations:
Use the controlled document Template "AQL Free Acid Spreadsheet" to calculate and import results. The spreadsheet uses the following formula:

$$\%\text{Free Acid as HCl} = \frac{\text{ml NaOH} \times \text{N of NaOH} \times 0.0365 \times 100}{\text{g of sample}}$$

8.4.2. For Chloride samples that require a %Negative Free HCl to be reported, proceed to Section 8.4.2.1; for all other Chloride samples, proceed to Section 8.4.2.3

8.4.2.1. Using the automatic pipette listed in Section 6.9, spike the solution with 10 mL of 0.05N hydrochloric acid. With stirring, constantly measure the pH of the solution while titrating with 0.05N sodium hydroxide until the pH of ~8.30 is achieved. Record the volume of 0.05N sodium hydroxide titrated.

8.4.2.2. Analyze a method blank by repeating the steps in Section 8.4.2 without the addition of sample.

8.4.2.2.1. Calculations:

$$\%\text{Negative Free HCl} = \frac{(\text{ml NaOH} - \text{ml blank NaOH}) \times \text{N of NaOH} \times 0.0365 \times 100}{\text{g of sample}}$$

8.4.2.3. The titration is complete, and the result is reported as <0.05% Free HCl.

8.5. For Sulfate Products: After the addition of the sample, measure the pH of the solution after 15 seconds of stirring.

8.5.1. Using the automatic pipette listed in Section 6.9, spike the solution with 10 mL of 0.05N sulfuric acid. With stirring, constantly measure the pH of the solution while titrating with 0.05N sodium hydroxide until the pH of ~8.30 is achieved. Record the volume of 0.05N sodium hydroxide titrated. Use the equation listed below in section 8.5.2.1 to calculate the %Free Acid.

8.5.2. Analyze a method blank by repeating the steps in Section 8.5 without the addition of sample.

8.5.2.1. Calculations:
Use the controlled document Template "AQL Free Acid Spreadsheet" to calculate and import results. The spreadsheet uses the following formula:

$$\%\text{Free Acid as } H_2SO_4 = \frac{(\text{ml Sample NaOH} - \text{ml blank NaOH}) \times \text{N of NaOH} \times 0.049 \times 100}{}$$

g of sample

8.5.2.2. If the sample titration uses less NaOH than the blank titration, than the %Free Acid will be a negative value.

9. Quality Control

9.1. See KWS QL 3002

10. Training Requirement

10.1. This procedure

Appendix

pH Calibration

1. Prepare the electrode according to the electrode user guide.
2. In the setup mode, select the buffer set (USA or EUro) that will be used for the automatic buffer recognition feature.
3. In the measurement mode, press (menu) until the arrow icon points to the top line, press (△) until the **pH** icon is shown and press (↙) to begin the calibration.
4. Rinse the electrode, and ATC probe if being used, with distilled water and place into the buffer.
5. Wait for the **pH** icon to stop flashing.
   a. Automatic buffer recognition – When the **pH** icon stops flashing the meter will display the temperature-corrected pH value for the buffer.
   b. Manual calibration – When the **pH** icon stops flashing the meter will display the actual pH value read by the electrode. Press (pH) until the first digit to be changed is flashing, press (△) / (▽) to change the value of the flashing digit and continue to change the digits until the meter displays the temperature-corrected pH value of the buffer. Once the pH buffer value is set, press (pH) until the decimal point is in the correct location.
6. Press (↙) to proceed to the next calibration point and repeat steps 4 and 5 or press (✓) to save and end the calibration.
7. The actual electrode slope, in percent, will be displayed in the main field and SLP will be displayed in the lower field.
   a. For a one point calibration, press (pH) and (△) / (▽) to edit the slope and press (✓) to return to the measurement mode.
   b. For a two or more point calibration, the meter will automatically proceed to the measurement mode after the slope is displayed.

Revision Page

Revision	Description of Change	Release Date
1	Change Potassium fluoride used to reflect premade 50%	5/2/13
2	Change order of reagent addition during procedure	5/2/13
3	Require use of plastic beakers to avoid glass etching from fluoride ion	8/7/13
4	Added instructions for negative free acidities	10/16/13
5	Change Potassium fluoride used to reflect pre-adjusted material from Labchem.	3/12/15
6	Changed order to reagent addition during procedure	3/12/15
7	Reflect The Americas Quality Lab brand name	4/17/15
8	Corrected errors in equations 8.6.1.2 and 8.6.2.2	6/5/2015
9	Document Owner revised to Mike Snider	11/2/15

Revision	Description of Change	Approved By
1.0	No changes to document content, moved from old site, updated header & footer to new DMS format.	Sheila St. Amour
2.0	Document was reviewed at the Lab Meeting held on 10/5/16 Revised **Section 6.8** to allow use of different size buret Revised **Secction 8.1** to list the buffers used for calibration, the acceptable slope range, and the use of the pH Calibration Log Revised **Section 8.3** to state weigh close to 0.5000 g of sample and record the weight to 4 decimals Revised the equation references listed in **Section 8.4** from 6.4.1.2 and 6.4.2.2 to 8.6.1.2 and 8.6.2.2	Sheila St. Amour
3.0	Revised **Section 3** to reference the latest version of the AWWA standard B406-14	Sheila St. Amour
4.0	Revised **Section 8.4** to show that the ph is measured after 15 seconds of stirring Added pH buffers to reagent list in **Section 7**	Sheila St. Amour
5.0	Revised **Section 7.6** from pH 10.1 Buffer to 10.0 Buffer Revised **Section 8.3** from "Accurately weigh close to 0.5000 g" to "Accurately weigh approximately 0.5 g"	Sheila St. Amour
6.0	Revised Sections 8.4, 8.5, and 8.6 by rewriting 8.4 for chloride products and 8.5 for sulfate products. Added the option to not spike chloride products if a negative free acid is not required.	Sheila St. Amour
7.0	No changes made to document. Document author added.	Sheila St. Amour
8.0	Revised Section 8.5 to show that all sulfate products are spiked when analyzed and that a method blank is analyzed and used in the calculation.	Sheila St. Amour
9.0	• Added Section 8.4.2.2 • Revised the equation in Section 8.4.2.2.1 to show the use of a method blank	Sheila St. Amour

10.0	Revised Section 8.4.2 to refer to Section 8.4.2.3 instead of Section 8.4.2.2	Sheila St. Amour
11.0	• Added Fisherbrand Pipette to Section 6.9 • Added "Using the automatic pipette listed in Section 6.9" to Sections 8.4.2.1 and 8.5.1 • Revised Section 8.5.1 from use the equation listed in Section "8.5.2.2" to "8.5.2.1"	Sheila St. Amour
12.0	Revised Section 3.1 to update AWWA standard B406 to current version -20	Sheila St. Amour
13.0	• Added "Data is imported into the database using the controlled document template" to Section 4.1 • Added controlled document Template "AQL Free Acid Spreadsheet" to Sections 8.4.1.1.1 and 8.5.2.1	Sheila St. Amour
14.0	Document reviewed. No changes made	Sheila St. Amour
15.0	Added a Fisherbrand Elite 1-10ml pipette in Section 6.9	Sheila St. Amour
16.0	Added "that has been prepared using procedure KWS QL 5300" to Section 6.8	Sheila St. Amour

BP#0908-23

Unit PriceSheet

(as of 11/1/24)

Liquid Ferric Chloride price per gallon $2.83

COMPLIANCE WITH FEDERAL SINGLE AUDIT ACT

In the event the Contractor is a recipient through this contract, directly or indirectly of any funds of or from the United States Government, Contractor agrees to comply fully with the terms and requirements of Federal Single Audit Act [Title 31 United States Code, Chapter 75], as amended from time to time. The Contractor shall comply with all requirements stated in Federal Office of Management and Budget Circulars A-102, A-110 and A-133 and such other circulars, interpretations, opinions, rules or regulations that may be issued in connection with the Federal Single Audit Act.

If on a cumulative basis the Contractor expends Seven Hundred Fifty Thousand and no/100 Dollars ($750,000.00) or more in federal funds in any fiscal year, it shall cause to have a single audit conducted, the Data Collection Form (defined in Federal Office of Management and Budget Circular A-133) shall be submitted to the County; however, if there are findings or questioned costs related to the program that is federally funded by the County, the Contractor shall submit the complete reporting package (defined in Federal Office of Management and Budget Circular A-133) to the County.

If on a cumulative basis the Contractor expends less than Seven Hundred Fifty Thousand and no/100 Dollars ($750,000.00) in federal funds in any fiscal year, it shall retain all documents relating to the federal programs for three (3) years after the close of the Contractor's fiscal year in which any payment was received from such federal programs.

All required documents must be submitted within nine (9) months of the close of the Contractor's fiscal year end to:

Monroe County Internal Audit Unit
304 County Office Building
39 West Main Street
Rochester, New York 14614

The Contractor shall, upon request of the County, provide the County such documentation, records, information and data and response to such inquiries as the County may deem necessary or appropriate and shall fully cooperate with internal and/or independent auditors designated by the County and permit such auditors to have access to, examine and copy all records, documents, reports and financial statements as the County deems necessary to assure or monitor payments to the Contractor under this contract.

The County's right of inspection and audit pursuant to this contract shall survive the payment of monies due to Contractor and shall remain in full force and effect for a period of three (3) years after the close of the Contractor's fiscal year in which any funds or payment was received from the County under this contract.