

COPY

Bid Form

Please return this Bid Form along with any required documentation (see below) to the Office of the City Secretary by the bid's due date and time.

Bid General Information

Bid Number	S24337
Bid Description	Chemicals, Inorganic Metal Salt Coagulants (Ferric Sulfate)
Bid Abstract	This project is for the purchase, and delivery of Ferric Sulfate, in accordance with the specifications, terms and conditions specified in the solicitation.
Buyer Email	martin.king@houstontx.gov
Post Date/Time	7/6/2012 12:01:01 PM
Close Date/Time	7/26/2012 10:30:00 AM

Bid Items

CHEMICALS, INORGANIC METAL SALT COAGULANTS

Item #	Material Description	Description	Unit of Measure	Quantity	Unit Price	Line Total
1	LIQUID, FERRIC SULFATE, BULK	Ferric Sulfate Liquid, Delivered by Truck Tank Trailer, Wet Tons.	US ton	117500	138.98	\$16330150.00
Manufacturer's Name, Product Name & Product Number:		Kemira Water Solution, Inc. - Kemira PIX-308				

Group Total: \$16,330,150.00

Demurrage Charge for wait times over two hours

Item #	Material Description	Description	Unit of Measure	Quantity	Unit Price	Line Total
3		Demurrage Charge after two hours of unloading time caused by negligence on the part of the City.	Hour	6	50.00	\$300.00
4		Order Cancellation Fee. Contractor charge for failure by the City of Houston to provide notice of cancellation at least two hours prior to a scheduled delivery.	Each	1	0.00	\$0.00

Group Total: \$300.00

TOTAL BID: \$16,330,450.00

Additional Required Forms to be Included:

In addition to the electronic Bid Form and the Official Signature Page, the Forms listed in Table 1 must be completed and submitted to the Office of the City Secretary on or before the date and time the bid is due:

Table 1
Affidavit_of_Ownership
Fair_Campaign_Ordinance
Conflict_of_Interest_Questionnaire
Bidders_Attachments_Supply

Table 2 may list other documents and/or forms that should be viewed/downloaded from the City's website, but are not required to be submitted with the bid. The City will specify which documents and/or forms be completed and submitted to the City by the successful bidder:

Table 2
Drug_Forms
MWBE
Sample_Insurance_Over_\$50000

Formal_Instructions_for_Bid_Terms
Contractor_Ownership_Disclosure_Ordinance
EEOC

If you elect not to participate in the aforementioned project, please submit the No Bid Sheet to the Buyer by the due date for the receipt of the solicitation.

OFFICIAL BID FORM FOR CHEMICALS, INORGANIC METAL SALT COAGULANTS (FERRIC SULFATE)

OFFICIAL SIGNATURE PAGE

The respondent warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees. For breach or violation of this warranty, the City shall have the right to annul this agreement without liability or, at its discretion, to deduct from the contract prices or consideration, or otherwise recover the full amount of such commission, percentage, brokerage or contingent fee.

The undersigned hereby offers to furnish and deliver the goods and/or services as specified at the prices and terms herein stated and in accordance with the Invitation to Bid, Clarification Letters, and General Terms & Conditions, all of which are made a part of this offer.

All pages of the City of Houston's bid document including but not limited to the General Terms & Conditions and page 3 three of this invitation are incorporated by reference into for all purposes.

The undersigned, as bidder, certifies that the only person or parties interested in this proposal as principals are those named herein; that the bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the award of this Contract.

THIS BIDDER IS AND REPRESENTS THAT IT IS AN EQUAL OPPORTUNITY EMPLOYER.

NOTE: BID MUST BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE BIDDER, WHICH MUST BE THE ACTUAL LEGAL ENTITY THAT WILL PERFORM THE CONTRACT IF AWARDED.

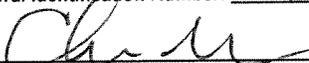
**SUBMIT YOUR BID IN DUPLICATE
BID MUST BE MANUALLY SIGNED IN INK
(BLUE INK PREFERRED)**

Respectfully Submitted:

Bidder: **Kemira Water Solutions, Inc.**
(Print or type name of Bidder - Full Company Name)

Supplier Number: **Kemira Water Solutions, Inc.**

Federal Identification Number: **59-3657872**

By: 
(Signature of Authorized Officer or Agent)

Name: **Christina M. Addington**

Title: **Customer Service Manager**

Date: **July 24, 2012**

Address (Street or P.O. Box) **3211 Clinton Parkway Court
Lawrence, Kansas 66047**

City-State-Zip Code _____

Telephone Number: **(800) 879-6353**

Email Address: **KWSHA.bids@kemira.com**

FAX Number: **(785) 842-2629**

**This bid opened and read
in Council Chamber**

AUG 02 2012

Troy D. Lemon

**Duplicate copy of Bid Appears to
contain a xerox signature.**

**ATTACHMENT SENT TO PURCHASING
(CITY SECRETARY)**

Supplier: _____ Buyer: martin.king@houstontx.gov Bid Number: S24337

EXHIBIT "A"
SOLICITATION NO.: S12-S24337

CITY OF HOUSTON
CERTIFIED ANALYSIS
FOR FERRIC SULFATE
FOR PUBLIC WORKS AND ENGINEERING DEPARTMENT
This sheet should be submitted in duplicate upon request.

<u>PARAMETER</u>	<u>CONCENTRATION</u>
Available Ferric Ion Fe+3	<u>12.11</u> % by Weight
Total Ferrous Ionas Fe+2	<u>0.14</u> ppm
Chlorides as Cl-	<u>< 50</u> ppm
Free Acid	<u>< 0.1</u> % by Weight
Total Heavy Metals as Lead	<u>< 5</u> ppm
Total Manganese as Mn	<u>62</u> mg/kg
Water Insoluble Matter	<u>0.0128</u> ppm
Total Chloride Concentration	<u>< 0.01</u> % by Weight

TRACE METALS

Arsenic as As <u>< 5</u> ppm	Lithium as Li <u>N/A</u> ppm
Barium as Ba <u>< 1</u> ppm	Mercury as Hg <u>< 5</u> ppm
Bromine as Br <u>N/A</u> ppm	Nickel as Ni <u>22</u> ppm
Cadmium as Cd <u>< 1</u> ppm	Silver as Ag <u>< 5</u> ppm
Chromium as Cr <u>1.8</u> ppm	Selenium as Se <u>< 5</u> ppm
Copper as Cu <u>< 1</u> ppm	Strontium as Sr <u>N/A</u> ppm
Lead as Pb <u>< 5</u> ppm	Zinc as Zn <u>2.5</u> ppm

Additional analyses may be required prior to bid award as deemed necessary by the City of Houston.

Source of Supply: Houston, TX Laboratory: Kemira Water
 Supplier: Kemira Water Solutions, Inc. Analysis By: Sheila St. Armour / Sheila St. Armour
 PRINTED NAME SIGNATURE
 Date of Analysis: 7/20/12
 Supplier Representatives: Tina Addington Certified By: Sheila St. Armour
 Title: Senior Chemist
 Address: 3761 Canal Street, East Chicago, IN
 Phone No. (219) 397-2646

All bidders agree by their participation in the bidding process to supply the user department within ten (10) working days from date of request, duplicate Certified Analysis performed by a third party independent analytical laboratory and signed by said laboratory's management and analyst. Such analysis is to be used, if deemed necessary by user department, for comparative purposes when making comparisons to bidder analyses and the City of Houston's analyses. Failure to provide this within ten (10) working days may remove bid from consideration.

EXHIBIT "B"
SOLICITATION NO.: S12-S24337

In order to receive bid award consideration, the bidder must be able to demonstrate that they are currently providing or have had at least one contract, as a prime contractor, for the required Services that is similar in size and scope to this BVB requirements. Bidder must have references documenting that it has performed the required BVB services. The reference(s) should be included in the space provided below. Please attach another piece of paper if necessary. Bidder's capability and experience shall be evaluated and a factor in determining the Contractor's responsibility.

LIST OF PREVIOUS/CURRENT CUSTOMERS

1. Name: City of Tampa Phone No.: _____
Address: _____
Contract Award Date: _____ Contract Completion Date: Current
Contract Name/Title: _____
Project Description: Supply Ferric Sulfate

2. Name: City of Raleigh Phone No.: _____
Address: _____
Contract Award Date: _____ Contract Completion Date: Current
Contract Name/Title: _____
Project Description: Supply Ferric Sulfate

3. Name: City of St. Louis Phone No.: _____
Address: _____
Contract Award Date: _____ Contract Completion Date: _____
Contract Name/Title: _____
Project Description: Supply Ferric Sulfate

see attached reference lists for contact information

EXHIBIT "C"
SOLICITATION NO.: S12-S24337

THIS AGREEMENT IS SUBJECT TO BINDING ARBITRATION ACCORDING TO THE TEXAS GENERAL ARBITRATION ACT.

TO: **City of Houston**
City Purchasing Agent

MINORITY/WOMEN BUSINESS ENTERPRISE (M/WBE) AND SUPPLIER

LETTER OF INTENT

Contract Bid Number: _____

Bid Title: _____

Bid Amount: _____

M/WBE Participation Amount: \$ _____ **M/WBE GOAL** _____%

1. _____ agrees to perform work/supply goods and/or
(Name of Minority/Women Business Enterprise)
 Services in connection with the above-named contract and _____ as:
Name of Prime Contractor
 - (a) _____ An Individual
 - (b) _____ A Partnership
 - (c) _____ A Corporation
 - (d) _____ A Joint Venture

2. _____ status is confirmed by M/WBE Directory made
(Name of Minority/Women Business Enterprise)
 available through the City of Houston Office of Business Opportunity. Certificate No.: _____.

3. _____ and _____
(Name of Prime Contractor) **(Minority/Women Business Enterprise)**
 intend to work on the above-named contract in accordance with the M/WBE Participation Section of the City of Houston Contract Bid Provision.

The Terms & Conditions of Attachment "C" attached hereto are incorporated into this Letter of Intent for all purposes.

 (Signed -- Prime Contractor)

 (Title)

 (Date)

 (Signed -- Minority/Women Business Enterprise)

 (Title)

 (Date)

Our M/WBE carrier gave less than a week's notice that he was leaving the business. We are attempting to find a new carrier.

EXHIBIT "D"
SOLICITATION NO.: S12-S24337

In order to receive bid award consideration, the bidder must be able to demonstrate that they are currently providing or have had at least one contract, as a prime supplier, for delivering CHEMICAL, INORGANIC METAL SALT COAGULANT that is similar in size and scope to this solicitation. The reference(s) should be included in the space provided below. Please attach another piece of paper if necessary. If references are not included with the bid, the bidder shall be required to provide such references to the City of Houston within five working days from receipt of a written request from the City of Houston to do so. **Bidder's capability and experience shall be a factor in determining the Supplier's responsibility. Bidder must have references documenting that it has delivered CHEMICAL, INORGANIC METAL SALT COAGULANT.**

1. Name: City of Tampa, FL
 Address: Contact info on attached
 City & State: reference lists
 Name & Phone Number of Contact: _____ Years of Services: 17

2. Name: City of St. Louis, MO
 Address: _____
 City & State: _____
 Name & Phone Number of Contact: _____ Years of Services: 17

3. Name: City of Raleigh, NC
 Address: _____
 City & State: _____
 Name & Phone Number of Contact: _____ Years of Services: 11

In addition to providing references for similar work and size, the following must be addressed within 10 working days of request by the City of Houston:

The City of Houston has chosen Dun & Bradstreet (D&B) to assist with the evaluation process of the contract award in two specific areas, past supplier performance and financial and operational stability. This is accomplished through your provision of requested information to D&B and our review of two (2) D&B reports:

1. Past Performance Evaluation

This report will provide an overall rating and reliability, cost, order accuracy, delivery/timeliness, quality, order accuracy, business relations, personnel, customer support and responsiveness. To assist in the development of this report, all bidders must complete the attached forms in Section Four (4). This includes the submittal of twenty (20) business references. Completed forms are to be submitted to D&B's fulfillment partner, Open Ratings.

2. Supplier Evaluation Report

This report will provide an independent, third-party overview of your financial and operational stability. You are not required to provide D&B with any information for this report.

It is mandatory that you order and pay for these reports, as well as, submit proof of having ordered them with your bid document to be considered for this contract. The cost of the two reports is \$225.00

Because the Past Performance Evaluation report will take approximately 10-15 days after receipt of order form to complete, bidders are encouraged to submit their request to D&B in a timely fashion.

EXHIBIT "D"
SOLICITATION NO.: S12-S24337

Past Performance Evaluation (PPE) Order Form

To order, complete the attached forms and fax or e-mail them to:

Open Ratings, Inc.

eFAX: 866-743-4239

E-MAIL: reports@openratings.com

ATTN: Mary Kelly, Past Performance Evaluation Fulfillment

SECTION ONE: ABOUT YOUR COMPANY

Enter name and contact information for the company on which the past performance evaluation/supplier evaluation report is to be prepared:

Kemira Water Solutions, Inc.

(COMPANY NAME)

627945702

(DUNS NUMBER)

1000 Parkwood Circle #500

(STREET ADDRESS)

Atlanta, GA

(CITY, STATE, ZIP)

Tina Addington

(YOUR NAME)

Customer Service Manager

(TITLE)

tina.addington@kemira.com

(E-MAIL ADDRESS)

(785) 842-7424

(COMPANY PHONE NUMBER)

(785) 842-2629

(COMPANY FAX NUMBER)

emailed

If you don't know your company's DUNS number, call (800) 333-0505 or look it up online at:
<http://www.dnb.com/dunsno/dunsno.htm>.

EXHIBIT "D"
SOLICITATION NO.: S12-S24337

SECTION TWO: REPORT RECIPIENTS

One copy of the past performance evaluation and supplier evaluation report will be sent to the individual listed in Section 1. One additional copy will be sent to the agency specified below (additional copies of the PPE can be sent to additional recipients for a fee of \$25 per additional recipient – attach additional sheets as necessary):

<u>City of Houston</u>	
(AGENCY NAME)	(COMPANY NAME)
<u>900 Bagby Street</u>	
(AGENCY STREET ADDRESS)	(COMPANY STREET ADDRESS)
<u>Houston, TX 77002</u>	
(CITY, STATE, ZIP)	(CITY, STATE, ZIP)
<u>(832) 393-8705</u>	
(AGENCY PHONE NUMBER)	(COMPANY PHONE NUMBER)
(AGENCY FAX NUMBER)	(COMPANY FAX NUMBER)
<u>Martin King</u>	
(CONTACT NAME/ATTENTION)	(CONTACT NAME/ATTENTION)
<u>Martin.King@houstontx.gov</u>	
(E-MAIL ADDRESS)	(E-MAIL ADDRESS)
RFP #: <u>S12-S24337</u>	RFP #: _____

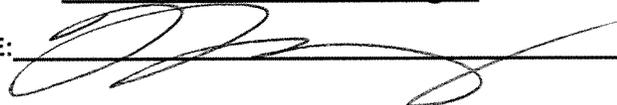
SECTION THREE: PAYMENT INFORMATION

ENCLOSED PLEASE FIND MY COMPANY CHECK

BILL TO MY CREDIT CARD:

AMERICAN EXPRESS VISA MASTERCARD

CARD NUMBER: 5268 1500 0006 4320 EXP. DATE: 10/14

SIGNATURE: 

I AGREE TO PAY \$225 FOR THE PREPARATION/DISTRIBUTION OF MY PAST PERFORMANCE EVALUATION AND SUPPLIER EVALUATION REPORT, COPIES OF WHICH WILL BE PROVIDED BOTH TO MY COMPANY AND ONE RECIPIENT IDENTIFIED IN SECTION TWO ABOVE.

I ALSO AGREE TO PAY \$25 FOR EACH ADDITIONAL PPE COPY THAT I HAVE REQUESTED BE DISTRIBUTED TO ADDITIONAL RECIPIENTS IDENTIFIED IN SECTION TWO.

Addington Tina

From: Addington Tina
Sent: Tuesday, July 24, 2012 12:41 PM
To: 'reports@openratings.com'
Subject: Attn: Mary Kelly, Past Performance Evaluation Fulfillment
Attachments: 20120724120130232.pdf

Could I please get a confirmation that I have requested this information please? I need to send it in with a bid package. Thank you.

Tina Addington Customer Service Supervisor / Municipal & Industrial / North America
Tel. +1 785 842 7424 | Mobile +1 785 423 1419 | Fax +1 785 842 2629 | tina.addington@kemira.com
To Place an Order
Tel. +1 800 879 6353 | Fax +1 785 842 2629 | kwsna.orders@kemira.com

Kemira Water Solutions, Inc. | 3211 Clinton Parkway Court | 66047 Lawrence, United States
www.kemira.com | www.waterfootprint.kemira.com

The content of this message is confidential and it may contain information protected by copyright. If you have received this message in error, forwarding, copying, printing or other use of it is prohibited. We request that you inform the sender of the error and then delete the message.

EXHIBIT "D"
SOLICITATION NO.: S12-S24337

QUESTIONS? CONTACT OPEN RATINGS AT (617) 232-9660

SECTION FOUR: CUSTOMER REFERENCES

PLEASE PROVIDE INFORMATION ON RECENT CUSTOMERS TO BE SURVEYED (COMPANIES WITH WHICH YOU
HAVE DONE BUSINESS WITHIN THE PAST 1 YEAR)

1. CUSTOMER NAME: Northern Kentucky Water
DUNS NUMBER: _____
CITY/STATE: _____
NAME OF CONTACT: _____
PHONE: _____ FAX: _____
E-MAIL: _____

See reference
lists for contact
information

2. CUSTOMER NAME: City of Ft. Wayne, IN
DUNS NUMBER: _____
CITY/STATE: _____
NAME OF CONTACT: _____
PHONE: _____ FAX: _____
E-MAIL: _____

3. CUSTOMER NAME: City of Bay City, MI
DUNS NUMBER: _____
CITY/STATE: _____
NAME OF CONTACT: _____
PHONE: _____ FAX: _____
E-MAIL: _____

4. CUSTOMER NAME: City of St. Louis, MO
DUNS NUMBER: _____
CITY/STATE: _____
NAME OF CONTACT: _____
PHONE: _____ FAX: _____
E-MAIL: _____

5. CUSTOMER NAME: City of Greensboro, NC
DUNS NUMBER: _____
CITY/STATE: _____
NAME OF CONTACT: _____
PHONE: _____ FAX: _____
E-MAIL: _____

Kemira Water Solutions, Inc.
Ferric Sulfate References

City of Tampa
Jeff Vilagos, 813.231.5255
7125 N. 30th Street
Tampa, Florida 33610
Fourteen+ years of service
12,000 dry tons annual

City of Cocoa
Troy Howell, 321.568.5867
Claude H. Dyal WTP
600 School Street
Cocoa, Florida 32922
Ten+ years of service
1700 dry tons annual

City of Bradenton Water Plant
Keith M. McGurn 941.727.6366
5600 Natalie Way
Bradenton, FL 34203
Ten+ years of service
1,500 dry tons annual

Bay County Water Treatment Plant
Donald Hamm, 850.872.4785
3400 Transmitter Road
Panama City, FL 32404
Twelve+ years of service
2,000 dry tons annual

City of Raleigh, NC
John Garland, 919.870.2870
222 West Hargett Street
P.O. Box 590
Raleigh, NC 27602
Eight+ years of service
5,000 dry tons annual

City of West Palm Beach
Ken Blankley, 561.837.4052
P. O. Box 3483
West Palm Beach, FL 33402
Ten+ years of service
1,200 dry tons

Tampa Bay Water
Ken Enlo, 813.477.6247
9302 Stannum Road
Tampa, FL 33619
seven+ years of service
<1,000 dry tons annual

City of Melbourne
Fred Davis, 321.255.4623
5985 Lake Washington Road
Melbourne, FL 32935
Three+ years of service
4,000 dry tons annual

Kemira Water Solutions, Inc.
Ferric Sulfate References

Northern Kentucky Water
Fort Thomas Treatment Plant
700 Alexander Pike
Fort Thomas, KY 41075
Bari Joslyn 859-441-0482

City of St. Louis
1640 S. Kingshighway Boulevard
St. Louis, MO 63110
Rodney Street – WTP Supervisor
314-592-8225

City of Newark Water Plant
164 Waterworks Road
Newark, OH 43055-5594
Dave O'Brien 740-349-6765

City of Kiel WWTP
100 Park Avenue
Kiel, WI 53042
Kris August 920-894-2133

City of Highland Park Water Park
1707 St. Johns Avenue
Highland Park, IL 66035
Don Jensen 847-433-4355

City of Fort Wayne W.P.P. F
Three Rivers Filtration Plant
2601 Dwenger Avenue
Ft. Wayne, IN 46805
Vicky Zehr – Water Quality Supervisor
260-740-1612

City of Bay City
Bay Metro Treatment Plant
301 Washington Avenue
Bay City, MI 48706
Tom Levengood – Acting Superintendent
989-686-8300

City of Iowa City
Water Division
410 E. Washington Street
Iowa City, IA 52240
Craig Meachem 319-356-5160

Providence Water Supply
552 Academy Avenue
Providence, RI 02908
Joe Spemulli 401-521-6300

References

Kemira PIX-317 (Liquid Ferric Sulfate, 13% Fe)

City of Raleigh
Raleigh, NC
Willie Tanner
(919) 870-2870

City of Wilson
Wilson, NC
Lisa
(252) 399-2375

City of Rocky Mount
Rocky Mount, NC
Ray Proctor
(252) 972-1292

City of Greensboro
Greensboro, NC
Jim Morefield
(336) 373-5856

Orig. Dept.:

File/I.D. No.:

INSTRUCTION: ENTITIES USING AN ASSUMED NAME SHOULD DISCLOSE SUCH FACT TO AVOID REJECTION OF THE AFFIDAVIT. THE FOLLOWING FORMAT IS RECOMMENDED: CORPORATE/LEGAL NAME DBA ASSUMED NAME.

STATE OF Kansas

§

COUNTY OF Douglas

§

§

AFFIDAVIT OF OWNERSHIP OR CONTROL

BEFORE ME, the undersigned authority, on this day personally appeared

Christina Addington
Customer Service Manager
Kemira Water Solutions, Inc.

[FULL NAME] (hereafter "Affiant"),
[STATE TITLE/CAPACITY WITH CONTRACTING ENTITY] of
[CONTRACTING ENTITY'S CORPORATE/LEGAL NAME]

("Contracting Entity"), who being by me duly sworn on oath stated as follows:

1. Affiant is authorized to give this affidavit and has personal knowledge of the facts and matters herein stated.

2. Contracting Entity seeks to do business with the City in connection with Water Treatment Chemicals [DESCRIBE PROJECT OR MATTER], which is expected to be in an amount that exceeds \$50,000.

3. The following information is submitted in connection with the proposal, submission or bid of Contracting Entity in connection with the above described project or matter.

4. Contracting Entity is organized as a business entity as noted below (Type (X) as applicable).

FOR PROFIT ENTITY:

NON-PROFIT ENTITY:

- SOLE PROPRIETORSHIP
- CORPORATION
- PARTNERSHIP
- LIMITED PARTNERSHIP
- JOINT VENTURE
- LIMITED LIABILITY COMPANY
- OTHER (Specify type in space below)

- NON-PROFIT CORPORATION
- UNINCORPORATED ASSOCIATION

Orig. Dept.:

File/I.D. No.:

5. The information shown below is true and correct for the Contracting Entity and all owners of 5% or more of the Contracting Entity and, where the Contracting Entity is a non-profit entity, the required information has been shown for each officer. [NOTE: IN ALL CASES, USE FULL NAMES, LOCAL BUSINESS AND RESIDENCE ADDRESSES AND TELEPHONE NUMBERS. DO NOT USE POST OFFICE BOXES FOR ANY ADDRESS. INCLUSION OF E-MAIL ADDRESSES IS OPTIONAL, BUT RECOMMENDED. ATTACH ADDITIONAL SHEETS AS NEEDED.]

Contracting Entity:

Name:	Kemira Water Solutions, Inc.
Business Address [No./Street]:	3211 Clinton Parkway Court
[City / State / Zip Code]:	Lawrence, KS 66047
Telephone Number:	(800) 879-6353
Email Address:	kwsna.bids@kemira.com
Residence Address [No./Street]:	1636 Pennsylvania Street
[City / State / Zip Code]:	Lawrence, KS 66044
Telephone Number:	(785) 423-1419
Email Address:	tina.addington@kemira.com

5% Owner(s) or More (IF NONE, STATE "NONE."):

Name:	None
Business Address [No./Street]:	
[City / State / Zip Code]:	
Telephone Number:	
Email Address:	
Residence Address [No./Street]:	
[City / State / Zip Code]:	
Telephone Number:	
Email Address:	

Orig. Dept.:

File/I.D. No.:

6. Optional Information

Contracting Entity and/or _____ [NAME OF OWNER OR NON-PROFIT OFFICER] is actively protesting, challenging or appealing the accuracy and/or amount of taxes levied against _____ [CONTRACTING ENTITY, OWNER OR NON-PROFIT OFFICER] as follows:

Name of Debtor: _____
Tax Account Nos.: _____
Case or File Nos.: _____
Attorney/Agent Name: _____
Attorney/Agent Phone No.: _____
Tax Years: _____

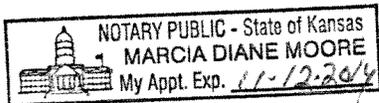
Status of Appeal [DESCRIBE]:

Affiant certifies that he or she is duly authorized to submit the above information on behalf of the Contracting Entity, that Affiant is associated with the Contracting Entity in the capacity noted above and has personal knowledge of the accuracy of the information provided herein, and that the information provided herein is true and correct to the best of Affiant's knowledge and belief.

[Handwritten Signature]
Affiant

SWORN TO AND SUBSCRIBED before me this 23 day of July, 2012

(Seal)



[Handwritten Signature]
Notary Public

NOTE:

This affidavit constitutes a government record as defined by Section 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided in Section 37.10 of the Texas Penal Code. Attach additional pages if needed to supply the required names and addresses.

CONTRACTOR SUBMISSION LIST FORM CITY OF HOUSTON FAIR CAMPAIGN ORDINANCE

The City of Houston Fair Campaign Ordinance makes it unlawful for a Contractor to offer any contribution to a candidate-for City elective office (including elected officers-elect) during a certain period of time prior to and following the award of the Contract by the City Council. The term "Contractor" includes proprietors of proprietorships, partners or joint venturers having an equity interest of 10 percent or more for the partnership or Joint Venture, and officers, directors and holders of 10 percent or more of the outstanding shares of corporations. A statement disclosing the names and business addresses of each of those persons will be required to be submitted with each bid or proposal for a City Contract. See Chapter 18 of the Code of Ordinances, Houston, Texas for further information.

This list is submitted under the provisions of § 18-36(b) of the Code of Ordinances, Houston, Texas, in connection with the attached proposal, submission or bid of:

Firm or Company Name: Kemira Water Solutions, Inc.

Firm or Company Address: 3211 Clinton Parkway Court, Lawrence, KS 66047

The firm/company is organized as a (Check one as applicable) and attach additional pages if needed to supply the required names and address:

SOLE PROPRIETORSHIP

Name _____

Proprietor

Address

A PARTNERSHIP

List each partner having equity interest of 10% or more of partnership (if none state "none")

Name _____

Partner

Address

Name _____

Partner

Address

A CORPORATION

LIST ALL DIRECTORS OF THE CORPORATION (IF NONE STATE "NONE")

Name Joseph Richey Atlanta, GA

Director

Address

Name Hannu Melarti Atlanta, GA

Director

Address

Name Belinda Rosario Atlanta, GA

Director

Address

CONTRACTOR SUBMISSION LIST FORM (CONTINUED)

LIST ALL OFFICERS OF THE CORPORATION (IF NONE STATE "NONE")

Name	Joseph Richey	Atlanta, GA
	Officer	Address
Name	Belinda Rosario	Atlanta, GA
	Officer	Address
Name	Carolina Perez	Atlanta, GA
	Officer	Address

LIST ALL INDIVIDUALS OWNING 10% OR MORE OF OUTSTANDING SHARES OF STOCK OF THE CORPORATION (IF NONE STATE "NONE")

Name	Kemira Specialty Chemicals, Inc.	Atlanta, GA
	Owner	Address
Name		
	Owner	Address
Name		
	Owner	Address

I certify that I am duly authorized to submit this list on behalf of the firm, that I am associated with the firm in the capacity noted below and that I have personal knowledge of the accuracy of the information provided herein.



Preparer

Christina Addington

Printed name

Customer Service Manager

Title

NOTE: This list constitutes a government record, as defined by § 37.01 of the Texas Penal Code.

STATEMENT OF RESIDENCY
(Please submit in duplicate with your Bid Form)

The following information is required by the **City of Houston** in order to comply with provisions of state law, **TEX.GOV'T. CODE § 2252.001 et. seq.** (State or Political Subdivision Contracts for Construction, Supplies, Services; Bids by Nonresident).

Every bidder must affirmatively state its principal place of business in its response to a bid invitation. Failure to provide the required information may constitute a basis for rejection of your bid. Bidders' cooperation in this regard will avoid costly time delays in the award of bids by the **City of Houston**.

For this reason, each bidder is encouraged to complete and return in duplicate, with its bid, the **Statement of Residency Form**, but in any event the low bidder will be required to submit this information within five (5) calendar days after the date of receipt of notification of apparent low bidder status from the **Purchasing Section of the Finance and Administration Department**, Failure to provide all required information within this designated period may result in the apparent low bidder being considered non-responsive and non-responsible, and the second low bidder being considered for award.

TEX. GOV'T CODE , §2252.001, §(4) defines a "**Resident bidder**" as a bidder whose principal place of business* is in this state, and includes a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

TEX. GOV'T CODE , §2252.001§ (3) defines a "**Nonresident bidder**" as a bidder who is not a resident in this state.

Bidder's complete company name:
Kemira Water Solutions, Inc

State your business address in the space provided below if you are a **Texas Resident bidder**:

State your business address in the space provided below if you are a **Nonresident bidder**:
8701 Park Place Boulevard
Houston, TX 77017

*The **State Purchasing and General Services Commission** defines Principal Place of Business as follows:

Principal Place of Business in Texas means, for any type of business entity recognized in the **State of Texas**, that the business entity:

- has at least one permanent office located within the **State of Texas**, from which business activities other than submitting bids to governmental agencies are conducted and from which the bid is submitted, and
- has at least one employee who works in the Texas office

Form prepared by: Christina Addington | Customer Service Manager
(Name) (Title)

Date: July 23, 2012

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor or other person doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 1491, 80th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code by a person who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the person meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the person becomes aware of facts that require the statement to be filed. See Section 176.006, Local Government Code.

A person commits an offense if the person knowingly violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of person who has a business relationship with local governmental entity.

None

2 Check this box if you are filing an update to a previously filed questionnaire.

(The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date the originally filed questionnaire becomes incomplete or inaccurate.)

3 Name of local government officer with whom filer has employment or business relationship.

Name of Officer

This section (item 3 including subparts A, B, C & D) must be completed for each officer with whom the filer has an employment or other business relationship as defined by Section 176.001(1-a), Local Government Code. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer named in this section receiving or likely to receive taxable income, other than investment income, from the filer of the questionnaire?

Yes No

B. Is the filer of the questionnaire receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer named in this section AND the taxable income is not received from the local governmental entity?

Yes No

C. Is the filer of this questionnaire employed by a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership of 10 percent or more?

Yes No

D. Describe each employment or business relationship with the local government officer named in this section.

4

Signature of person doing business with the governmental entity

Date

State of Kansas
County of Douglas

**Kemira Water Solutions, Inc.
Affidavit of Compliance**

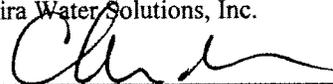
This is to certify that the Liquid Ferric Sulfate (PIX-308) manufactured by **Kemira Water Solutions, Inc.** for the City of Houston meet or exceed all specifications required by the City (Bid No. S12-S24337 for Ferric Sulfate) and those specifications as established by the latest American Water Works Association standards. Kemira's Ferrous Sulfate has been certified under ANSI/NSF Standard 60.

Please note that the Kemira Product Data Sheet and MSDS are global documents and indicate our broad manufacturing specifications worldwide. The material supplied to City of Houston will be manufactured according to the City's specifications.

Kemira has multiple ferric sulfate plants in the US allowing us to guarantee supply through our redundancy.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 23 day of July, 2012.

Kemira Water Solutions, Inc.

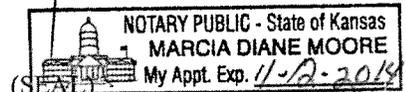
By: 
Name: Christina Addington
Title: Customer Service Manager

This instrument was signed and sworn to before me on 23 day of July, 2012 by Christina Addington as Customer Service Manager of Kemira Water Solutions, Inc.


Signature of Notary Public

Print Name: Marcia Diane Moore

Attach Notarial Seal:



My appointment expires: 11-12-2014



NSF Product and Service Listings

These NSF Official Listings are current as of **Tuesday, July 24, 2012** at 12:15 a.m. Eastern Time. Please contact NSF International 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://www.nsf.org/Certified/PwsChemicals/Listings.asp?CompanyName=kemira+water&TradeName=pix%2D308&>

NSF/ANSI STANDARD 60 Drinking Water Treatment Chemicals - Health Effects

Kemira Water Solutions, Inc.

316 Bartow Municipal Airport
 Bartow, FL 33830
 United States
 888-KEMIRON
 863-533-5990
 Visit this company's website

Facility : Distribution Center - Birmingham, AL

Ferric Sulfate

Trade Designation
 Kemira PIX-308

Product Function
 Coagulation & Flocculation

Max Use
 600mg/L

Facility : Fontana, CA

Ferric Sulfate

Trade Designation
 KEMIRA PIX-308

Product Function
 Coagulation & Flocculation

Max Use
 600mg/L

Facility : Distribution Center - Fairburn, GA**Ferric Sulfate***Trade Designation*
KEMIRA PIX-308*Product Function*
Coagulation & Flocculation*Max Use*
600mg/L**Facility :** Baltimore, MD**Ferric Sulfate***Trade Designation*
KEMIRA PIX-308*Product Function*
Coagulation & Flocculation*Max Use*
600mg/L**Facility :** Distribution Center - Allston, MA**Ferric Sulfate***Trade Designation*
KEMIRA PIX-308*Product Function*
Coagulation & Flocculation*Max Use*
600mg/L**Facility :** Charlotte, NC**Ferric Sulfate***Trade Designation*
KEMIRA PIX-308*Product Function*
Coagulation & Flocculation*Max Use*
600mg/L**Facility :** Distribution Center - Raleigh, NC**Ferric Sulfate***Trade Designation*
KEMIRA PIX-308*Product Function*
Coagulation & Flocculation*Max Use*
600mg/L**Facility :** Distribution Center - Euclid, OH**Ferric Sulfate***Trade Designation*
KEMIRA PIX-308*Product Function*
Coagulation & Flocculation*Max Use*
600mg/L**Facility :** Distribution Center - Philadelphia, PA

Ferric Sulfate

Trade Designation
KEMIRA PIX-308

Product Function
Coagulation & Flocculation

Max Use
600mg/L

Facility : Houston, TX

Ferric Sulfate

Trade Designation
KEMIRA PIX-308

Product Function
Coagulation & Flocculation

Max Use
600mg/L

Facility : Spokane, WA

Ferric Sulfate

Trade Designation
KEMIRA PIX-308

Product Function
Coagulation & Flocculation

Max Use
600mg/L

Number of matching Manufacturers is 1

Number of matching Products is 11

Processing time was 0 seconds

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Laboratory Report No.: **12-05-17449** May 11, 2012

Sheila St. Amour
Kemira Water Solutions
3761 Canal St.
East Chicago, IN 46312

Project: Ferric Sulfate
Total number of samples submitted: 1
Date sample collected: May 1, 2012
Date sample submitted: May 7, 2012
Date of sample analysis: May 7, 2012-May 11, 2012

ANALYTICAL RESULTS

Sample Identification: Ferric Sulfate #120070
Lab No: 30553
Sample Matrix: Ferric Sulfate Solution

Metals, ppm:	
Beryllium, Be	<0.10
Arsenic, As	1.1
Barium, Ba	0.37
Cadmium, Cd	<0.20
Chromium, Cr	2.2
Copper, Cu	2.2
Lead, Pb	1.1
Manganese, Mn	50
Mercury, Hg	<0.01
Molybdenum, Mo	<1.0
Nickel, Ni	23
Selenium, Se,	<1.0
Silver, Ag	<0.30
Titanium, Ti	112
Zinc, Zn	2.1
Antimony, Sb	<1.0

KIESEL ENVIRONMENTAL LABORATORIES

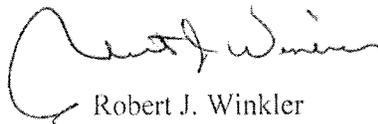
Laboratory Report No.: 12-05-17449 May 11, 2012

Ferric Iron, Fe, %:	12.93
Ferrous Iron, Fe, %:	0.13
Free Acid as H ₂ SO ₄ , %:	0.0
Specific Gravity @ 74 °F:	1.588

Methods Reference:

- "Standard Methods for the Examination of Water and Wastewater," 20th Ed.
- American Water Works Association, ANSI/AWWA Standard for Ferric Sulfate, B406-97.

KIESEL ENVIRONMENTAL LABORATORIES



Robert J. Winkler
Laboratory Director

Lab No(s): 30553
RW/rw



MSDS: 0075006
Print Date: 08/31/2011
Revision Date: 08/31/2011

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Kemira PIX-308
Synonyms: Iron (III) Sulfate
Product Description: Ferric Sulfate Solution
Chemical Family: Inorganic Salts
Molecular Formula: Fe₂(SO₄)₃·9H₂O
Intended/Recommended Use: Water and wastewater treatment Odor removal

KEMIRA WATER SOLUTIONS, INC., 316 BARTOW MUNICIPAL AIRPORT, BARTOW, FLORIDA 33830, USA
For Product Information call 1-800/879-6353. Outside the USA and Canada call 1-785/842-7424.
EMERGENCY PHONE: For emergency involving spill, leak, fire, exposure or accident call CHEMTREC: 1-800/424-9300.
Outside the USA and Canada call 1-703/527-3887.
ProductSafety.US.Kennesaw@Kemira.com

2. COMPOSITION/INFORMATION ON INGREDIENTS

OSHA REGULATED COMPONENTS

Component / CAS No.	%	(w/w)	OSHA (PEL):	ACGIH (TLV)	Carcinogen
Sulfuric Acid 7664-93-9	< 0.25		1 mg/m ³ (TWA)	0.2 mg/m ³ thoracic fraction (TWA)	IARC 1 ACGIH A2
Ferric sulfate 10028-22-5	56 - 62 (36 - 40 as anhydrous)		1 mg/m ³ Fe (TWA)	0.1 mg/m ³ as persulfate (TWA) 1 mg/m ³ as Fe (TWA)	-

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR:

Color: red-brown
Appearance: liquid
Odor: acidic

STATEMENTS OF HAZARD:

WARNING! IRRITATING TO EYES, SKIN, RESPIRATORY AND DIGESTIVE TRACTS

POTENTIAL HEALTH EFFECTS

EFFECTS OF EXPOSURE:

Refer to Section 11 for toxicology information on the regulated components of this product. Direct contact with this material may cause moderate-severe eye and moderate skin irritation. The acute oral (rat) LD50 is estimated to be >400 mg/kg.

4. FIRST AID MEASURES

Ingestion:

Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting. Administer 250 - 300 ml water to dilute material in the stomach.

Skin Contact:

In case of skin contact, wash affected areas of skin with soap and water. If skin irritation persists, call a physician.

Eye Contact:

Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.

Inhalation:

If breathing has stopped, trained personnel should administer artificial respiration. If the heart has stopped, trained personnel should administer cardio-pulmonary resuscitation. Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

The substance is not combustible. Use extinguishing media appropriate to the surrounding fire.

NOTE: Also see "Section 10 - Stability and Reactivity"

Protective Equipment:

Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection). Firefighters, and others exposed, wear self-contained breathing apparatus.

Special Hazards:

Sulfur oxides and/or toxic and flammable hydrogen sulfide may be formed under fire conditions. Keep unnecessary people away.

Mechanical/Static Sensitivity Statements:

None

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

'Restrict access until clean-up operations are complete. Wear appropriate Personal Protective Equipment per Section 8. Ensure trained personnel conduct clean up and wear Personal Protective Equipment per Section 8.

'Stop leak if possible. Avoid personal risk.

Methods For Cleaning Up:

'Small Spills - Absorb spill with clay or dry material or neutralize with lime, limestone or soda ash and collect in appropriate container for disposal. Neutralization with soda ash can generate carbon dioxide so additional ventilation may be necessary.

'Large Spills - Prevent entry into sewers and confined areas. Dike, if possible. Keep unnecessary people away, isolate area and deny entry. Pump liquid material into appropriate vessels as possible or absorb spill with clay absorbents or non-reactive dry materials and collect in appropriate container for disposal.

Neutralize spill residuals carefully with lime, limestone, or soda ash and collect in suitable container for disposal. Flush area with water. This could generate carbon dioxide so additional ventilation may be necessary.

'Notify Authorities if release exceeds reportable quantity per Section 15

7. HANDLING AND STORAGE

HANDLING

Precautionary Measures: Do not get in eyes. Handle with caution. Wash thoroughly after handling. See MSDS for details.

Special Handling Statements: Review the label, this MSDS and any other applicable information before use. Keep separated from incompatible substances. Use appropriate Personal Protective Equipment per Section 8. Handle only with equipment, materials and supplies specified by their manufacturer as being compatible and appropriate for use with this product.

STORAGE

Prevent material from coming in contact with common metals. Ensure that all storage vessels are labeled. Avoid skin and eye contact. Wear appropriate protective clothing. Store only in dry rubber-lined, plastic, FRP or stainless steel (304, 316). Keep storage temperatures between 10o and 30o C. Store away from incompatible materials such as alkalis. Keep smaller containers as drums and totes tightly closed when not in use or when empty. Product should be used within one year. Storage facilities should have secondary containment as required by law or regulation. Storage tanks, piping and offloading points should be labeled with appropriate signage to avoid accidents.

Containers of this material may be hazardous when empty, since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:

A ventilation system of local/general exhaust is recommended to keep employee exposure below the Airborne Exposure Limits. Ensure that eyewash station and safety showers are proximal to the workstation location.

Respiratory Protection:

Where exposures are below the established exposure limit, no respiratory protection is required. Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure.

Eye Protection:

Provide eye wash fountain and safety shower in close proximity to points of potential exposure. Wear eye/face protection such as chemical splash proof goggles or face shield. Prevent eye and skin contact.

Skin Protection:

Prevent contamination of skin or clothing when removing protective equipment. Wear impermeable gloves and suitable protective clothing.

Additional Advice:

Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	red-brown
Appearance:	liquid
Odor:	acidic
Boiling Point:	105 - 110 °C 220 - 230 °F
Melting Point:	<-18 °C 0 °F
Vapor Pressure:	Not available
Specific Gravity/Density:	1.38 - 1.59
Vapor Density:	Not available
Percent Volatile (% by wt.):	~50
pH:	<2.0
Saturation In Air (% By Vol.):	Not available
Evaporation Rate:	Similar to water
Solubility In Water:	soluble
Volatile Organic Content:	Not applicable
Flash Point:	Not applicable
Flammable Limits (% By Vol):	Not applicable
Autoignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Partition coefficient (n-octanol/water):	Not applicable
Odor Threshold:	Not available

10. STABILITY AND REACTIVITY

Stability:	Stable
Conditions To Avoid:	Avoid contact with mineral acids, excessive heat and bases/alkalis.
Polymerization:	Will not occur
Conditions To Avoid:	None known
Materials To Avoid:	Carbon steel, brasses, and nylon.
Hazardous Decomposition Products:	Thermal decomposition: after completely dry and heated to decomposition will produce oxides and sulfur.

11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION.
Toxicological information on the regulated components of this product is as follows:

The acute oral (rat) LD50 and acute 1-hour inhalation (rat) for sulfuric acid are 2,140 mg/kg and 347 ppm (0.348 mg/L/4hr), respectively. Sulfuric acid is corrosive to the skin and eyes. Concentrated sulfuric acid can also be corrosive to the nose, mucous membranes, respiratory tract and gastrointestinal tract. Inhalation of the vapors or mist can cause pulmonary edema, emphysema or permanent changes in pulmonary function. Chronic exposure has been reported to be associated with dermatitis, chronic bronchitis, gastritis, erosion of dental enamel, conjunctivitis, increased frequency of respiratory tract infections and cancer of the larynx, lungs and upper respiratory tract.

Ferric Sulfate

Available TOXICOLOGICAL DATA:

LD50 (intraperitoneal mouse): 168 mg/kg

LD50 (oral, rat) = 500 mg/kg

Mutagenicity: Not available

Reproductive Effects: Not available

Teratogenicity and Fetotoxicity: Not available

Synergistic Materials: Not available

12. ECOLOGICAL INFORMATION

The test values shown for this product are actually the results for studies conducted on anhydrous ferric sulfate.

ALGAE TEST RESULTS

Test: Acute toxicity, freshwater

Duration: 7 day.

Species: Green Algae (*Scenedesmus subspicatus*)
10000 ug/l Toxicity endpoint not reported.

Based on the anhydrous material. 1978 Journal: Egypt.J.Bot. 21(2):121-130

FISH TEST RESULTS

Test: Acute toxicity, freshwater

Duration: 24 hr. **Procedure:** Static.

Species: Mosquitofish (*Gambusia affinis*)
37,200 ug/l LC50

Based on the anhydrous material. 1957 Journal: Sewage Ind.Wastes 29(6):695-711

Test: Acute toxicity, freshwater

Duration: 96 hr **Procedure:** Static

Species: Mosquitofish (*Gambusia affinis*)
37,200 ug/l LC50

Based on the anhydrous material. 1957 Journal: Sewage Ind.Wastes 29(6):695-711

OTHER TEST RESULTS

Test: Acute toxicity, freshwater

Duration: 48 hr

Species: Rock Oyster (*Saccostrea commercialis*)
100 - 200 ug/l NOEC

Based on the anhydrous material. 1997 Journal: Ectotoxicol.Envirion.Saf. 37:30-36

13. DISPOSAL CONSIDERATIONS

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA `listed hazardous waste` or has any of the four RCRA `hazardous waste characteristics.` Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA `listed hazardous waste`; information contained in Section 15 of this MSDS is not intended to indicate if the product is a `listed hazardous waste.` RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. Kemira encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. Kemira recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. Kemira has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s.

Hazard Class: 8

Packing Group: III

UN/ID Number: UN3264

Transport Label Required: Corrosive

Technical Name (N.O.S.): Contains ferric sulfate

Hazardous Substances:

<u>Component / CAS No.</u>	<u>Reportable Quantity of Product (lbs)</u>
Ferric sulfate	~1613 lbs. (Ferric Sulfate RQ = 1000 lbs)

TRANSPORT CANADA

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s.

Hazard Class: 8

Packing Group: III

UN Number: UN3264

Transport Label Required: Corrosive

Technical Name (N.O.S.): Contains ferric sulfate

ICAO / IATA

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s.

Hazard Class: 8

Packing Group: III

UN Number: UN3264

Transport Label Required: Corrosive

Packing Instructions/Maximum Net Quantity Per Package:

Passenger Aircraft: 818; 5L

Cargo Aircraft: 820; 60L

Technical Name (N.O.S.): Contains ferric sulfate

IMO

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s.
 Hazard Class: 8
 UN Number: UN3264
 Packing Group: III
 Transport Label Required: Corrosive
 Technical Name (N.O.S.): Contains ferric sulfate

15. REGULATORY INFORMATION

INVENTORY INFORMATION

United States (USA): This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U. S. C. 2601 et. seq.

Canada: Components of this product have been reported to Environment Canada in accordance with Sections 66 and/or 81 of the Canadian Environmental Protection Act (1999), and are included on the Domestic Substances List.

European Union (EU): All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) in compliance with Council Directive 67/548/EEC and its amendments.

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

Component / CAS No.	%	TPQ (lbs)	RQ(lbs)	S313	TSCA 12B
Sulfuric Acid 7664-93-9	< 0.25	1000	1000	Yes	No
Ferric sulfate 10028-22-5	56 - 62 (36 - 40 as anhydrous)	None	1000	No	No

PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA

- Acute

16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

Fire: 0 - Materials that will not burn.

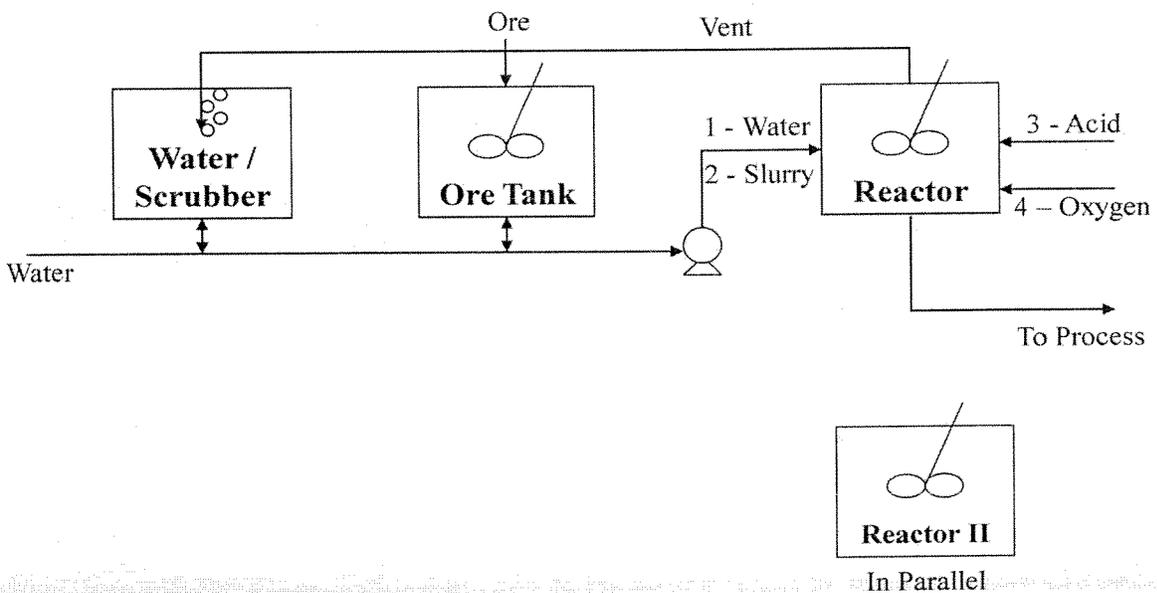
Reactivity: 0 - Materials that in themselves are normally stable, even under fire exposure conditions.

Reasons For Issue: Revised Section 9

Richard Moye, Product Safety/Regulatory 1-251-459-5532
08/31/2011

This information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation, and verification. Before using any product, read its label.

Manufacturing Process Flow - Ferric Sulfate



Material Safety Data Sheet

Trade Name: Sulfuric Acid 98%

SECTION 1 CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer or Formulator: Industrial Minera Mexico, S.A. DE C.V.
Calle Oro 555, Colonia Morales
San Luis Potosi, S.L.P., Mexico

Product Name: Sulfuric Acid 98%
Common Name: Sulfuric Acid, Oil of Vitriol
Chemical Type: Inorganic Acid

Emergency Phone - Chemtrec: 1-800-424-9300

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name and Synonyms	C.A.S. No.	Chemical Formula	WT% Hazardous Non-hazardous	TLV	PEL
Sulfuric Acid	7664-93-9	H ₂ SO ₄	98%	0.2 mg/m ³	1 mg/ m ³ 8Hr TWA
Water	7732-18-5	H ₂ O	2%	Not listed	Not listed

SECTION 3 HAZARDS IDENTIFICATION

Ingestion: Ingestion may cause severe injury or death.

Inhalation: Not normal route of entry.

Eye Contact: May be slight to severe. Irritation, burns, corneal necrosis (loss of sight).

Skin Absorption: May destroy the epidermis and penetrate some distance into the skin and subcutaneous tissues and cause necrosis. Ulceration of the skin.

Skin Contact: May cause irritation or burns on skin. Prolonged contact may cause severe, deep burns to tissue; very corrosive effects. May cause dermatitis, ulceration.

Effects of Overdose: LOCAL: Conjunctivitis, corneal necrosis, dermatitis, skin burns, ulceration. RESPIRATORY: Irritation of the nose and throat, laryngeal edema, bronchitis, pneumonia, pulmonary edema. GASTROINTESTINAL: Dental erosion, shock, anuria, burning in mouth, throat and abdomen; nausea, vomiting of blood and eroded tissue, perforation of gastrointestinal tract, albumin, blood and casts in urine.

SECTION 4 FIRST AID MEASURES

Emergency and First Aid Procedures: Treatment is symptomatic and no specific antidotes are known.

Ingestion: Rinse mouth with large amounts of water, DO NOT INDUCE VOMITING. If patient is conscious give milk mixed with egg whites or as much water as possible.

Inhalation: Remove person from exposure area to fresh air and support breathing.

Eyes: IMMEDIATELY flush eyes with fresh running water for 15-20 minutes.

Skin: Give continuous flow of water to wash material off body. Remove contaminated clothing (under a shower if possible) and subject patient to deluge-type shower, if possible. Treat for shock. Prompt medical consultation is essential.

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing Media: Fires involving small amounts of combustibles may be smothered with suitable dry chemicals. Use water on combustibles in vicinity of this material but use care, as water applied directly to the acid results in evolution of heat and causes splattering.

Special Fire Fighting Procedures: Avoid any contact with acid. Wear full protective rubber clothing, gloves, boots, wear self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Not flammable but highly reactive and can cause ignition by contact with combustible materials. Reacts violently with water and organics. May release explosive hydrogen gas inside storage tanks, drums, tank cars, and tank trucks. This is a very powerful acidic oxidizer which can ignite or even explode on contact with many materials; i.e., acetic acid, acetone cyanhydrin, (acetone + HNO₃), (acetone + K₂Cr₂O₇), acetonitrile, acrolein, acrylonitrile, (acrylonitrile + H₂O), (alcohols + H₂O₂), allyl alcohol, allyl chloride, NH₄OH, 2-amino ethanol, NH₄tripperchromate, aniline, (bromates + metals, BrF₅, n-butylaldehyde, carbides, CoHC₂, chlorates, (metals + chlorates), ClF₃, chlorosulfonic acid, C₆H₆, diisobutylene, (dimethyl benzylcarbinol + H₂O₂), epichlorohydrin, ethylene cyanhydrin, ethylene diamine, ethylene glycol, ethylene imine, fulminates, HCl, H₂, IF₇ (indene + HNO₃ + glycerides, p-nitroluene, perchlorates, HClO₄, (C₆H₆ + permanganates), pentasilver trihydroxydiamino phosphate, (l-phenyl-2-methyl propyl alcohol + H₂O₂), P, P(OCN)₃, picrates, potassium-tertbutoxide, KClO₃, KMnO₄, (KMnO₄ + KCl), KMnO₄ + H₂O) beta-propiolactone, RbHC₂, propylene oxide, pyridine, NA, Na₂CO₃, NaOH, steel, styrene monomer, water, vinyl acetate, (HNO₃ + toluene).

SECTION 6 ACCIDENTAL RELEASE MEASURES

Environmental Precautions: No information available; however, Sulfuric Acid has a reportable quantity of 1000 lbs. and, in the event of an accidental release, should be kept out of all watercourses and bodies of water. Do not contaminate any watercourse or body of water by direct application, cleaning of equipment or disposal.

Steps to be taken in case material is released or spilled: Treat with extreme caution. Zone off contaminated area. Dike area with sand or earth. Acid may be neutralized with soda ash or lime. Neutralization or dilution of strong Sulfuric Acid will ALWAYS be accompanied by a very strong

Trade Name: Sulfuric Acid 98%

chemical reaction with release of heat and possible splattering of the acid. Organic or combustible materials such as sawdust or rags should never be used to soak up spills. Wear full protective clothing (acid protective slicker suit).

SECTION 7 HANDLING AND STORAGE

Precautions to be taken in handling and storing:

When diluting always add acid to water slowly, never the reverse. Protect against physical damage and water. Wear full protective rubber clothing and rubber gloves and boots, acid hood, and full face shield when loading or unloading tank trucks or railway cars. If exposure is low, acid gas canister may be satisfactory or a self-contained breathing apparatus in the pressure demand mode or a supplied air respirator. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. In any event always wear eye protection.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation Protection: Maintain adequate ventilation at all locations where acid is handled. Store in the open or in well ventilated buildings or sheds.

Respiratory Protection: Depends on type of exposure, can range from none to full protection. Self-contained breathing apparatus, or positive pressure hose mask, or air-line supplied with clean compressed air. Check with respirator manufacturer to determine the appropriate type of equipment for a given application.

Protective Clothing: When loading or unloading trucks or cleaning out tanks or towers, wear acid resistant slicker suit, rubber clothing with rubber hood or broad soft hat, rubber apron, rubber gloves, rubber boots, and full face shield.

Suit Material Performance: (suggested by E.P.A.—user should determine by specific use)

Butyl	Poor	Butyl/Neoprene.....	Good
CPE.....	Excellent	Chlorobutyl.....	Good
Neoprene.....	Good		

Eye Protection: Chemical splash-proof goggles and full face shield.

Other: Safety shower and eyewash fountain checked daily in area.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	530 °F	Solubility in Water:	Complete (Exothermic)
Specific Gravity:	1.84 @ 60 °F	% Volatiles (by volume):	100% @ 644 F
pH:	Less than 1.0	Reaction with Water:	VIOLENT
Appearance:	Clear, colorless to cloudy.	Vapor Pressure, mm Hg:	1 @ 294 F
Extinguishing Media:	Dry chemicals or carbon dioxide	Melting Point:	-31 F to 51 F
Flashpoint:	Non-flammable. It may cause ignition on contact with combustible liquids or solids.		

SECTION 10 HANDLING AND STORAGE PRECAUTIONS

Stability (Normal Conditions): Stable

Conditions to Avoid: High temperature, organic materials, powdered metals, and other combustible materials.

Incompatibility (Material to Avoid): Water and most common metals, organic materials, carbides, chlorates, fulminates, nitrates, picrates, powdered metals, other combustible materials and strong oxidizing agents. Attacks many metals, releasing hydrogen. Acetic acid, acetone cyanohydrin, acetone and nitric acid and styrene monomer, vinyl acetate, nitric acid and toluene.

Hazardous Decomposition Products: Hydrogen gas and hazardous fumes of SO_x.

Hazardous Polymerization: Will not occur

SECTION 11 TOXICOLOGY INFORMATION

Acute Oral Toxicity: LD₅₀ (rat) is greater than 5,000 mg/kg (ppm); not acutely toxic by oral exposure. (TFI Product Testing Results, OECD Guideline 425)

Acute Inhalation Toxicity: LC₅₀ (rat, guinea pig) is 18-420 mg/m³; highly toxic by inhalation. (TFI Product Testing Results)

Acute Aquatic Toxicity: Fish 96-hour LC₅₀ is 42-500 mg/L (ppm); daphnia 24-hour EC₅₀: 29-88 mg/L; algae 10 mg/L. Slightly toxic to aquatic organisms. (TFI Product Testing Results)

SECTION 12 ECOLOGICAL INFORMATION

None listed.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Disposal Procedures: If possible, avoid pouring or spraying water directly onto strong Sulfuric Acid. This **ALWAYS** results in a violent chemical reaction. It is always best to slowly pour the acid into water during disposal operations to avoid the violent reaction and splattering of acid. If water must be sprayed into the acid for dilution, flushing, etc., it should always be done from a distance with proper protective gear.

Trade Name: Sulfuric Acid 98%

SECTION 14	TRANSPORT INFORMATION
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Proper shipping name:	RQ Sulfuric Acid (with more than 51 percent acid), 8, UN1830, P.G. II		
Hazard Class:	8	D.O.T. Number:	UN1830
Reportable Quantity (RQ):	1000 lbs. - Sulfuric Acid	Haz Waste No:	D002
Labels Required:	Corrosive	EPA Regist No:	None
Placard:	Corrosive	Packaging Group:	II
C.A.S. Number:	7664-93-9		

Refer to 49 CFR 172.101 Hazardous Materials Table for further provisions, packaging authorizations and quantity limitations.

SECTION 15	REGULATORY INFORMATION
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Carcinogenicity: by IARC?: Yes () No (X) by NTP?: Yes () No (X)
IARC evaluates occupational exposures to strong, inorganic-acid mists containing Sulfuric Acid in "Group 1", as having carcinogenic potential. However, SULFURIC ACID ITSELF WAS NOT CLASSIFIED AS A GROUP I CARCINOGEN.

This product contains sulfuric acid, CAS No. 7664-93-9, which is subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

SECTION 16	OTHER INFORMATION
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Flash Point (Test Method):	Not applicable	Flammable Limits	LOWER	UPPER
Autoignition Temperature:	Not applicable	(% BY VOLUME)	N/A	N/A
Hazard Rating (N.F.P.A.):	Health: 3	Fire: 0	Reactivity: 2	Specific: Use no water

This N.F.P.A. rating is a recommendation by the manufacturer using the guidelines or published evaluations prepared by the National Fire Protection Association (N.F.P.A.).

FIREFIGHTING TECHNIQUE

Concentrated vapors of Sulfuric Acid are extremely irritating to the respiratory tract and may cause breathing difficulty. Prevent human exposure to fire, smoke, fumes, or products of combustion. Evacuate nonessential personnel from the fire area. Maintain a safe distance from the fire and storage area because excessive heat may cause tank to rupture. Wear full face, self-contained breathing apparatus and impervious clothing (such as gloves, hood, suits, and rubber boots). Use water spray, dry chemical, foam, carbon dioxide, or halogenated extinguishing agents. If the tank is not leaking, keep cooled using a fog spray nozzle to minimize the reactivity of the water and acid. Under no circumstance should water or other liquid be introduced into acid tanks. Take care not to ignite hydrogen gas which can accumulate inside metal tanks containing acid.

SPECIAL HANDLING

Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices. A small spill can be handled routinely. Use adequate ventilation or wear an air-supplied respirator to prevent inhalation contact. Wear suitable protective clothing to prevent skin and eye contact. Use the following procedures:

- Any leak occurring in pipelines or equipment should be considered an acid leak and treated with extreme caution until the leak is proven not to be an acid leak.
- All contaminated areas should be immediately zoned off to avoid personnel exposure to the acid spray or stream.
- Adjust all appropriate valves to isolate the system and stop further leakage.
- Soda ash or lime should be spread around to neutralize any remaining acidity on the surface of the ground or concrete pad. The contaminated area should be covered with sand or gravel, and acidity neutralized with soda ash or lime.
- Sulfuric Acid leaks, spills or drainings must not come in contact with any acid soluble sulfide wastes (such as in sewers), because of danger of evolving hydrogen sulfide gas.
- Large spills should be handled according to the predetermined plan. Part of this plan should include Section V, FIRE FIGHTING MEASURES.

CORROSIVITY TO MATERIALS OF CONSTRUCTION

Weaker strengths of Sulfuric Acid, particularly concentrations below 60° Baume, are highly corrosive to most metals with evolution of hydrogen gas.

STORAGE REQUIREMENTS

The following safety facilities should be readily accessible in all areas where Sulfuric Acid is handled or stored.
SAFETY SHOWERS—with quick opening valves which stay open. Water should be supplied through insulated lines to prevent freeze-ups in cold weather.
EYEWASH FOUNTAIN—or other means of washing the eyes with a gentle flow of tap water.
Sulfuric Acid may be safely stored in properly designed bulk storage tanks.

DISPOSAL OF UNUSED MATERIAL

Sulfuric Acid that cannot be used or chemically reprocessed should be disposed of in such a manner that will not adversely affect the environment.

Disclaimer: This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process.

Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. **NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED.** It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

Reviewed by: The Environmental Health and Safety Department
November 7, 2007 (52 444) 8139515



Health and Safety Data Sheet

<p>1. Identification of:</p> <ul style="list-style-type: none"> - the substance/preparation - the company/undertaking 	<p>MAGNETITE</p> <p>Producer: LKAB Box 952 S-971 28 Luleå Sweden</p> <p>Supplier: MINELCO AB Box 952 S-971 28 Luleå Sweden</p>
<p>2. Composition/information on ingredients</p> <ul style="list-style-type: none"> - chemical characteristics 	<p>Magnetite (natural mineral) Fe₃O₄.</p>
<p>3. Hazards identification</p>	<p>None.</p>
<p>4. First-aid measures</p> <ul style="list-style-type: none"> - immediate measures - special instructions to the doctor 	<p>In case of excessive dust evolution, move to fresh air; wash with water.</p> <p>None.</p>
<p>5. Fire-fighting measures</p> <ul style="list-style-type: none"> - suitable extinguishing media/foam extinguisher - extinguishing media which must not be used for safety reasons - special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases 	<p>No restrictions.</p> <p>Not flammable, does not support fire.</p> <p>None.</p>
<p>6. Accidental release measures</p> <ul style="list-style-type: none"> - personal precautions - environmental precautions - method for cleaning up 	<p>In case of dust evolution, avoid prolonged inhalation; if required, use dust respirator and goggles.</p> <p>Room ventilation.</p> <p>Normal housekeeping.</p>

Reference:
 Product: MAGNETITE
 Date of issue: 26th September 2001
 Issued by: M Hewitt

5046 Kg/cm
 2.2 15 per kg
 1124.41 / 35.31 = 315 * dft



Health and Safety Data Sheet

<p>7. Handling and storage</p> <ul style="list-style-type: none"> - handling - storage, requirements concerning stocks and containers 	<p>No hazards involved with normal handling.</p> <p>None.</p>
<p>8. Exposure control/personal protection</p> <ul style="list-style-type: none"> - other instructions for technical equipment - personal protective equipment <ul style="list-style-type: none"> - respiratory protection - hand protection - eye protection - skin protection 	<p>None.</p> <p>If excessive dust generated:</p> <p>Normal dust - mask. Normal gloves. Normal goggles. Normal clothes, boots.</p>
<p>9. Physical and chemical properties</p> <ul style="list-style-type: none"> - appearance: <ul style="list-style-type: none"> - form - colour - odour - change of state: <ul style="list-style-type: none"> - boiling point/range - melting point/range - flash point - flammability - ignition temperature - autoflammability - explosive properties: <ul style="list-style-type: none"> - below explosion limits - upper explosion limits - oxidizing properties - vapour pressure - specific density - bulk density - water solubility - pH-value - partition coefficient n-octanol/water - other information 	<p>Moist powder, 99 % < 200 micron. Black. None.</p> <p>N.A. 1400-1600°C. N.A. Not flammable. Does not burn. None.</p> <p>N.A. N.A. None. N.A. 5,15 g/cm³. 3 g/cm³. N.A. 7. N.A. None.</p>

Reference:
 Product: **MAGNETITE**
 Date of issue: **26th September 2001**
 Issued by: **M Hewitt**



Health and Safety Data Sheet

10.	Stability and reactivity <ul style="list-style-type: none"> - conditions to avoid - material to avoid - hazard decomposition products 	None. None. None.
11.	Toxicological information	Non toxic.
12.	Ecological information	Environmental friendly material.
13.	Disposal considerations	Dispose to normal landfills or reuse in blast furnace or as iron bearing component in cement manufacturing.
14.	Transport information <ul style="list-style-type: none"> - carriage by route ADR/RID and GVS/GGVE - carriage by inland waterway (ADN/ADR) 	N.A. N.A.
15.	Regulatory information <ul style="list-style-type: none"> - classification, packaging and labelling of dangerous substances and preparations - subject of specific provisions in relation to protection of man or the environment at community level 	N.A. N.A.
16.	Other information	CAS No.: 1309-38-2.

Reference:

Product:

Date of issue:

Issued by:

MALUETTE

26th September 2001

M Hewitt



Material Safety Data Sheet

Version 1.3

Revision Date 08/24/2003

MSDS Number 30000000111

Print Date 01/07/2004

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Oxygen (Refrigerated)

Chemical formula : O₂

Synonyms : Oxygen (refrigerated), Oxygen USP, LOX, Cryogenic Liquid Oxygen

Product Use Description : General Industrial

Company : Air Products and Chemicals, Inc
7201 Hamilton Blvd.
Allentown, PA 18195-1501

Telephone : 800-345-3148

Emergency telephone number : 800-523-9374 USA
01-610-481-7711 International

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Volume)
Oxygen	7782-44-7	100 %

Concentration is nominal. For the exact product composition, please refer to Air Products technical specifications.

3. HAZARDS IDENTIFICATION

Emergency Overview

Extremely cold liquid and gas under pressure.
Direct contact with liquid can cause frostbite.
May react violently with combustible materials.
Keep oil, grease, and combustibles away.

Potential Health Effects

Inhalation : Breathing 75% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects. Breathing 75% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects.

Eye contact : Contact with liquid may cause cold burns/frost bite.

Skin contact : Contact with liquid may cause cold burns/frost bite. May cause severe frostbite.

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Ingestion : Ingestion is not considered a potential route of exposure.

Exposure Guidelines

Primary Routes of Entry : Inhalation
Eye and skin contact.

Target Organs : None.

Aggravated Medical Condition

If oxygen is administered to persons with chronic obstructive pulmonary disease, raising the oxygen concentration in the blood depresses their breathing and raises their retained carbon dioxide to a dangerous level.
None.

4. FIRST AID MEASURES

Eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash frost-bitten areas with plenty of water. Do not remove clothing. As soon as practical, place the affected area in a warm water bath- which has a temperature not to exceed 40 °C (105 °F). Cover wound with sterile dressing.

Ingestion : Ingestion is not considered a potential route of exposure.

Inhalation : Consult a physician after significant exposure. Move to fresh air.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : All known extinguishing media can be used.
Use extinguishing media appropriate for surrounding fire.

Specific hazards : Combustibles in contact with liquid oxygen may explode on ignition or impact. Some materials which are noncombustible in air may burn in the presence of an oxidizer. Contact with organic and most inorganic materials may cause fire. Vapor cloud may obscure visibility. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost). Move away from container and cool with water from a protected position. Do not direct water spray at container vent. If possible, stop flow of product.

Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary. Fire resistant clothing may burn and offer no protection in oxygen rich atmospheres.

Further information : Some materials that are noncombustible in air will burn in the presence of an oxygen enriched atmosphere (greater than 23%). Fire resistant clothing may burn and offer no protection in oxygen rich atmospheres.

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6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Clothing exposed to high concentrations may retain oxygen 30 minutes or longer and become a potential fire hazard. Stay away from ignition sources. Evacuate personnel to safe areas. Ventilate the area. Monitor oxygen level. Spill will rapidly vaporize forming an oxygen rich vapor cloud. Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level. Personnel who have been exposed to high concentrations of oxygen should stay in a well-ventilated or open area for 30 minutes before going into a confined space or near an ignition source.
- Methods for cleaning up : Ventilate the area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).
- Additional advice : Increase ventilation to the release area and monitor oxygen level.

7. HANDLING AND STORAGE

Handling

All gauges, valves, regulators, piping and equipment to be used in oxygen service must be cleaned for oxygen service. Oxygen is not to be used as a substitute for compressed air. Never use an oxygen jet for cleaning purposes of any sort, especially clothing, as it increases the likelihood of an engulfing fire. Know and understand the properties and hazards of the product before use. Only experienced and properly instructed persons should handle compressed gases. Before using the product, determine its identity by reading the label. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Do not remove or interchange connections. Prevent entrapment of cryogenic liquid in closed systems not protected with relief device. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with lower pressure rating than that of the container. Do not subject containers to abnormal mechanical shocks which may cause damage to their valve or safety devices. Only transfer lines designed for cryogenic liquids shall be used. Use only with equipment cleaned for oxygen service and rated for cylinder pressure. Never permit oil, grease, or other readily combustible substances to come into contact with valves or containers containing oxygen or other oxidants. All vents should be piped to the exterior of the building.

Storage

WARNING! Do not change or force fit connections. Always keep container in upright position. Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Do not allow storage temperature to exceed 50°C (122°F). Full containers should be stored so that oldest stock is used first. Do not store in a confined space. Full and empty cylinders should be segregated. Store containers in location free from fire risk and away from sources of heat and ignition. Return empty containers in a timely manner. Stored containers should be periodically checked for general condition and leakage. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Cryogenic containers are equipped with pressure relief devices to control internal pressure. Under normal conditions these containers will periodically vent product. Where necessary containers containing oxygen and oxidants should be separated from flammable gases by a fire resistant partition.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal protective equipment

- Respiratory protection : Not required for properly ventilated areas.
- Hand protection : Loose fitting thermal insulated or leather gloves.
Work gloves are recommended when handling cylinders.
Gloves must be clean and free of oil and grease.
The breakthrough time of the selected glove(s) must be greater than the intended use period.
- Eye protection : Protect eyes, face and skin from liquid splashes.
Safety glasses recommended when handling cylinders.
- Skin and body protection : Personnel who have been exposed to high concentrations of oxygen should stay in a well-ventilated or open area for 30 minutes before going into a confined space or near an ignition source.
Never allow any unprotected part of the body to touch uninsulated pipes or vessels which contain cryogenic fluids. The extremely cold metal will cause the flesh to stick fast and tear when one attempts to withdraw from it.
Safety shoes are recommended when handling cylinders.
- Special instructions for protection and hygiene : Ensure adequate ventilation, especially in confined areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Form : Liquefied gas.
- Color : Blue.
- Odor : No odor warning properties.
- Molecular Weight : 32 g/mol
- Relative vapor density : 1.1 (air = 1)
- Relative density : 1.1 (water = 1)
- Boiling point/range : -297.4 °F (-183 °C)
- Critical temperature : -180.4 °F (-118 °C)
- Melting point/range : -362.2 °F (-219 °C)
- Water solubility : 0.039 g/l

10. STABILITY AND REACTIVITY

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- Stability : Stable under normal conditions.
- Materials to avoid : Avoid oil, grease and all other combustible materials.
Flammable materials.
Organic materials.
Finely divided aluminium.
Carbon steel.
Reducing agents.

11. TOXICOLOGICAL INFORMATION

Acute Health Hazard

- Inhalation : LC50 : 26556 ppm
Species : Rat.
Exposure time : 4 h

Chronic Health Hazard

Premature infants exposed to high oxygen concentrations may suffer delayed retinal damage that can progress to retinal detachment and blindness. Retinal damage may also occur in adults exposed to 100% oxygen for extended periods (24 to 48 hr). At two or more atmospheres central nervous system (CNS) toxicity occurs. Symptoms include nausea, vomiting, dizziness or vertigo, muscle twitching, vision changes and loss of consciousness and generalized seizures. At three atmospheres, CNS toxicity occurs in less than two hours and at six atmospheres in only a few minutes.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

- Aquatic toxicity : No data available.
- Toxicity to other organisms : No data available.
- Mobility : No data available.
- Bioaccumulation : No data available.

13. DISPOSAL CONSIDERATIONS

- Waste from residues / unused products : Return unused product in original cylinder to supplier. Contact supplier if guidance is required.
- Contaminated packaging : Return cylinder to supplier.

14. TRANSPORT INFORMATION

CFR

- Proper shipping name : Oxygen, refrigerated liquid
Class : 2.2 (5.1)
UN/ID No. : UN1073

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Print Date 01/07/2004

IATA

Proper shipping name : Oxygen, refrigerated liquid
UN/ID No. : UN1073

IMDG

Proper shipping name : OXYGEN, REFRIGERATED LIQUID
Class : 2.2 (5.1)
UN/ID No. : UN1073

CTC

Proper shipping name : OXYGEN, REFRIGERATED LIQUID
Class : 2.2 (5.1)
UN/ID No. : UN1073

Further Information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)
Oxidizer., Cryogenic (refrigerated) Liquid

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.
Japan	ENCS	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:
Acute Health Hazard, Fire Hazard.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)
This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

16. OTHER INFORMATION

NFPA Rating

Health : 3
Fire : 0

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Instability : 0
Special : OX

HMIS Rating

Health : 3
Flammability : 0
Physical hazard : 2

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

For additional information, please visit our Product Stewardship web site at
<http://www.airproducts.com/productstewardship/>
