



State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER

WATERT07

PAGE

1

ADDRESS CORRESPONDENCE TO ATTENTION OF:

BETTY FRANCISCO
304-558-0468

*709040458 800-999-3484
C I THORNBURG COMPANY INC
PO BOX 2163

HUNTINGTON WV 25722-2163

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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
09/05/2006				
BID OPENING DATE:	09/28/2006			

BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
REQUEST FOR QUOTATION						
THE PURCHASING DIVISION IS SOLICITING BIDS FOR A STATEWIDE CONTRACT TO PROVIDE WATER TREATMENT CHEMICALS FOR ALL STATE AGENCIES AND ALL POLITICAL SUBDIVISIONS.						
MANDATORY PRE-BID: SEPTEMBER 20, 2006, 11:00 AM LOCATION: 2019 WASHINGTON ST., EAST BLDG. 15 CHARLESTON, WV 25305						
ATTACHMENTS: A. ITEM SPECIFICATIONS (3 PAGES) B. GENERAL SPECIFICATIONS (2 PAGES) C. PRICING PAGE(1 PAGE) D. AFFIDAVIT(1 PAGE)						
THE STATE OF WEST VIRGINIA RESERVES THE RIGHT TO MAKE MULTIPLE AWARDS SHOULD IT BE FINANCIALLY BENEFICIAL.						
PRICE INCREASES: THIS CONTRACT SHALL ALLOW SUBSTANTIATED PRICE INCREASES AT RENEWAL ONLY. SUPPORTING DOCUMENTATION SHALL CONSIST OF ACTUAL DOLLAR AMOUNT PASS-THROUGH INCREASES FROM THE MANUFACTURER. AT THAT TIME, IT WILL BE DECIDED TO ACCEPT THE INCREASE OR RE-BID THE CONTRACT.						
PRICES BID SHALL BE FIRM FROM THE DATE OF AWARD TO 365 DAYS THEREAFTER; AND BIDS SHALL INCLUDE ANY AND ALL SHIPPING COSTS.						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	<i>John M. Kelly</i>	TELEPHONE	1-304-523-3484	DATE	9/28/06
TITLE	Sales	FEIN	55-0421240-001	ADDRESS CHANGES TO BE NOTED ABOVE	

WHEN RESPONDING TO RFQ INSERT NAME AND ADDRESS

**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125.00 registration fee.
5. All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this contract is automatically null and void, and is terminated without further order.
14. **HIPAA Business Associate Addendum -** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications.

SIGNED BID TO:

Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130



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BID OPENING DATE: 09/28/2006		BID OPENING TIME 01:30PM				
LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		885-70		
WATER TREATMENT CHEMICALS						
EXHIBIT 3						
LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE.						
UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.						
RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR, SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30) DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) ONE (1) YEAR PERIODS.						
CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.						
SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE <i>John M. Kelly</i>		TELEPHONE 1-304-523-3484		DATE 9/28/06		
TITLE <i>Sales</i>		FEIN 55-0421240-001		ADDRESS CHANGES TO BE NOTED ABOVE		



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<p>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK.)</p> <p>QUANTITIES: QUANTITIES LISTED IN THE REQUISITION ARE APPROXIMATIONS ONLY, BASED ON ESTIMATES SUPPLIED BY THE STATE SPENDING UNIT. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACT SHALL COVER THE QUANTITIES ACTUALLY ORDERED FOR DELIVERY DURING THE TERM OF THE CONTRACT, WHETHER MORE OR LESS THAN THE QUANTITIES SHOWN.</p> <p>ORDERING PROCEDURE: SPENDING UNIT(S) SHALL ISSUE A WRITTEN STATE CONTRACT ORDER (FORM NUMBER WV-39) TO THE VENDOR FOR COMMODITIES COVERED BY THIS CONTRACT. THE ORIGINAL COPY OF THE WV-39 SHALL BE MAILED TO THE VENDOR AS AUTHORIZATION FOR SHIPMENT, A SECOND COPY MAILED TO THE PURCHASING DIVISION, AND A THIRD COPY RETAINED BY THE SPENDING UNIT.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.</p> <p>THE TERMS AND CONDITIONS CONTAINED IN THIS CONTRACT SHALL SUPERSEDE ANY AND ALL SUBSEQUENT TERMS AND CONDITIONS WHICH MAY APPEAR ON ANY ATTACHED PRINTED DOCUMENTS SUCH AS PRICE LISTS, ORDER FORMS, SALES AGREEMENTS OR MAINTENANCE AGREEMENTS, INCLUDING ANY ELECTRONIC MEDIUM SUCH AS CD-ROM.</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

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WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



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09/28/2006

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01:30PM

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
REV. 04/11/2001 VENDOR PREFERENCE CERTIFICATE CERTIFICATION AND APPLICATION* IS HEREBY MADE FOR PREFERENCE IN ACCORDANCE WITH WEST VIRGINIA CODE, 5A-3-37 (DOES NOT APPLY TO CONSTRUCTION CONTRACTS). A. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED: () BIDDER IS AN INDIVIDUAL RESIDENT VENDOR AND HAS RESIDED CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR () BIDDER IS A PARTNERSHIP, ASSOCIATION OR CORPORA- TION RESIDENT VENDOR AND HAS MAINTAINED ITS HEAD- QUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR 80% OF THE OWNERSHIP INTEREST OF BIDDER IS HELD BY ANOTHER INDIVIDUAL, PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR WHO HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR () BIDDER IS A CORPORATION NONRESIDENT VENDOR WHICH HAS AN AFFILIATE OR SUBSIDIARY WHICH EMPLOYS A MINIMUM OF ONE HUNDRED STATE RESIDENTS AND WHICH HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA CONTINUOUSLY FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION.						

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<i>John M Kelly</i>	1-304-523-3484	9/28/06
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LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
B. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:						
() BIDDER IS A RESIDENT VENDOR WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES WORKING ON THE PROJECT BEING BID ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID;						
OR						
() BIDDER IS A NONRESIDENT VENDOR EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS OR IS A NONRESIDENT VENDOR WITH AN AFFILIATE OR SUBSIDIARY WHICH MAINTAINS ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES OR BIDDERS' AFFILIATE'S OR SUBSIDIARY'S EMPLOYEES ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID.						
BIDDER UNDERSTANDS IF THE SECRETARY OF TAX & REVENUE DETERMINES THAT A BIDDER RECEIVING PREFERENCE HAS FAILED TO CONTINUE TO MEET THE REQUIREMENTS FOR SUCH PREFERENCE, THE SECRETARY MAY ORDER THE DIRECTOR OF PURCHASING TO: (A) RESCIND THE CONTRACT OR PURCHASE ORDER ISSUED; OR (B) ASSESS A PENALTY AGAINST SUCH BIDDER IN AN AMOUNT NOT TO EXCEED 5% OF THE BID AMOUNT AND THAT SUCH PENALTY WILL BE PAID TO THE CONTRACTING AGENCY OR DEDUCTED FROM ANY UNPAID BALANCE ON THE CONTRACT OR PURCHASE ORDER.						
BY SUBMISSION OF THIS CERTIFICATE, BIDDER AGREES TO DISCLOSE ANY REASONABLY REQUESTED INFORMATION TO THE PURCHASING DIVISION AND AUTHORIZES THE DEPARTMENT OF						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	John M Kelly	TELEPHONE	1-304-523-3484	DATE	9/28/06
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<p>TAX AND REVENUE TO DISCLOSE TO THE DIRECTOR OF PURCHASING APPROPRIATE INFORMATION VERIFYING THAT BIDDER HAS PAID THE REQUIRED BUSINESS TAXES, PROVIDED THAT SUCH INFORMATION DOES NOT CONTAIN THE AMOUNTS OF TAXES PAID NOR ANY OTHER INFORMATION DEEMED BY THE TAX COMMISSIONER TO BE CONFIDENTIAL.</p> <p>UNDER PENALTY OF LAW FOR FALSE SWEARING (WEST VIRGINIA CODE 61-5-3), BIDDER HEREBY CERTIFIES THAT THIS CERTIFICATE IS TRUE AND ACCURATE IN ALL RESPECTS; AND THAT IF A CONTRACT IS ISSUED TO BIDDER AND IF ANYTHING CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: <u>THE C.I Thornburg Co. INC</u></p> <p>DATE: <u>9/28/06</u></p> <p>SIGNED: <u>John M. Kelly</u></p> <p>TITLE: <u>Sales</u></p> <p>* CHECK ANY COMBINATION OF PREFERENCE CONSIDERATION(S) IN EITHER "A" OR "B", OR BOTH "A" AND "B" WHICH YOU ARE ENTITLED TO RECEIVE. YOU MAY REQUEST UP TO THE MAXIMUM 5% PREFERENCE FOR BOTH "A" AND "B". (REV. 12/00)</p> <p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO:</p>						
SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE <u>John M. Kelly</u>		TELEPHONE <u>1-304-523-3484</u>		DATE <u>9/28/06</u>		
TITLE <u>Sales</u>		FEIN <u>55-0421240-001</u>		ADDRESS CHANGES TO BE NOTED ABOVE		



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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
	DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130					
THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:						
SEALED BID						
BUYER:		BETTY FRANCISCO				
RFQ. NO.:		WATERT07				
BID OPENING DATE:		SEPTEMBER 28, 2006				
BID OPENING TIME:		1:30 PM				
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:						
		1-304-523-0510				
CONTACT PERSON (PLEASE PRINT CLEARLY):						
		John M. Kelly				
SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE John M. Kelly		TELEPHONE 1-304-523-3484			DATE 9/28/06	
TITLE Sales		FEIN 55-0421240-001			ADDRESS CHANGES TO BE NOTED ABOVE	



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VENDOR

SHIP

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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
***** THIS IS THE END OF RFQ WATERT07 ***** TOTAL: _____						
SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE John M. Kelly			TELEPHONE 1-304-523-3484		DATE 9/28/06	
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ATTACHMENT A

STATEWIDE CONTRACT – WATER06 – ITEM SPECIFICATIONS

<u>ITEM#</u>	<u>DESCRIPTION</u>
1	Aluminum Sulfate, 50 lb. bag, commercial grade General Chemical or Equal Mfg.: General Chemical or Equal Size: Standard Ground Net Wt.: 50 lb.
2	Calcium Hypochlorite, 45 lb pail, min. 70% chlorine, tablet form for use in swimming pools & water treatment Norweco or Equal Mfg.: Norweco or Equal Size: 1" Net Wt.: 45 lb.
3	Calcium Hypochlorite, 100 lb drum, min. 70% chlorine, tablet form for use in swimming pools & water treatment Norweco or Equal Mfg.: Norweco or Equal Size: 1" Net Wt.: 100 lb.
4	Calcium Hypochlorite, 100 lb drum, min. 70% Induclor (PPG) or Equal Mfg.: Induclor (PPG) or Equal Size: Granular Net Wt.: 100 lb.
5	Liquid Chlorine, 150 lb cylinder – <u>not for swimming pool use</u> Jones Chemical or Equal Mfg.: Jones Chemical or Equal Size: 150 lb. Net Wt.: 150 lb.

- 6 Soda Ash, Anhydrous Sodium Carbonate,
99% by weight, refined, light, 50 lb

FMC – 100 or Equal
Mfg.: FMC Wyoming Corp. or Equal
Size: Standard Ground
Net Wt.: 50 lb.
- 7 Soda Ash, Anhydrous Sodium Carbonate,
99% by weight, dense, 50 lb

FMC – 100 or Equal
Mfg.: FMC Wyoming Corp. or Equal
Size: Standard Ground
Net Wt.: 50 lb.
- 8 Soda Ash, Anhydrous Sodium Carbonate,
99% by weight, briquettes, 50 lb

Western Briquettes or Equal
Mfg.: Briquettes Co. or Equal
Net Wt.: 50 lb.
- 9 Sodium Fluoride, 97% Pure, 125 lb. Drum, Course

Cryralline Structure (Granular) – to be used to
Fluoride drinking water
Chemtech (Solvay) or Equal
Mfg.: Chemtech (Solvay) or Equal
Size: Granular
Net Wt.: 125 lb.
- 10 Hydrated Lime, Min. 71% CAO, 50 lb. bag

Carmuse Corp, (Dravo) or Equal
Mfg.: Carmuse Corp. (Darvo) or Equal
Net Wt.: 50 lb.
- 11 Caustic Soda, 100% Crystal / Pellets, 55 Gal Drum

PPG (Univar) or Equal
Size: 55 Gal Drum
Net Wt.: 690 lb.

12

Salt for Water Softeners, Pellet

System Saver II (Morton) or Equal
Net Wt.: 50 lb bag – 99.5% Pure Salt / .5%
Cleaning resin for softner equipment

13

Muratic Acid, Min. 30% by volume

Univar (Superior) or Equal
Size: 15 Gal Drum
Net Wt.: 140 lb.

14

**Cyanuric Acid, Stabilizer for use in swimming
pools**

Bio-Lab or Equal
Net Wt.: 45 lb.

WATERT07 General Specifications

SCOPE

This contract is to furnish water treatment chemicals to all state agencies and political subdivisions. It is the intent of this contract to cover current product applications and any new product applications as they become available. This bid shall be a Request for Quotation" (RFQ); it is preferred a single award for all items be issued to the lowest responsible bidder, whose products meet the minimum quality defined herein. A sample shall be provided upon request.

Mandatory Pre-Bid Meeting

A mandatory pre-bid meeting shall be held on Wednesday, September 20, 2006, at 11:00 a.m. The meeting will be held in the Purchasing Division Conference Room located at 2019 Washington Street, East (Capitol Complex - Building 15), Charleston, WV 25305. Any vendor who wishes to bid on this contract must be represented at this meeting. Failure to attend the pre-bid conference shall disqualify a vendor from bidding on this contract. No person can represent more than one bidder.

General Information

1. All products bid, furnished and delivered must meet the needs of the State of West Virginia. Each item bid on the pricing page must be identified with the brand and manufacturer's number on the bid form. Vendors are requested to type the pricing pages. Failure to indicate the minimum order quantity on the pricing sheets shall require the vendor to ship any quantity of that product ordered, regardless of order size.
2. Bidders shall complete the pricing on "WATERT07 Pricing/Information Page". Bidders should complete all columns and information requested. Quantities for each item represent an approximate volume. No future use of contract is guaranteed or implied. The "unit price" must be the final price that will be charged to the State of West Virginia.
3. If bidding an "Equal To" other than the brand listed, bidders are required to supply literature with the chemical composition demonstrating the product is in fact equal in quality.
4. The lowest cost bid whose products meet or exceeds the acceptable quality, shall be awarded a contract.
5. The item or model number(s) may be updated at renewal. If the Purchasing Division extends the offer to renew, and the catalog prices have significant increases, Purchasing may decline and re-bid the contract.
6. Estimated Quantity amounts are shown for informational purposes only and should not be construed as a guarantee of any future contract usage.

WATERT07 General Specifications

7. Orders shall be delivered within three (3) working days after orders are received. Spending unit must be advised in writing if orders will be delayed for any reason. Contractor shall carry an adequate stock to insure such delivery service for the duration of the contract.
8. All deliveries must be made during normal working hours for the delivery location. All shipments of products requiring a material safety data sheet (MSDS) shall include a MSDS included with the product.
9. All bids are to be quoted as F.O.B. destination to any West Virginia location. The minimum order for prepaid shipping to one, in-state destination shall be \$200.00. For orders less than \$200.00, transportation charges (if any) will be invoiced as a separate charge with the original freight bill attached to the invoice. Agencies may make purchases that fall under the \$200.00 limit at a local source to avoid the delivery charges. Note: Stringing orders to circumvent purchasing regulations is expressly prohibited.
10. The successful bidder shall not substitute any other brand of products from those awarded, nor sell any additional items under their contract not specifically covered herein, without prior written permission of the Purchasing Division.
11. All products must be highly efficient and effective in the performance of the tasks for which the product is intended to be used.
12. Successful vendor shall provide quarterly reports and annual summaries showing the quantities, dollar value and agencies (including political subdivisions) which have used this contract. Successful vendor shall also be able to provide report showing the top items purchased during the contract period. This report is mandatory and failure of the successful bidder to supply such reports may be grounds for cancellation of contract.
13. Nonconforming products and materials shall be returned to the vendor at no expense to the State of West Virginia at any time during the life of this contract; and shall be credited or not invoiced if caught prior to billing.
14. Internet Access – Vendor should be able to provide internet ordering access. If vendor has such capabilities, this should be so noted in their quotation and describe the process for setting up such ordering for state agencies. Internet access is not a requirement for bidding.

STATEWIDE CONTRACT: WATERT07- PRICING PAGE - BID OPENING DATE: 09/28/2006, 1:30 PM						
ITEM #	Generic Description	EST. USAGE QTY.	UNIT PRICE	EXTENDED PRICE	BRAND/MODEL BID	MIN. ORDER QTY.
1	Aluminum Sulfate, 50 lb bag Comm.	100	\$ 12.00	\$ 1200.00		
2	Calcium Hypochlorite, Min. 70%, 1", 45 lb pail	125	\$ N/A	\$ N/A		
3	Calcium Hypochlorite, 1", 100 lb drum	40	\$ 200.00	\$ 8000.00		
4	Calcium Hypochlorite, Granular, 100 lb drum	50	\$ 170.00	\$ 8500.00		
5	Liquid Chlorine - 150 lb. cyl.	30	\$ 72.00	\$ 2160.00		
6	Soda Ash - Refined	140	\$ 14.00	\$ 1960.00		
7	Soda Ash - Dense	150	\$ 14.00	\$ 2100.00		
8	Soda Ash - Briquettes	105	\$ 20.00	\$ 2100.00		
9	Sodium Fluoride	145	\$ 152.00	\$ 22040.00		
10	Hydrated Lime	175	\$ 7.50	\$ 1312.50		
11	Caustic Soda	180	\$ 350.00	\$ 63000.00		
12	Salt	200	\$ 9.50	\$ 1900.00		
13	Muratic Acid	30	\$ 50.00	\$ 1500.00		
14	Cyanuric Acid	25	\$ 90.00	\$ 2250.00		
			GRAND TOTAL	\$		

* See attached pages 9-13 for exact item specifications

Bidder Information

Name:

The C.I Thornburg Co. INC

Address:

4034 ALITZER AVE
P.O. Box 2163 Huntington WV. 25722

Telephone:

H 1-304-523-3484

Fax#:

1-304-523-0510

Email:

JOHN.KELLY@CITHORNBURG.COM

John M Kelly
Signature

AFFIDAVIT

West Virginia Code §5A-3-10a states:

No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions.

"Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

EXCEPTION:

The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

LICENSING:

The vendor must be licensed in accordance with any and all state requirements to do business with the state of West Virginia.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit www.state.wv.us/admin/purchase/privacy for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: C. I. Thornburg Co. Inc

Authorized Signature: Jahn M. Kelly

Date: 9/28/06



State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFG NUMBER

WATERT07

PAGE

1

ADDRESS CORRESPONDENCE TO ATTENTION OF:

BETTY FRANCISCO
304-558-0468

*709040458 800-999-3484
C I THORNBURG COMPANY INC
PO BOX 2163
HUNTINGTON WV 25722-2163

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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS		
09/05/2006						
BID OPENING DATE: 09/28/2006		BID OPENING TIME 01:30PM				
LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<p align="center">REQUEST FOR QUOTATION</p> <p>THE PURCHASING DIVISION IS SOLICITING BIDS FOR A STATEWIDE CONTRACT TO PROVIDE WATER TREATMENT CHEMICALS FOR ALL STATE AGENCIES AND ALL POLITICAL SUBDIVISIONS.</p> <p>MANDATORY PRE-BID: SEPTEMBER 20, 2006, 11:00 AM LOCATION: 2019 WASHINGTON ST., EAST BLDG. 15 CHARLESTON, WV 25305</p> <p>ATTACHMENTS: A. ITEM SPECIFICATIONS (3 PAGES) B. GENERAL SPECIFICATIONS (2 PAGES) C. PRICING PAGE(1 PAGE) D. AFFIDAVIT(1 PAGE)</p> <p>THE STATE OF WEST VIRGINIA RESERVES THE RIGHT TO MAKE MULTIPLE AWARDS SHOULD IT BE FINANCIALLY BENEFICIAL.</p> <p>PRICE INCREASES: THIS CONTRACT SHALL ALLOW SUBSTANTIATED PRICE INCREASES AT RENEWAL ONLY. SUPPORTING DOCUMENTATION SHALL CONSIST OF ACTUAL DOLLAR AMOUNT PASS-THROUGH INCREASES FROM THE MANUFACTURER. AT THAT TIME, IT WILL BE DECIDED TO ACCEPT THE INCREASE OR RE-BID THE CONTRACT.</p> <p>PRICES BID SHALL BE FIRM FROM THE DATE OF AWARD TO 365 DAYS THEREAFTER; AND BIDS SHALL INCLUDE ANY AND ALL SHIPPING COSTS.</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE

John M. Kelly

TELEPHONE

1-304-523-3484

DATE

9/28/06

ADDRESS CHANGES TO BE NOTED ABOVE



State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER

WATERT07

PAGE

1

ADDRESS CORRESPONDENCE TO ATTENTION OF:

BETTY FRANCISCO
304-558-0468

*709040458 800-999-3484
C I THORNBURG COMPANY INC
PO BOX 2163

HUNTINGTON WV 25722-2163

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SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE <i>John M. Kelly</i>				TELEPHONE 1-304-523-3484	DATE 9/28/06	
TITLE				ADDRESS CHANGES TO BE NOTED ABOVE		
FEIN 55-0421240-0001				PAGE ABOVE LABELED 'VENDOR'		

Material Safety Data Sheet



Dry Alum

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Dry Alum

OTHER/GENERIC NAMES: Aluminum Sulfate

PRODUCT USE: Water treatment. Food additive. Various industrial uses.

MANUFACTURER: General Chemical, LLC
90 East Halsey Road
Parsippany, NJ 07054

General Chemical Performance Products Ltd.
277 Lakeshore Road, East, Suite #206
Oakville, Ontario L6J 1H9

FOR MORE INFORMATION CALL: 800-631-8050
US ONLY Customer Service
(Monday-Friday, 9:00am-4:30pm)
CANADA ONLY 866-543-3896
(Monday-Friday, 9:00am-4:30pm) Customer Service

IN CASE OF EMERGENCY CALL: 800-424-9300
US ONLY (CHEMTREC)
(24 Hours/Day, 7 Days/Week)
CANADA ONLY 613-996-6666
(24 Hours/Day, 7 Days/Week) (CANUTEC)

2. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Aluminum sulfate	10043-01-3 (anhydrous)	57-60

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

OSHA Hazard Communication Standard: *This product is considered hazardous under the OSHA Hazard Communication Standard.*

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: White or creamy white granules or powder with no odor. Can irritate the skin and eyes. Not flammable, but may release toxic vapors if decomposed in a fire.

POTENTIAL HEALTH HAZARDS

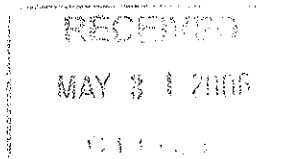
SKIN: May cause skin irritation, especially under repeated or prolonged contact, or when moisture is present.

EYES: May irritate or burn the eyes. Similarly for the aqueous solution.

INHALATION: Dust or mist inhalation at levels above the TLV may cause irritation to the respiratory tract.

INGESTION: May irritate the gastrointestinal tract.

DELAYED EFFECTS: None known.



MATERIAL SAFETY DATA SHEET

Dry Alum

Ingredients found on one of the three OSHA designated carcinogen lists are listed below.

INGREDIENT NAME

NTP STATUS

IARC STATUS

OSHA LIST

No ingredients listed in this section.

4. FIRST AID MEASURES

SKIN: Flush with plenty of soap water, removing contaminated clothing. If irritation develops, get medical attention.

EYES: Immediately flush with water, continuing for at least 15 minutes. If irritation persists, get medical attention.

INHALATION: Promptly remove to fresh air.

INGESTION: If conscious, immediately give large quantity of water or milk. If not already vomiting, induce vomiting by touching finger to back of throat. Get medical assistance.

ADVICE TO PHYSICIAN: Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:

Not flammable

FLASH POINT METHOD:

Not applicable

AUTOIGNITION TEMPERATURE:

Not applicable

UPPER FLAME LIMIT (volume % in air):

Not applicable

LOWER FLAME LIMIT (volume % in air):

Not applicable

FLAME PROPAGATION RATE (solids):

Not applicable

OSHA FLAMMABILITY CLASS:

Not applicable

EXTINGUISHING MEDIA:

Foam, dry chemical, carbon dioxide, water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (See section 8 for recommended personal protective equipment.) Shovel up dry chemical and place in empty container and cover. Spray residue with plenty of water. Neutralize any further residue with alkali such as soda ash, lime or limestone. Adequate ventilation is required if soda ash or limestone is used, because of the consequent release of carbon dioxide gas. Collect liquid and/or residue and dispose of in accordance with applicable regulations.



MATERIAL SAFETY DATA SHEET

Dry Alum

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (See section 8 for recommended personal protective equipment.)

Keep container tightly closed when not in use. Avoid contact with skin, eyes and on clothing. Do not breathe product dusts or mists.

STORAGE RECOMMENDATIONS:

Keep storage container tightly closed. Store in cool, dry, well-ventilated area or cabinet. Isolate from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use local exhaust to keep airborne concentrations below the permissible exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:	Wear rubber gloves and apron, long sleeved shirts, trousers and boots. If prolonged or repeated contact is anticipated, all clothing should be impervious to liquid.
EYE PROTECTION:	Wear chemical safety goggles. Do not wear contact lenses.
RESPIRATORY PROTECTION:	A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.
ADDITIONAL RECOMMENDATIONS:	To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product. Eyewash and safety showers are recommended.

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Aluminum sulfate (as Aluminum)	2 mg/m ³	2 mg/m ³	None

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

None

MATERIAL SAFETY DATA SHEET

Dry Alum

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	White or creamy white granules or powder.
PHYSICAL STATE:	Solid
MOLECULAR WEIGHT:	~594 for $\text{Al}_2(\text{SO}_4)_3 \cdot 14\text{H}_2\text{O}$
CHEMICAL FORMULA:	$\text{Al}_2(\text{SO}_4)_3 \cdot 14\text{H}_2\text{O}$
ODOR:	Odorless
SPECIFIC GRAVITY (water = 1.0):	1.61
SOLUBILITY IN WATER (weight %):	50% at 0°C
pH:	~3.5 (1% solution)
BOILING POINT:	Not applicable
MELTING POINT:	Not applicable
VAPOR PRESSURE:	Negligible
VAPOR DENSITY (air = 1.0):	Not applicable
EVAPORATION RATE:	Not applicable
% VOLATILES:	Negligible
FLASH POINT:	Not flammable

(Flash point method and additional flammability data are found in Section 5.)

COMPARED TO: Not applicable.

10. STABILITY AND REACTIVITY

NORMALLY STABLE (CONDITIONS TO AVOID):

Normally stable. Avoid temperatures above 760°C, as this will yield toxic and corrosive gases.

INCOMPATIBILITIES:

Alkalis and water reactive materials such as oleum: causes exothermic reactions.

HAZARDOUS DECOMPOSITION PRODUCTS:

At elevated temperatures, sulfur oxides may be formed. These are toxic and corrosive and are oxidizers. Sulfur trioxide is also a fire hazard. The loss of these gases leaves a caustic residue.

HAZARDOUS POLYMERIZATION:

Will not occur

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Aluminum sulfate:
LD₅₀ (oral, mouse): 6207 mg/kg
LD₅₀ (oral, rat): 1930 mg/kg

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Data not available

OTHER DATA:

None



MATERIAL SAFETY DATA SHEET

Dry Alum

12. ECOLOGICAL INFORMATION

Aluminum sulfate:

14 ppm/36 hr/ fundulus/fatal/fresh water.

240 ppm/48 hr/mosquito fish/TL_m/water type not specified.

TL_m Mosquito fish, 235 ppm, 96 hours

LC₅₀ Largemouth bass, 250 ppm, 96 hours

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? No

If yes, the RCRA ID number is: Not applicable

OTHER DISPOSAL CONSIDERATIONS:

If permitted by regulations, material may be dissolved in water and neutralized with alkali. Neutralized waste may have to be disposed of by an approved contractor.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS/PACKING GROUP: 9 (only if greater than 5000 lbs. in one package), PGIII

US DOT ID NUMBER: UN3077

PROPER SHIPPING NAME:

Environmentally hazardous substances, solid, n.o.s. (contains aluminum sulfate)

TDG HAZARD CLASS/PACKING GROUP:

9 (only if intended for disposal and 100 mg/kg or more), PGIII

TDG ID NUMBER: UN3077

PROPER SHIPPING NAME:

Environmentally hazardous substances, solid, n.o.s. (contains aluminum sulfate)

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: All ingredients listed on the TSCA Inventory

OTHER TSCA ISSUES: None

MATERIAL SAFETY DATA SHEET

Dry Alum

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME

Aluminum sulfate (anhydrous)

SARA/CERCLA RQ (lb)

5000

SARA EHS TPQ (lb)

None

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals" and may be subject to annual reporting requirements. CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME

No ingredients listed in this section.

COMMENT

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME

No ingredients listed in this section.

WEIGHT % COMMENT

ADDITIONAL REGULATORY INFORMATION:

None listed

WHMIS CLASSIFICATION (CANADA):

Class D2B.

Classified in accordance with WHMIS Controlled Product regulations.



FOREIGN CHEMICAL CONTROL INVENTORY STATUS:

All ingredients listed on European (EINECS), Canadian (DSL), Australian (AICS), Japan (MITI), Korean (ENCS), Philippines (PICCS) and China (IECSC).



MATERIAL SAFETY DATA SHEET

Dry Alum

16. OTHER INFORMATION

CURRENT ISSUE DATE: January 27, 2006
PREVIOUS ISSUE DATE: April 11, 2005

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
Changes to section 1, 2, 5, 7, 8, 14, 15, and 16.

OTHER INFORMATION: HMIS: 2-0-1
NFPA: 2-0-1

All information, statements, data, advice and/or recommendations, including, without limitation, those relating to storage, loading/unloading, piping and transportation (collectively referred to herein as "information") are believed to be accurate and reliable. However, no representation or warranty, express or implied, is made as to its completeness, accuracy, fitness or a particular purpose or any other matter, including, without limitation, that the practice or application of any such information is free of patent infringement or other intellectual property misappropriation. The Company providing this MSDS is not engaged in the business of providing technical, operational, engineering or safety information for a fee, and therefore, any such information provided herein has been furnished as an accommodation and without charge. All information provided herein is intended for use by persons having requisite knowledge, skill and experience in the chemical industry. The Company providing this MSDS shall not be responsible or liable for the use, application or implementation of the information, provided herein, and all such information is to be used at the risk, and in the sole judgement and discretion, of such persons, their employees, advisors and agents. This material safety data sheet (MSDS) is offered for your information, consideration and investigation as required by federal hazardous products act and related legislation.



CCH, tablets

MATERIAL SAFETY DATA

OCEAN NETWORK EMERGENCY PHONE 1-800-OLIN-911

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD. (REFER TO THE OSHA CLASSIFICATION IN SEC. I.) THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE. THE EXPOSURE TO THE COMMUNITY, IF ANY, IS QUITE DIFFERENT.

I. PRODUCT IDENTIFICATION

REVISION NO : 4
REVISION DATE : 1/21/93
PRODUCT CODE : CPE133269
FILE NUMBER : CPE00001.0034
PRODUCT NAME: CCH(R) BRAND TABLETS

SYNONYMS: Calcium Hypochlorite
CHEMICAL FAMILY: Hypochlorite
FORMULA: Not Applicable/Mixture
DESCRIPTION: Sanitizer and Oxidizer
OSHA HAZARD CLASSIFICATION: Oxidizer, irritant

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Calcium hypochlorite
CAS NUMBER: 7778-54-3
PERCENTAGE RANGE: 65-75%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Sodium chloride
CAS NUMBER: 7647-14-5
PERCENTAGE RANGE: 10-20%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Calcium chlorate
CAS NUMBER: 10137-74-3
PERCENTAGE RANGE: 0-5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established



MATERIAL SAFETY DATA

IV. PHYSICAL DATA

APPEARANCE: White, free flowing granules or tablet-form product
FREEZING POINT: Not Applicable
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: 177 Deg.C (350 Deg.F)
SPECIFIC GRAVITY: Not Applicable
pH @ 25 DEG.C: 10.5-11.5 (1% soln.)
SOLUBILITY IN WATER: Approximately 18% @ 25 Deg.C. (Product contains calcium hydroxide and calcium carbonate which will leave a residue.)
BULK DENSITY: 0.8 g/cc, loose (granules), 1.9 g/cc (tablets)
VAPOR PRESSURE @ 25 DEG.C: Not Applicable
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
VAPOR DENSITY: Not Applicable
MOLECULAR WEIGHT: 143 (Active ingredient)
PRODUCT IS: Not cryogenic and not a compressed gas
ODOR: Chlorine-like
COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Applicable

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA approved chlorine cartridge with dust/mist prefilter.

VENTILATION: Use local exhaust ventilation to minimize dust levels and chlorine gas.

SKIN AND EYE PROTECTIVE EQUIPMENT: Wear gloves, boots, chemical goggles, neoprene apron or suit to avoid skin and eye contact.

EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):

RESPIRATOR TYPE:	NIOSH/MSHA approved chlorine cartridge full face piece respirator with dust/mist prefilter
GLOVE TYPE:	Neoprene or PVC
BOOT TYPE:	Neoprene or PVC
APRON TYPE:	Neoprene or PVC
FACE SHIELD:	Not Normally Required
PROTECTIVE SUIT:	Not Normally Required

CAS or CHEMICAL NAME: Calcium chloride
CAS NUMBER: 10043-52-4
PERCENTAGE RANGE: 0-5%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Calcium hydroxide
CAS NUMBER: 1305-62-0
PERCENTAGE RANGE: 0-4%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA (PEL)		ACGIH (TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		5		5
CEILING:	None		None	
STEL:	None		None	

CAS or CHEMICAL NAME: Calcium carbonate
CAS NUMBER: 471-34-1
PERCENTAGE RANGE: 0-4%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

	OSHA (PEL)		ACGIH (TLV)	
	ppm	mg/cubic-meter	ppm	mg/cubic-meter
TWA:		15 (Total dust) 5 (Respirable fraction)		10
CEILING:	None		None	
STEL:	None		None	

CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 0-5.5%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH EYES, SKIN OR CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS: Keep tightly sealed. Store in a clean, dry well-ventilated area.

DO NOT STORE AT TEMPERATURES ABOVE: 52 Deg.C (125 Deg.F)

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Approximately 2 years at temperatures above 52 Deg.C (125 Deg.F) and low humidity.

INCOMPATIBLE MATERIALS FOR PACKAGING: Containers must be clean and free of organic residues.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Acids, other oxidizers, organic materials, all corrosive liquids.



MATERIAL SAFETY DATA

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: Remove victim to fresh air. Support respiration if needed. Call a physician.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IF INHALED OR INGESTED. HARMFUL IF EXPOSED TO SKIN OR EYES.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Approximately 1.7 mg/cubic-meter (0.3 ppm) based on odor of chlorine.

IRRITATION THRESHOLD: There is no data for irritation threshold.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The product has the potential to be immediately dangerous to life or health.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION:

Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage. Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE: No
COMBUSTIBLE: No
PYROPHORIC: No
FLASH POINT: Not Applicable
AUTOIGNITION TEMPERATURE: Not Applicable
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS:

Health: 2
Flammability: 0
Reactivity: 2
Special Hazard Warning: OXIDIZER

HMIS RATINGS:

Health: 2
Flammability: 0
Reactivity: 2

EXTINGUISHING MEDIA: Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. Also see Section XI.

OTHER: Do not use dry extinguishers containing ammonium compounds

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:

TEMPERATURES ABOVE: 177 Deg.C (350 Deg.F)

MECHANICAL SHOCK OR IMPACT: No

ELECTRICAL (STATIC) DISCHARGE: No

HAZARDOUS POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: Acids, organics, nitrogen containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphates), corrosive, flammable or combustible materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas

OTHER CONDITIONS TO AVOID: High temperatures > 125 Deg.F, high humidity

SUMMARY OF REACTIVITY:

OXIDIZER: Yes
PYROPHORIC: No
ORGANIC PEROXIDE: No
WATER REACTIVE: No

OTHER: Olin calcium hypochlorite products meet the specifications of ASTM method E-487-74 as set forth in 49 C. F. R. Sec. 173.21, Title 49-Code of Federal Regs. (DOT Regs.).



MATERIAL SAFETY DATA

degree of cellular toxicity. The concentration which produces mutations in these in vitro assays is significantly greater than the concentrations used for disinfection. Based on high cellular toxicity in in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172:
CALCIUM HYPOCHLORITE MIXTURE, DRY OXIDIZER, UN 1748

REPORTABLE QUANTITY: 10 lbs. (Per 49 CFR 172.101, Appendix)

The material described above is subject to the U.S. DOT HAZARDOUS MATERIALS REGULATIONS via the modes and packaging quantities indicated below with the letter "x":

MODE	PACKAGING QUANTITIES	
<input checked="" type="checkbox"/> Rail	<input checked="" type="checkbox"/> Bulk	<input checked="" type="checkbox"/> Non-Bulk
<input checked="" type="checkbox"/> Motor	<input checked="" type="checkbox"/> Bulk	<input checked="" type="checkbox"/> Non-Bulk
<input checked="" type="checkbox"/> Water	<input checked="" type="checkbox"/> Bulk	<input checked="" type="checkbox"/> Non-Bulk
<input checked="" type="checkbox"/> Air	<input checked="" type="checkbox"/> Bulk	<input checked="" type="checkbox"/> Non-Bulk

The applicable packaging sections in 49 CFR are 173.153 and 173.217.

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: 10 lbs. as calcium hypochlorite per 40 CFR 302.4

SPILL MITIGATION PROCEDURES:

Hazardous concentrations in air may be found in local spill area and immediately downwind. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. All water utilized to assist in fume suppression, decontamination or fire suppression may be contaminated and must be contained before disposal.

EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage. SKIN: Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate. Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INGESTION

Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration. There are no known or reported effects from chronic exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma, respiratory and cardiovascular disease

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY

None known or reported

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

Inhalation LC 50: Approximately 1700 mg/cubic-meter for 1 hour in the rat based on acute toxicity for chlorine

Oral LD 50: 850 mg/kg (rat)

Dermal LD 50: > 2 g/kg (rabbit)

Aquatic LC 50: 0.088 mg/l (bluegill) Causes burns to eyes and skin

CHRONIC TOXICITY:

There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:

There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

MUTAGENICITY:

Calcium hypochlorite has been reported to produce mutagenic activity in two in vitro assays. It has, however, been shown to lack the capability to produce mutations in animals based on results from the micronucleus assay. In vitro assays frequently are inappropriate to judge the mutagenic potential of bactericidal chemicals due to a high



MATERIAL SAFETY DATA

NSF LIMITS: NSF Maximum Drinking Water Use Concentration - 20 mg/l
as calcium hypochlorite

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:

Immediate (Acute)

PHYSICAL:

Fire and Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREME HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

None Established

XIV. ADDITIONAL INFORMATION

REGULATED UNDER FIFRA, USDA & FDA

MSDS REVISION STATUS: NSF limits added

XV. MAJOR REFERENCES

1. ACGIH Guide to Protective Clothing. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1987.
2. ANSI Z88.2. Recommended Practice for Respiratory Protection. American National Standards Institute, New York, NY.
3. Baker, C. J., The Fire Fighter's Handbook of Hazardous Materials, 4th Ed., Indiana: Maltese Enterprises, Inc., 1984.
4. Bretherick, L., Handbook of Reactive Chemical Hazards, 3rd Ed., Boston, MA: Butterworths, 1985.
5. Cassarett, L. and J. Doull, Eds., Toxicology: The Basic Science of Poisons, 3rd Ed., New York: Macmillan Publishing Co., Inc. 1986.
6. CERIS (Chemical Emergency Response Information System) On Line Database. Association of American Railroads.
7. Chemical Degradation and Permeation Database and Selection Guide for Resistant Protective Materials. Austin, TX.
8. Clayton, G. and F. Clayton, Eds., Patty's Industrial Hygiene and Toxicology, Vol. 2A-C 3rd Ed., New York: John Wiley & Sons, 1981-1982.

WATER RELEASE: This material is heavier than water. This material is soluble in water. Monitor all exit water for available chlorine and pH. Advise local authorities of any contaminated water release.

LAND SPILL: Containerize all virgin material in a clean dry container using only clean dedicated equipment to clean material up. Containerize all contaminated material in a clean dry container and remove to a well ventilated area being sure to not seal tightly. Contaminated spill material may become a hazardous waste.

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

This material may be neutralized for disposal; you are requested to contact OCEAN at 800-OLIN-911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

For a spill of this material no extra protection beyond that listed in Section V is required.

In a fire involving this material a self contained breathing apparatus (SCBA) is required as well as standard fire protective clothing.

XII. WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.

If this product becomes a hazardous waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous solid waste, it must be disposed of in accordance with local, state, and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by treatment.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:

This substance is listed on the Toxic Substances Control Act inventory.



MATERIAL SAFETY DATA

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

OLIN MSDS CONTROL GROUP
Olin Corporation
120 Long Ridge Road
Stamford, CT 06904

Phone Number: (203) 356-3449

OLIN CORPORATION SUBSIDIARIES AND AFFILIATED ENTITIES: ASAHI-OLIN LTD., BRIDGEPORT BRASS CORPORATION, INDY ELECTRONICS, INC., OLIN CHLORATE CORPORATION, OLIN FABRICATED METAL PRODUCTS INC., OLIN HUNT SPECIALTY PRODUCTS INC., OLIN ELECTRONICS TECHNOLOGY, OLIN MESA CORP., OLIN SPECIALTY METALS CORPORATION, PACIFIC ELECTRO DYNAMICS, INC., PHYSICS INTERNATIONAL COMPANY, ROCKET RESEARCH COMPANY, OCG MICROELECTRONIC MATERIALS, INC.

9. Code of Federal Regulations, Titles 21, 29, 40 and 49. Washington, DC: U.S. Government Printing Office.
10. Emergency Response Guide (D.O.T.). Washington, DC: U.S. Government Printing Office, 1987.
11. Fire Protection Guide on Hazardous Materials, 9th Ed., National Fire Protection Association, Batterymarch Park, Quincy, MA, 1986.
12. Gosselin, R., et al., Gosselin-Clinical Toxicology of Commercial Products, 5th Ed., Baltimore: Williams and Wilkins, 1984.
13. Hazardline, Occupational Health Services Inc., New York, NY.
14. IARC Monogram on the Evaluation of Carcinogenic Risk of Chemicals to Man., Geneva: World Health Organization, International Agency for Research on Cancer.
15. Lenga, R., The Sigma-Aldrich Library of Chemical Safety Data, 1st Ed., Milwaukee, WI: Sigma-Aldrich Corporation, 1985.
16. Lewis, R. and D. Sweet, Eds., Registry of Toxic Effects of Chemical Substances, 1985-1986, Washington, DC: U.S. Government Printing Office, 1987.
17. Medline, U.S. National Library of Medicine, Bethesda, MD.
18. NIOSH Pocket Guide to Chemical Hazards. Washington, DC: U.S. Government Printing Office, 1985.
19. Olin Respiratory Protection Manual.
20. Sax, N. Irving, Dangerous Properties of Hazardous Materials 6th Ed., New York: Van Nostrand Reinhold Company, 1984.
21. Threshold Limit Values and Biological Exposure Indices for 1987-88. Cincinnati, OH: American Conference of Government Industrial Hygienists, 1987.
22. Toxic Substances Control Act Inventory, Washington, DC: U.S. Government Printing Office, 1986.
23. Ishidate, M. et al. (1984). Primary mutagenicity screening of food additives currently used in Japan. *Fd. Chem. Toxicol.* 22:623-636.
24. Hayashi, M. et al. (1988). Micronucleus tests in mice on 39 food additives and eight miscellaneous chemicals. *Fd. Chem. Toxicol.* 26:487-500.



MATERIAL SAFETY DATA SHEET

The information in the Material Safety Data Sheet (MSDS) is organized into fifteen sections which are as follows:

- | | |
|---|---|
| I Product Identification | VIII First Aid |
| II Component Data | IX Toxicology and Health Information |
| III Precautions for Safe Handling and Storage | X Transportation Information |
| IV Physical Data | XI Spill and Leak Procedures |
| V Personal Protective Equipment Requirements | XII Waste Disposal |
| VI Fire and Explosion Hazard Information | XIII Additional Regulatory Status Information |
| VII Reactivity Information | XIV Additional Information |
| | XV Major References |

Section I — Product Identification

The product name and product code are used to identify the product. The file number and revision number identify the Material Safety Data Sheet (MSDS) itself. The chemical family or name and synonyms are given with formula where applicable. A brief use description of the product is presented along with the OSHA Hazard Classifications.

Section II — Component Data

All Olin products are evaluated to determine if they are hazardous. According to the Occupational Safety and Health Administration (OSHA), a hazardous chemical refers to any chemical that presents a physical hazard or a health hazard. A chemical may be a physical hazard if it is combustible, flammable, pyrophoric, chemically unstable, water reactive or explosive, a compressed gas, an organic peroxide or other oxidizer.

A chemical may present a health hazard if exposure could result in acute or chronic adverse health effects. This definition of a hazardous material has been adapted from the OSHA Hazardous Communication Standard (29 CFR 1910.1200). The reader should refer to the Standard for further details. If it has been determined that a product is not hazardous, then this is stated. If it has been determined that the product is a health hazard then all components that present a health hazard and that comprise 1% or more of the material are listed in this section. Also, any component that is a carcinogen is listed if it comprises 0.1% or more of the product. If it has been determined that the product is a physical hazard, then any component that presents a physical hazard is listed.

Normally, the chemical name and Chemical Abstracts Service (CAS) Number are used to identify a component. CAS numbers are assigned to chemicals and mixtures by the Chemical Abstracts Service (published by the American Chemical Society) as a specific identification. CAS numbers are not always available for mixture but are stated where available. Where the identity of a component is a trade secret, a descriptive name is used instead of the chemical name and a trade secret access number is given to that component. Disclosure of the identity of the trade secret component will be made to health professionals upon request, subject to the conditions specified in the Standard.

Exposure limits are given for each component where these have been established. Definitions of these exposure limits follow:

■ **ACGIH TLV (Threshold Limit Value):** a term used by American Conference of Governmental Industrial Hygienists to express the airborne concentration of a material to which nearly all persons can be exposed day after day without adverse effects. ACGIH expresses TLVs in three ways:

— **TLV-TWA:** = The allowable Time Weighted Average concentration for a normal 8-hour workday of a 40-hour work week.

— **TLV-STEL:** = The Short-Term Exposure Limit, or maximum concentration for a continuous 15-minute exposure period. A maximum of four such periods per day, with at least 60 minutes between exposure periods are allowed, and provided that the daily TLV is not exceeded.

— **TLV-C:** The Ceiling exposure limit; the concentration that should not be exceeded even instantaneously.

■ **SKIN:** A notation used to indicate that the stated substance may be absorbed by the skin, mucous membranes and eyes, either by air or direct contact, and that this additional exposure must be considered part of the total exposure to avoid exceeding TLV for that substance.

The value quoted is the TWA unless another category is stated.

■ **OSHA PEL (Permissible Exposure Limits):** an exposure limit established by the Occupational Safety and Health Administration. May be a time weighted average (TWA) limit or ceiling (C) exposure limit. A skin notation has the same meaning as for the TLV.

Section III — Precautions for Safe Handling and Storage

This section provides vital information for handling and storing a product. It is important that all recommendations be followed.

Section IV — Physical Data

Knowledge of the physical properties of a substance is necessary for all safety and industrial hygiene decisions. Definitions of terms that apply to the physical data presented in this section are given below:

■ **Freezing Point/Melting Point:** The temperature at which a substance changes state from liquid to solid or solid to liquid. For mixtures, a range may be given.

■ **Boiling Point:** The temperature at which a liquid changes to a vapor state at a given pressure. (Usually 760 mmHg, or one atmosphere.) For mixtures, the initial boiling point or the boiling range may be given. Flammable materials with low boiling points generally present special fire hazards.

■ **Decomposition Temp:** The temperature at which a substance will break down, or decompose, into smaller fragments.

■ **Specific Gravity:** The weight of a material compared to

the weight of an equal volume of water; an expression of the density (or heaviness) of the material. Example: if a volume of material weighs 8 pounds, and an equal volume of water weighs 10 pounds, the material has a specific gravity of 0.8:

$$\frac{8 \text{ lbs}}{10 \text{ lbs.}} = 0.8$$

Insoluble materials with a specific gravity of less than 1.0 may float in (or on) water. Insoluble materials with a specific gravity greater than 1.0 may sink in water. Most insoluble flammable liquids having a specific gravity of less than 1.0 will float on water, an important consideration for fire suppression.

■ **Bulk Density:** Weight of material per unit volume.

■ **pH:** A value presenting the acidity or alkalinity of an aqueous solution.

1 7 14
Acidic Neutral Alkaline

■ **Vapor Pressure:** The pressure (usually expressed in millimeters of mercury) characteristic at any given temperature of a vapor in equilibrium with its liquid or solid form.

■ **Solubility in Water:** A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information may be useful in determining spill cleanup methods and fire-extinguisher agents.

■ **Volatiles, Percent by Volume:** The percentage of a liquid or solid (by volume) that will evaporate at an ambient temperature of 70°F (unless some other temperature is stated).

■ **Evaporation Rate:** The rate at which a particular material will vaporize (evaporate) when compared to the rate of vaporization of a known material. The evaporation rate can be useful in evaluating the health and fire hazards of a material. The known material is usually either normal butyl acetate or water, with a vaporization rate designated as 1.0.

■ **Vapor Density (Air = 1):** A relative comparison of the density of the vapor compared to the density of air (Air = 1). If the vapor density is greater than 1, then the vapor is heavier than air.

■ **Molecular Weight:** The molecular weight of a chemical is the sum of the atomic weights of the atoms making up one molecule of the chemical.

■ **Coefficient of Oil/Water Distribution:** If a substance which is soluble both in oil and in water is added to a two-phase oil/water system, then the ratio of the concentration of that substance in oil to its concentration in water is called the Coefficient of Oil/Water distribution.

Section V — Personal Protective Equipment Requirements

The proper use of personal protective equipment is of the utmost importance, and the guidelines presented in this section must be closely followed. Descriptions of specific equipment (goggles, gloves, respiratory, etc.) required for routine use are given. Use of additional protective equipment, as required for fire-fighting and for spill and leak clean-up, is outlined in Section XI.

Use of some products may require specific ventilation requirements. The following definitions apply to ventilation systems:

■ **General Exhaust:** A system for exhausting air containing contaminants from a general work area. General exhaust may be referred to as dilution ventilation.

■ **Local Exhaust:** A system for capturing and exhausting contaminants from the air at the point where the contaminants are produced (welding, grinding, sanding, other processes or operations).

Section VI — Fire and Explosion Hazard Information

The recommended extinguishing media to be used in the event of a fire are given, together with any unusual fire and explosion hazards.

The following definitions are applicable to this section:

■ **Pyrophoric:** A substance that burns spontaneously in air at a temperature of 130°F or below.

■ **Flammable:** A flammable liquid is defined by NFPA and DOT as a liquid with a flash point below 100°F (37.8°C). The OSHA definition is substantially the same. Solids, other than explosives that will ignite readily or are liable to cause fires under ordinary conditions of transportation through friction or retained heat from manufacturing or processing, and which burn so vigorously and persistently as to create a serious transportation hazard, are classified by DOT as "flammable solids."

■ **Combustible:** A term used by NFPA, DOT and OSHA to classify liquids on the basis of a flash point range of 100°F to below 200°F.

■ **Flash Point:** The temperature at which a liquid will give off enough flammable vapor to ignite in the presence of an ignition source.

There are several flash point test methods. Because flash points may vary for the same material depending on the method used, the test method is indicated when the flash point is given. The methods most frequently quoted are:

PMCC: Pensky-Martens Closed Cup — ASTM D93
SETA: Setaflash Closed Cup — ASTM D3278
TCC: Tag (Tagliabue) Closed Cup — ASTM D56

Details of these methods can be found in Section V of the Annual Book of ASTM Standards.

■ **Autoignition Temperature:** The lowest temperature at which a liquid will give off enough flammable vapors and heat energy to ignite spontaneously and maintain combustion.

■ **UEL and LEL:** Upper Explosive Limit and Lower Explosive Limit are the highest concentration and lowest concentration respectively that will produce a flash of fire when an ignition source is present. At higher concentrations than the UEL, the mixture is too "rich" to burn. At concentrations lower than the LEL, the mixture is too "lean" to burn.

■ **NFPA Ratings:** The National Fire Protection Association Standard System for the Identification of the Fire Hazards of Materials — NFPA No. 704.

The NFPA ratings provide a general idea both of the hazards and of the degree of the hazards associated with a material relative to fire protection and control. The Standard addresses the hazards under the three categories of "Health," "Flammability" and "Reactivity" and assigns numeric ratings using a scale of 0 to 4 with 0 indicating no

particular hazard, and 4 the most hazardous. It should be noted that health hazard ratings refer specifically to short-term exposure under fire conditions. The Standard also makes provision for special hazard warnings, such as water reactivity. For further details see 'Fire Protection Guide on Hazardous Materials' — National Fire Protection Association, Quincy, MA.

- **HMIS Ratings:** The Hazard Materials Identification System of the National Paint and Coatings Association.

The system is similar to the NFPA Standard in utilizing a 0-4 scale, rating the degree of hazard under the same three categories of health, flammability and reactivity, with 0 being the least hazardous and 4 the most. It should be noted that unlike NFPA ratings, HMIS ratings are not intended for emergency situations. The flammability and reactivity ratings will, however, usually be the same as the NFPA ratings. The health hazard rating is based on the acute toxicity of the chemical. For further information on these ratings, see 'HMIS Rating Manual' — National Paint and Coatings Association, Washington, DC.

Section VII — Reactivity Information

A substance is said to be reactive if it readily enters into chemical reactions and undergoes chemical change. For MSDS purposes the reactions can be grouped into three broad categories:

- (a) **Decomposition:** The chemical breakdown of a material into parts or simpler compounds.
- (b) **Polymerization:** A chemical reaction in which small molecules combine to form larger molecules.
- (c) **Reactions with other chemicals:** Any other chemical reaction.

- (a) **Decomposition — stable/unstable.**

A substance is stable if it is resistant to decomposition or possesses the ability to remain unchanged. For MSDS purposes, a material is stable if it remains in the same form under expected and reasonable conditions of use. A substance is considered unstable if it tends to suffer decomposition under these conditions. Some materials may become unstable at higher temperatures. Whenever relevant, the temperature at which a material can be said to be unstable is stated. Other conditions that may cause instability, such as shock from dropping or static electricity, are noted when applicable.

- (b) **Polymerization — Hazardous Polymerization.**

A polymerization reaction is hazardous when it takes place at a rate that releases large amounts of energy. If hazardous polymerization can occur with a given material, the MSDS usually will list conditions that could start the reaction. In addition, since the material usually contains a polymerization inhibitor, the expected time period before the inhibitor is used up is also given.

- (c) **Reactions with Other Chemicals — Incompatible Materials.**

Materials that could cause dangerous reactions from direct contact with another are described as incompatible. Common chemicals that react with the product are usually listed in the MSDS. Hazardous products of decomposition, including combustion products, are listed.

Section VIII — First Aid

First aid procedures are described for each of the normal routes of exposure. It is important that first aid be administered as soon as possible after exposure has occurred. If in any doubt regarding the victim's condition, a physician should be called. In case of emergency call Olin's OCEAN Network (1-800-OLIN-911). OCEAN, which stands for Olin Corporation Emergency Action Network, is accessible 24 hours a day.

Section IX — Toxicology and Health Information

The consequences of exposure, if any, by inhalation, skin or eye contact, or ingestion are outlined in this section. The signs, symptoms and effects that the exposure could produce are described so that any exposure would be recognized as quickly as possible and the appropriate action taken. The organs that are more susceptible to attack are referred to as target organs. The effects and damage that exposure could produce on these organs are given together with the symptoms. Some of the terms used that may be less familiar or which may have a specific inference in MSDSs are defined below:

- **Acute Effect:** An adverse effect on a human or animal body resulting from a single exposure with symptoms developing almost immediately or shortly after exposure. The effect is usually of short duration.
- **Chronic Effect:** An adverse effect on a human or animal body resulting from repeated low level exposure, with symptoms that develop slowly over a long period of time or that recur frequently.
- **Corrosive:** A liquid or solid that causes visible destruction or irreversible alterations in human skin tissue.
- **Irritation:** An inflammatory response or reaction of the eye, skin or respiratory system.
- **Allergic Sensitization:** A process whereby on first exposure a substance causes little or no reaction in humans or test animals, but which on repeated exposure may cause a marked response not necessarily limited to the contact site. Skin sensitization is the most common form of sensitization in the industrial setting, although respiratory sensitization is also known to occur.
- **Teratogen:** A substance or agent to which exposure of a pregnant female can result in malformations to the skeleton and or soft tissue of the fetus.
- **Mutagen:** A substance or agent capable of altering the genetic material in a living organism.
- **Carcinogen:** A substance or agent capable of causing or producing cancer in humans or animals. Authorities/organizations that have evaluated whether or not a substance is a carcinogen are the International Agency for Research on Cancer (IARC), the U.S. National Toxicology Program (NTP) and OSHA.

To evaluate the potential human effects from exposure to hazardous chemicals, studies in laboratory animals are performed. The terms most commonly used to define the results of the studies are as follows:

- **LD₅₀ (Lethal Dose Fifty)** — The dose of a substance expected to cause the death of 50% of an experimental

animal population. This dose may be from oral, dermal or other routes of exposure. The units given for the LD₅₀ are usually milligrams per kilogram body weight of the tested animal (mg/kg).

- **LC₅₀ (Lethal Concentration Fifty)** — A calculated concentration of a substance in air, exposure to which for a specified length of time is expected to cause the death of 50% of a laboratory animal population. This concentration is usually in units of milligrams per cubic meter of air (mg/m³) or milligrams per liter of air (mg/l) and is given for some time period (usually one or four hours).

Other terms occasionally used are:

- **LD₁₀ (Lethal Dose Low)** — The lowest dose of a substance introduced by any route other than inhalation reported to have caused death in humans or animals.
- **LC₁₀ (Lethal Concentration Low)** — The lowest concentration of a substance in air that has been reported to have caused death in humans or animals.
- **TD₁₀ (Toxic Dose Low)** — The lowest dose of a substance to which humans or animals have been exposed and reported to produce a toxic effect other than cancer.

Based on these values, an estimate of human health effects potential is obtained.

Section X — Transportation Information

In the event the material is regulated as hazardous by the Department of Transportation (DOT), the Hazardous Materials Regulations as described in the Code of Federal Regulations, 49 Chapter 1 subchapter C are outlined in this section. In the event of an emergency, CHEMTREC (Chemical Transportation Emergency Center) should be contacted.

CHEMTREC is a national center established by the Chemical Manufacturer Association (CMA) in Washington, DC, to relay pertinent emergency information concerning specific chemicals on request. CHEMTREC has a 24-hour toll-free telephone number (1-800-424-9300), intended primarily for use by those who respond to chemical transportation emergencies.

Section XI — Spill and Leak Procedures

During cleanup of spills or leaks, it may be necessary to use extra personal protective equipment as compared to normal operations. Recommendations for equipment use additional to what is described in Section V are given.

Procedural recommendations relative to air, land and water are described.

Section XII — Waste Disposal

This section gives guidelines for disposing of a product if it becomes a waste. Recommendations are based upon the physical state and hazardous properties of the material. If the material is designated as hazardous by 40 CFR Part 261, it must be disposed of in a permitted hazardous waste treatment, storage, or disposal facility in accordance with local, state, and Federal regulations. If the material is non-hazardous, recommendations for disposal are made depending on the physical state and known characteristics of the material.

Section XIII — Additional Regulatory Information

This section contains information relevant to compliance with other Federal and/or state laws such as TSCA, FIFRA and FDA.

Section XIV — Additional Information

Any relevant additional information is given in this section.

Section XV — Major References

This section lists some of the major references that have been consulted in preparing the Material Safety Data Sheet.

 **olin CORPORATION**

120 LONG RIDGE ROAD, P.O. BOX 1355, STAMFORD, CT 06904-1355



PPG INDUSTRIES, INC.

ONE PPG PLACE

PITTSBURGH, PA 15272

*** CALCIUM HYPOCHLORITE GRANULAR

MSDS NUMBER: 0310
DATE: 05/20/96
EDITION: 005
TRADE NAME: CALCIUM HYPOCHLORITE GRANULAR
CHEMICAL NAME/SYNONYMS: CAL HYPO, PITTCOLOR, INDUCLOR, REPAK, ZAPPIT
CHEMICAL FAMILY: HYPOCHLORITE
FORMULA: $\text{CA}(\text{OCL})_2$
U.S. DOT SHIPPING NAME: CALCIUM HYPOCHLORITE, HYDRATED CAS NUMBER: 007778 54 3
U.S. DOT HAZARD CLASS: 5.1 (OXIDIZER)
SUBSIDIARY RISK: N/A
I.D. NUMBER: UN2880
PACKING GROUP: II
REPORTABLE QUANTITY: 10 LBS/4.5 KG
IMO DESCRIPTION: CALCIUM HYPOCHLORITE, HYDRATED, CLASS 5.1, UN2880,
PACKING GROUP II, RQ.

SECTION 1 * PHYSICAL DATA

BOILING POINT @ 760 MM HG: DECOMPOSES @ 180 C
VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY (H2O=1): N/A
PH OF SOLUTIONS: ALKALINE
FREEZING/MELTING POINT: N/A
SOLUBILITY (WEIGHT % IN WATER): 217 G/L @ 27 C
BULK DENSITY: 65-67 LBS/CU.FT.
VOLUME % VOLATILE: N/A
VAPOR PRESSURE: N/A
EVAPORATION RATE: N/A
HEAT OF SOLUTION: SLIGHTLY EXOTHERMIC
APPEARANCE AND ODOR:
WHITE POWDER WITH SLIGHT CHLORINE ODOR

SECTION 2 * INGREDIENTS

MATERIAL	PERCENT
CALCIUM HYPOCHLORITE (65% AVAILABLE CHLORINE)	65
INERT (INCLUDES 5.5 - 10% MOISTURE)	35

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**** CALCIUM HYPOCHLORITE GRANULAR**
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SECTION 3 * FIRE/EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED):

NONE

FLAMMABLE LIMITS IN AIR (% BY VOLUME)

LEL: N/A

UEL: N/A

EXTINGUISHING MEDIA:

WATER ONLY. SMOTHERING INEFFECTIVE-PRODUCT SUPPLIES OWN OXYGEN

SPECIAL FIRE FIGHTING PROCEDURES:

FIRE FIGHTERS MUST WEAR NIOSH/MSHA APPROVED, PRESSURE DEMAND SELF-CONTAINED
BREATHING APPARATUS WITH FULL FACE PIECE FOR POSSIBLE EXPOSURE TO
HAZARDOUS GASES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

DECOMPOSES AT 180 C RELEASING OXYGEN GAS; CONTAINERS MAY RUPTURE.

SECTION 4 * HEALTH HAZARD DATA

TOXICITY DATA:

LC50 INHALATION:

(RAT) NO MORTALITY @ 3.5 MG/L (1 HR)

LD50 DERMAL:

(RABBIT) >1000 MG/KG

SKIN/EYE IRRITATION:

SEE SECTION 5

LD50 INGESTION:

SEE SECTION 5

FISH,LC50 (LETHAL CONCENTRATION): TLM 96 HR.: 10-1 PPM

CLASSIFICATION:

INHALATION: IRRITATING

SKIN: SLIGHTLY TOXIC

SKIN/EYE: CORROSIVE

INGESTION: SLIGHTLY TOXIC

AQUATIC: HIGHLY TOXIC

SECTION 5 * EFFECTS OF OVEREXPOSURE

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IS CHEMICAL LISTED AS A CARCINOGEN OR POTENTIAL CARCINOGEN?

NTP - NO IARC - NO OSHA - NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

NONE KNOWN

PERMISSIBLE EXPOSURE LIMITS:

NONE ESTABLISHED BY OSHA OR ACGIH FOR THIS PRODUCT.

PPG INTERNAL PERMISSIBLE EXPOSURE LIMIT (IPEL): 1 MG/CU.M., 8-HOUR TWA
(TIME WEIGHTED AVERAGE); 2 MG/CU.M. STEL (SHORT-TERM EXPOSURE LIMIT).

ACUTE:

INHALATION: INHALATION OF CALCIUM HYPOCHLORITE DUST AND DEPOSITION OF PARTICLES IN THE RESPIRATORY TRACT CAN LEAD TO IRRITATION OF THE TISSUE AND CAUSE A VARIETY OF EFFECTS. THESE EFFECTS ARE DEPENDENT ON CONCENTRATION AND INCLUDE: UPPER RESPIRATORY TRACT IRRITATION, NASAL CONGESTION, COUGHING, SORE THROAT, LARYNGITIS AND SHORTNESS OF BREATH. IN OPERATIONS WHERE THERE ARE HIGH CONCENTRATIONS OF RESPIRABLE PARTICULATES, PULMONARY EDEMA (FLUID IN THE LUNG) MAY BE PRODUCED. IF NOT TREATED IMMEDIATELY, PULMONARY EDEMA CAN BE LIFE THREATENING. SINCE THIS PRODUCT IS IN GRANULAR FORM, PARTICLES OF RESPIRABLE SIZE ARE NOT GENERALLY ENCOUNTERED.

EYE/SKIN: CALCIUM HYPOCHLORITE IS CORROSIVE TO THE EYES. CONTACT OF CALCIUM HYPOCHLORITE DUST WITH THE EYES, EVEN A MINUTE AMOUNT FOR A SHORT DURATION, CAN CAUSE SEVERE IRRITATION AND EVEN BLINDNESS. CONTACT WITH THE SKIN MAY CAUSE SEVERE IRRITATION, BURNS, OR TISSUE DESTRUCTION.

IN STUDIES UTILIZING RABBITS, THE SKIN IRRITATION SCORE WAS 8/8 AND THE EYE IRRITATION SCORE WAS 98.5/110. THE CLASSIFICATION FOR BOTH OF THESE IS CORROSIVE.

INGESTION: CALCIUM HYPOCHLORITE, IF SWALLOWED, CAUSES SEVERE BURNS TO THE DIGESTIVE TRACT AND CAN BE FATAL.

CHRONIC:

GENOTOXICITY: CALCIUM HYPOCHLORITE PRODUCED POSITIVE RESPONSES IN IN-VITRO ASSAYS USING BACTERIAL SYSTEMS (THE AMES TEST) AND CHROMOSOMAL ABERRATIONS IN CHINESE HAMSTER FIBROBLASTS. IN A WHOLE ANIMAL EXPERIMENT (MOUSE MICRONUCLEUS TEST), EXPOSURES RANGING FROM 20 TO 160 MG/KG PRODUCED NO COMPOUND RELATED CHROMOSOMAL ABNORMALITIES.

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CARCINOGENESIS: ALTHOUGH NO STUDY HAS BEEN CONDUCTED WITH CALCIUM HYPOCHLORITE, THE CARCINOGENIC POTENTIAL OF SODIUM HYPOCHLORITE WAS STUDIED IN F344 RATS. AFTER 104 WEEKS OF DRINKING WATER CONTAINING UP TO 2000 PPM SODIUM HYPOCHLORITE, THERE WAS NO EVIDENCE THAT THIS CHEMICAL PRODUCED ANY CARCINOGENIC RESPONSE. IN ADDITION, THIS EXPOSURE DID NOT RESULT IN ANY ADVERSE EFFECTS IN BLOOD, CLINICAL CHEMISTRY, OR OTHER TARGET ORGANS.

ONE OF THE MAJOR USES OF CALCIUM HYPOCHLORITE IS AS A SOURCE OF CHLORINE FOR WATER SANITIZATION IN DRINKING AND RECREATIONAL WATER. STUDIES HAVE BEEN CONDUCTED TO DETERMINE THE LONG-TERM EFFECTS OF CHLORINATED DRINKING WATER. SEVEN GENERATIONS OF RATS WERE GIVEN 100 PPM CHLORINE IN THEIR DRINKING WATER. NO DIFFERENCE IN FERTILITY, GROWTH, BLOOD PARAMETERS, OR SPECIFIC ORGAN TOXICITY WAS OBSERVED BETWEEN CONTROL AND EXPOSED ANIMALS. TWO SEPARATE ANIMAL STUDIES CONDUCTED BY DIFFERENT GOVERNMENT AGENCIES DETERMINED THAT THE CHLORINATION OF MUNICIPAL DRINKING WATER DID NOT RESULT IN TOXICITY TO THE DEVELOPING MOUSE FETUS.

SAFE HANDLING OF THIS MATERIAL ON A LONG-TERM BASIS SHOULD EMPHASIZE MINIMIZING REPEATED ACUTE EXPOSURES.

* EMERGENCY AND FIRST AID PROCEDURES

INHALATION:

REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN.

EYE OR SKIN CONTACT:

FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. FOR EYE CONTACT, GET IMMEDIATE MEDICAL ATTENTION. IF SKIN IRRITATION OCCURS, GET MEDICAL ATTENTION.

INGESTION:

IF CONSCIOUS, DRINK LARGE QUANTITIES OF WATER AND ANY COMMON COOKING (VEGETABLE) OIL, IF AVAILABLE. DO NOT INDUCE VOMITING. TAKE IMMEDIATELY TO A HOSPITAL OR PHYSICIAN. IF UNCONSCIOUS, OR IN CONVULSIONS, TAKE IMMEDIATELY TO A HOSPITAL. DO NOT ATTEMPT TO INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIAN (INCLUDING ANTIDOTES):

TREAT SYMPTOMATICALLY.

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SECTION 6 * REACTIVITY DATA**STABILITY: UNSTABLE**

CONDITIONS TO AVOID: CONTAMINATION OR EXCESSIVE HEAT ABOVE 177 C

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE-WILL NOT POLYMERIZE

INCOMPATIBILITY (MATERIALS TO AVOID):

ACIDS, COMBUSTIBLE MATERIALS, ORGANICS, REDUCING AGENTS

HAZARDOUS DECOMPOSITION PRODUCTS:

ACIDS OR AMMONIA CONTAMINATION WILL RELEASE TOXIC GASES. EXCESSIVE HEAT WILL CAUSE DECOMPOSITION RESULTING IN THE RELEASE OF OXYGEN AND CHLORINE GAS.

SECTION 7 * SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED:**

NOTE: USE EXTREME CAUTION IN HANDLING SPILLED MATERIAL. CONTAMINATION WITH ORGANIC OR COMBUSTIBLE MATERIAL MAY CAUSE FIRE OR VIOLENT DECOMPOSITION. IF FIRE OR DECOMPOSITION OCCURS IN AREA OF SPILL, IMMEDIATELY DOUSE WITH PLENTY OF WATER. OTHERWISE, SWEEP UP ALL VISIBLE MATERIAL USING A CLEAN, DRY SHOVEL AND BROOM AND DISSOLVE MATERIAL IN WATER. DISPOSE OF WASTE MATERIAL AS OUTLINED BELOW.

WASTE DISPOSAL METHOD:

SPILLED MATERIAL THAT HAS BEEN SWEEPED UP AND DISSOLVED IN WATER SHOULD BE USED IMMEDIATELY IN THE NORMAL APPLICATION FOR WHICH CALCIUM HYPOCHLORITE IS BEING CONSUMED. IF THIS IS NOT POSSIBLE, CAREFULLY NEUTRALIZE DISSOLVED MATERIAL BY ADDING HYDROGEN PEROXIDE (ONE PINT OF 35% HYDROGEN PEROXIDE SOLUTION PER POUND OF CALCIUM HYPOCHLORITE TO BE NEUTRALIZED) THEN DILUTE THE NEUTRALIZED MATERIAL WITH PLENTY OF WATER AND FLUSH TO SEWER. NOTE: ONLY PROPERLY NEUTRALIZED MATERIAL SHOULD BE FLUSHED TO SEWER. UNNEUTRALIZED MATERIAL CAN CAUSE ENVIRONMENTAL DAMAGE TO RECEIVING WATER OR CAN INTERFERE WITH TREATMENT PLANT OPERATION. FOR ON-SITE NEUTRALIZATION, CAREFULLY AND SLOWLY POUR THE APPROPRIATE QUANTITY OF 35% HYDROGEN PEROXIDE SOLUTION OVER ALL SPILLED MATERIAL THEN FLUSH AREA WITH PLENTY OF WATER.

COMMENTS: CARE MUST BE TAKEN WHEN USING OR DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO PREVENT ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE CHEMICAL MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR ACT, THE CLEAN WATER ACT,

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THE RESOURCE CONSERVATION AND RECOVERY ACT, FIFRA, AS WELL AS ANY OTHER
RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING DISPOSAL.

SECTION 8 * SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

IF DUSTY CONDITIONS ARE ENCOUNTERED, USE NIOSH/MSHA APPROVED RESPIRATOR WITH ACID GAS CARTRIDGE AND DUST PREFILTER. THE RESPIRATOR USE LIMITATIONS SPECIFIED BY NIOSH/MSHA OR THE MANUFACTURER MUST BE OBSERVED. RESPIRATORY PROTECTION PROGRAMS MUST BE IN ACCORDANCE WITH 29 CFR 1910.134.

VENTILATION(TYPE):

NONE, UNLESS DUSTY CONDITIONS ARE ENCOUNTERED.

EYE PROTECTION:

CHEMICAL SAFETY GOGGLES

GLOVES:

NATURAL OR SYNTHETIC RUBBER

OTHER PROTECTIVE EQUIPMENT:

BOOTS, APRONS, OR CHEMICAL SUITS SHOULD BE USED WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE CLOTHING AND USE OF EQUIPMENT MUST BE IN ACCORDANCE WITH 29 CFR 1910.132 (GENERAL REQUIREMENTS), .133 (EYE AND FACE PROTECTION) AND .138 (HAND PROTECTION).

SECTION 9 * SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORING:

- * DO NOT GET IN EYES, ON SKIN OR ON CLOTHING.
- * KEEP IN ORIGINAL CONTAINER IN A COOL, DRY PLACE.
- * KEEP CONTAINER CLOSED WHEN NOT IN USE.
- * KEEP AWAY FROM HEAT SOURCES, SPARKS, OPEN FLAMES AND LIGHTED TOBACCO PRODUCTS.
- * USE ONLY A CLEAN, DRY SCOOP MADE OF METAL OR PLASTIC EACH TIME THIS PRODUCT IS TAKEN FROM CONTAINER.
- * DO NOT ADD THIS PRODUCT TO ANY DISPENSING DEVICE CONTAINING REMNANTS OF ANY OTHER PRODUCT. SUCH USE MAY CAUSE VIOLENT REACTION LEADING TO FIRE OR EXPLOSION.
- * ADD THIS PRODUCT ONLY TO WATER.
- * MAY CAUSE FIRE OR EXPLOSION IF MIXED WITH OTHER CHEMICALS.
- * FIRE MAY RESULT IF CONTAMINATED WITH ACIDS OR EASILY COMBUSTIBLE MATERIAL SUCH AS OIL, KEROSENE, GASOLINE, PAINT PRODUCTS AND MOST OTHER ORGANIC MATERIALS.

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- * WASH HANDS AFTER HANDLING.
- * DO NOT REUSE CONTAINER. RESIDUAL MATERIAL REMAINING IN EMPTY DRUM CAN REACT TO CAUSE FIRE. THOROUGHLY FLUSH EMPTY CONTAINER WITH WATER THEN DESTROY BY PLACING IN TRASH COLLECTION. DO NOT CONTAMINATE WATER, FOOD, OR FEED BY STORAGE OR DISPOSAL.

OTHER PRECAUTIONS:

- * KEEP OUT OF REACH OF CHILDREN.
- * STRONG OXIDIZER - FIRE MAY RESULT FROM CONTACT WITH HEAT, ACIDS, ORGANIC OR COMBUSTIBLE MATTER.
- * MAY BE FATAL OR HARMFUL IF SWALLOWED.
- * MAY CAUSE CHEMICAL BURNS.
- * IRRITATING TO NOSE AND THROAT - AVOID BREATHING DUST.

COMMENTS:

TSCA - CALCIUM HYPOCHLORITE IS ON THE TSCA INVENTORY UNDER CAS #7778-54-3.

SARA TITLE III - A) 311/312 CATEGORIES - ACUTE AND REACTIVITY, B) NOT LISTED IN SECTION 313, C) NOT LISTED AS AN "EXTREMELY HAZARDOUS SUBSTANCE" IN SECTION 302.

CERCLA - LISTED IN TABLE 302.4 OF 40 CFR PART 302 AS A HAZARDOUS SUBSTANCE WITH A REPORTABLE QUANTITY OF 10 POUNDS. RELEASES TO AIR, LAND OR WATER WHICH EXCEED THE RQ MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 800-424-8802.

RCRA - WASTE CALCIUM HYPOCHLORITE AND CONTAMINATED SOILS/MATERIALS FROM SPILL CLEANUP ARE D001 HAZARDOUS WASTE AS PER 40 CFR 261.21(A)(4) AND MUST BE DISPOSED OF ACCORDINGLY UNDER RCRA.

FIFRA - CALCIUM HYPOCHLORITE IS REGISTERED WITH EPA AS A PESTICIDE.

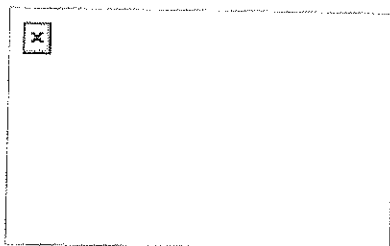
NSF - PPG CALCIUM HYPOCHLORITE IS CERTIFIED FOR MAXIMUM USE AT 46 MG/L UNDER ANSI/NSF STANDARD 60.

REVISIONS MADE TO 6/16/93, 4TH EDITION: DATE, EDITION, IMO DESCRIPTION UPDATED (PAGE 1), OTHER PROTECTIVE EQUIPMENT UPDATED (PAGE 6).

R. KENNETH LEE
MANAGER, PRODUCT SAFETY

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MATERIAL SAFETY DATA SHEET



Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is : 07/08/2004

PRODUCT IDENTIFICATION

PRODUCT NAME: CHLORINE LIQUEFIED GAS

MSDS#: OZ35410

DATE ISSUED: 06/10/2004

SUPERSEDES: 02/24/2004

ISSUED BY: 008730

MATERIAL SAFETY DATA SHEET

SUBSTANCE: CHLORINE, LIQUID (PESTICIDE)

SYNONYMS:
Chlorine

PRODUCT USE: water treatment chemical

REVISION DATE: Jun 10 2004

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
425-889-3400

2. COMPOSITION INFORMATION ON INGREDIENTS

COMPONENT: CHLORINE
CAS NUMBER: 7782-50-5
PERCENTAGE: 99.5-100

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1
HMIS RATINGS (SCALE 0-4): HEALTH=3 FLAMMABILITY=0 REACTIVITY=1

EMERGENCY OVERVIEW:

COLOR: Amber

PHYSICAL FORM: Liquefied gas

ODOR: Irritating odor, pungent odor

MAJOR HEALTH HAZARDS: MAY CAUSE BURNS TO THE RESPIRATORY TRACT, SKIN AND EYES. MAY CAUSE CHEMICAL PNEUMONIA. MAY CAUSE PERMANENT EYE DAMAGE. MAY BE LETHAL IN HIGH CONCENTRATIONS.

PHYSICAL HAZARDS: Strong oxidizer. Hazardous gas under pressure. May react explosively with organic materials.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation (possibly severe), chemical burns, pulmonary edema

LONG TERM EXPOSURE: to our knowledge, no effects are known

SKIN CONTACT:

SHORT TERM EXPOSURE: chemical burns, thermal burns

LONG TERM EXPOSURE: dermatitis

EYE CONTACT:

SHORT TERM EXPOSURE: chemical burns

LONG TERM EXPOSURE: visual disturbances

INGESTION:

SHORT TERM EXPOSURE: ingestion of harmful amounts is unlikely

LONG TERM EXPOSURE: ingestion of harmful amounts is unlikely

CARCINOGEN STATUS:

OSHA: No

NTP: No

IARC: No

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing and shoes before reuse. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: Not a likely route of exposure.

NOTE TO PHYSICIAN: Steriod therapy, if given early, has been reported effective in preventing pulmonary edema.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard. Oxidizer. May ignite or explode on contact with combustible materials. May react explosively with organic materials.

EXTINGUISHING MEDIA: Use extinguishing agents appropriate for surrounding fire.

FIRE FIGHTING: Keep unnecessary people away, isolate hazard area and deny entry. Consider evacuation of personnel located downwind if material is leaking. Move container from fire area if it can be done without risk. Cool non-leaking containers with water. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Fire fighting gear may not be protective due to the formation of acids with water.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive

SENSITIVITY TO STATIC DISCHARGE: Not sensitive

FLASH POINT: not flammable

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Remove sources of ignition. Stop leak if possible without personal risk. Consider evacuation of personnel located downwind if material is leaking. Do not apply water directly to the leak. Reacts with water to form corrosive, acidic solution (hydrochloric acid). Keep out of water supplies and sewers. Releases should be reported, if required, to appropriate agencies. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800) 424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE:

Store and handle in accordance with all current regulations and standards. Keep container tightly closed. Store in a well-ventilated area. Keep away from heat, sparks and flame. Keep separated from incompatible substances. Protect from physical damage.

HANDLING:

Avoid breathing gas. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

CHLORINE

1 ppm (3 mg/m3) OSHA ceiling

0.5 ppm (1.5 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)

1 ppm (3 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)

0.5 ppm ACGIH TWA

1 ppm ACGIH STEL

1 ppm (3 mg/m3) MEXICO TWA
3 ppm (9 mg/m3) MEXICO STEL

VENTILATION:

Use closed systems when possible. Provide local exhaust ventilation where gas may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION:

Wear chemical safety goggles with a faceshield to protect against skin contact when appropriate. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING:

Wear appropriate chemical resistant clothing.

GLOVES:

Wear chemical resistant, insulated gloves such as Perfect Fit NL-56(TM) or Best 6781R(TM).

PROTECTIVE MATERIAL TYPES:

Perfect Fit NL-56(TM), Best 6781R(TM), Best Nitri Solve 727(TM), Tychem 10000 (TM)

RESPIRATOR:

A NIOSH approved respirator with acid gas cartridge(s) may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits or when symptoms have been observed that are indicative of overexposure. A full facepiece air-purifying respirator may be used in concentrations up to the Immediately Dangerous to Life and Health (IDLH) Concentration of 10 ppm. Supplied air should be used when the level is expected to be above the IDLH concentration, or when there is a potential for uncontrolled release. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	liquid
COLOR:	amber
PHYSICAL FORM:	liquefied gas
ODOR:	irritating odor, pungent odor
MOLECULAR WEIGHT:	70.91
MOLECULAR FORMULA:	C12
BOILING POINT:	-29.27 F (-34.04 C)
FREEZING POINT:	-150 F (-101 C)
VAPOR PRESSURE:	5830 mmHg @ 25 C
VAPOR DENSITY (air=1):	2.4
SPECIFIC GRAVITY (water=1):	1.4 @ 15.6 C
DENSITY:	11.7 lbs/gal @ 15.6 C
WATER SOLUBILITY:	0.7% @ 20 C
PH:	Not applicable
VOLATILITY:	100%
ODOR THRESHOLD:	0.31 ppm approximate
EVAPORATION RATE:	Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available

10. STABILITY AND REACTIVITY**REACTIVITY:**

Stable at normal temperatures and pressure.

CONDITIONS TO AVOID:

Avoid contact with water. Reacts with water to form corrosive, acidic solution (hydrochloric acid). May react explosively with organic materials.

INCOMPATIBILITIES:

ammonia, combustible materials, metals, reducing agents, reacts in contact with aluminum to form hydrogen gas

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: None known.

POLYMERIZATION:

Will not polymerize.

11. TOXICOLOGICAL INFORMATION

CHLORINE, LIQUID (PESTICIDE):

TOXICITY DATA: Chlorine is a primary irritant on contact and may be corrosive to the eyes, skin, throat and mucous membranes. Exposure may result in severe or permanent eye injury. Overexposure may be fatal. Long term overexposure may produce upper airway changes leading to an increased prevalence of colds, shortness of breath and reactive airways dysfunction syndrome. The hazard at different concentrations is reported to be as follows: 0.2 - 0.5 ppm (No immediate toxic effects); 1-3 ppm (Definite odor with irritation of eye and nose); 5-8 ppm (Throat, eye and mucous membrane irritation); 30 ppm (Intense coughing fits); 34-51 ppm (Lethal in 1 to 1.5 hours exposure); 40-60 ppm (Exposure for 30-60 minutes may cause upper respiratory irritation, pulmonary edema, or bronchopneumonia); 100 ppm (May be lethal after 50 minutes exposure (estimated)); 430 ppm (Lowest concentration known to cause lethality after 30 minutes of exposure); 1000 ppm (May be fatal within a few deep breaths)

12. ECOLOGICAL INFORMATION

...

ECOTOXICITY DATA:

FISH TOXICITY: This material has exhibited moderate toxicity to aquatic organisms.

FATE AND TRANSPORT:

BIODEGRADATION: This material is an element and not subject to biodegradation.

PERSISTENCE: This material will exist in the disassociated state.

BIOCONCENTRATION: This material is believed not to bioaccumulate.

OTHER ECOLOGICAL INFORMATION: This material has exhibited toxicity to terrestrial organisms. Use or process if possible. Chlorine may be absorbed into an alkaline solution such as caustic soda, soda ash or hydrated lime. Dispose in accordance with all applicable regulations.

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Chlorine

ID NUMBER: UN 1017

HAZARD CLASS OR DIVISION: 2.3

LABELING REQUIREMENTS: 2.3; 8

ADDITIONAL SHIPPING DESCRIPTION: Toxic-Inhalation Hazard Zone B

MARINE POLLUTANT: CHLORINE
DOT HAZARDOUS SUBSTANCE(S):
Chlorine 10 lb(s) (4.54 kg(s))

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: Not a registered pesticide.
This material will not be shipped in Canada.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

CHLORINE: 10 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):

CHLORINE: 100 LBS TPQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: No

FIRE: Yes

REACTIVE: No

SUDDEN RELEASE: Yes

SARA TITLE III SECTION 313 (40 CFR 372.65):

This product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. Refer to Section 2.

CHLORINE

OSHA PROCESS SAFETY (29CFR1910.119):

CHLORINE: 1500 LBS TQ

STATE REGULATIONS:

California Proposition 65: This product may contain contaminants known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act.
For additional information, contact Customer Service.

NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW:

REPORTING REQUIREMENT:

CHLORINE 7782-50-5 99.5-100%

RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST:

CHLORINE 7782-50-5 99.5-100%

SPECIAL HEALTH HAZARD SUBSTANCE LIST:

Not regulated.

PENNSYLVANIA RIGHT TO KNOW:

REPORTING REQUIREMENT:

CHLORINE 7782-50-5 99.5-100%

HAZARDOUS SUBSTANCE LIST:

CHLORINE 7782-50-5 99.5-100%

ENVIRONMENTAL HAZARDOUS SUBSTANCE LIST:

CHLORINE 7782-50-5 99.5-100%

SPECIAL HAZARDOUS SUBSTANCE LIST:

Not regulated.

CANADIAN REGULATIONS:

CONTROLLED PRODUCTS REGULATIONS (CPR): This product has been classified in

accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS CLASSIFICATION: Not a registered pesticide.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): All the components of this substance are listed on or are exempt from the inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): Not a registered pesticide. This material will not be sold in Canada.

16. OTHER INFORMATION

For Additional Information:

Contact: MSDS Coordinator - Univar USA

During business hours, Pacific Time - (425) 889-3400

NOTICE

Univar USA expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar USA's control. Therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

END OF MSDS



Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is : 07/26/2004

PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM CARBONATE / SODA ASH
MSDS#: FZ000018
DATE ISSUED: 01/26/2004
SUPERSEDES: 09/10/1998
ISSUED BY: 008418

MATERIAL SAFETY DATA SHEET

Sodium Carbonate, Anhydrous

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the Canada's Workplace Hazardous Materials Information System (WHMIS) and, the EC Directive, 2001/58/EC.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Sodium Carbonate, Anhydrous
ALTERNATE PRODUCT NAME(S): Soda Ash, Sodium Carbonate Anhydrous

GENERAL USE:

Glass manufacture, detergent manufacture, sodium chemicals and carbonate chemicals manufacture, pulp and paper, brine treatment, water hardness removal, pH adjustment in water or waste water, flue gas desulfurization, coal treatment, ion exchange resin regeneration.

EMERGENCY TELEPHONE NUMBERS
(800) 424-9300 (CHEMTREC - U.S.)

Distributed by:
Univar USA Inc.

6100 Carillon Point
Kirkland, WA 98033
425-889-3400

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

White, odorless, granular solid.
Product is non-combustible.
Reacts with acids to release carbon dioxide gas and heat.
Irritating to the eyes and continuous contact may irritate the skin.
Not expected to be toxic to the environment, nor to aquatic organisms.

POTENTIAL HEALTH EFFECTS:

Direct contact with the product causes irritation of the eyes and continuous contact may cause skin irritation (red, dry, cracked skin). Excessive levels of airborne dust may irritate the mucous membranes and upper respiratory tract.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Sodium carbonate	497-19-8	99.8	207-838-8	Xi, R36

4. FIRST AID MEASURES

EYES:

Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist as necessary.

SKIN:

Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION:

Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION:

Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

NOTES TO MEDICAL DOCTOR:

While internal toxicity is low, irritant effects of high concentrations may produce corneal opacities, and vesicular skin reactions in humans with abraded skin only. Treatment is symptomatic and supportive.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:

Water, water fog, carbon dioxide (CO2), dry chemical

FIRE / EXPLOSION HAZARDS: Not applicable

FIRE FIGHTING PROCEDURES:

Wear full protective clothing and self-contained breathing apparatus.

FLAMMABLE LIMITS:

Not applicable

HAZARDOUS COMBUSTION PRODUCTS:
Fumes of sodium oxide.

SENSITIVITY TO IMPACT: None
SENSITIVITY TO STATIC DISCHARGE: None

6. ACCIDENTAL RELEASE MEASURES

COMMENTS:

PERSONAL PRECAUTIONS: Refer to Section 8 "Exposure Controls / Personal Protection".

CONTAINMENT:

Prevent large quantities of this product from contacting vegetation or waterways; large spills could kill vegetation and fish.

CLEAN-UP:

This product, if spilled, can be recovered and re-used if contamination does not present a problem. Vacuum or sweep up the material. If the spilled product is unusable due to contamination, consult state or federal environmental agencies for acceptable disposal procedures and locations. See Section 13 "Disposal Considerations".

NOTIFICATION REQUIREMENTS:

Federal regulations do not require notification for spills of this product. State and local regulations may contain different requirements; consult local authorities.

7. HANDLING AND STORAGE

HANDLING:

Use air conveying / mechanical systems for bulk transfer to storage. For manual handling o bulk transfer use mechanical ventilation to remove airborne dust from rail car, ship or truck. Use approved respiratory protection when ventilation systems are not available. Selection of respirators is based on the dust cloud generation. Keep material out of lakes, streams, ponds and sewer drains.

STORAGE:

Store in a cool dry area, away from acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Where possible, provide general mechanical and/or local exhaust ventilation to prevent release of airborne dust into the work environment.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE:

Appropriate eye and face protection equipment (ANSI Z87 approved) should be selected for the particular use intended for this material. Safety glasses with side shields are recommended.

RESPIRATORY:

Whenever dust in the worker's breathing zone cannot be controlled with ventilation or other engineering means, workers should wear respirators or dust masks approved by dust.

PROTECTIVE CLOTHING:

Dry product is generally non-irritating to intact skin. However, this product can be irritating where skin has been damaged and can create skin irritation after long exposures when moisture is present. Under such conditions, gloves and long-sleeved clothing are recommended to minimize skin contact.

COMMENTS:

ADDITIONAL EXPOSURE GUIDELINES:

Federal guidelines treat the ingredient(s) in this product as a nuisance dust, as no product-specific guidelines have been issued for exposure. As with all nuisance dusts, worker breathing zone concentrations should be measured by validated sampling and analytical methods. The following limits (OSHA and MSHA) apply to this material:

Particulates Not Otherwise Regulated:

OSHA (PEL / TWA): 15 mg/m³ (total dust); 5 mg/m³ (resp fraction)

MSHA (PEL / TWA): 10 mg/m³ (total dust)

The information noted above provides general guidance for handling this product. Specific work environments and material handling practices will dictate the selection and use of personal protection equipment (PPE).

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Odorless
APPEARANCE:	White, granular solid.
AUTOIGNITION TEMPERATURE:	Not applicable
BOILING POINT:	Decomposes
COEFFICIENT OF OIL / WATER:	Not applicable
DENSITY / WEIGHT PER VOLUME:	(g/ml) Dense Grades = 0.86- 1.12; Light Grades = 0.70 -0.90
EVAPORATION RATE:	Not applicable (Butyl Acetate = 1)
FLASH POINT:	Non-combustible
FREEZING POINT:	851 C (1564 F)
ODOR THRESHOLD:	Not applicable
OXIDIZING PROPERTIES:	Not applicable
PERCENT VOLATILE:	Not applicable
pH:	11.4 (1% solution)
SOLUBILITY IN WATER:	33.2 % maximum
SPECIFIC GRAVITY:	2.509 (water = 1)
VAPOR DENSITY:	Not Applicable
VAPOR PRESSURE:	Not applicable

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:

Contact with acids except under controlled conditions.

STABILITY:

Stable

POLYMERIZATION:

Will not occur

INCOMPATIBLE MATERIALS:

Reacts with acids with release of large volumes of carbon dioxide gas and heat.

HAZARDOUS DECOMPOSITION PRODUCTS:

Heated to decomposition, it emits fumes of sodium oxide.

COMMENTS:

Materials to Avoid:

Aluminum powder, acids, fluorine, molten lithium

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

Severe irritant (rabbit) (Toxicology 23:281 (1982))

SKIN EFFECTS:

Non-irritating to intact skin. Minor irritation may occur on abraded skin.
(Toxicol. Appl. Pharmacol. 31:481 (1975))

DERMAL LD50: No data available for the product.

ORAL LD50: 4,090 mg/kg (rat) (RTECS 1986)

INHALATION LC50: 2.3 mg/l (2 h) (rat) (Environ. Res. 31:138 (1983))

SENSITIZATION: 0.25% sodium carbonate: Non-sensitizing (human) (Toxicol.
Appl. Pharmacol. 31:481 (1975))

TARGET ORGANS: Eyes

ACUTE EFFECTS FROM OVEREXPOSURE:

May cause severe irritation of the eyes, including corneal opacities.
Dusts and mists may be irritating to the skin, mucous membranes and
upper respiratory tract. No significant acute toxicological effects
expected.

CHRONIC EFFECTS FROM OVEREXPOSURE:

No data available for the product.

CARCINOGENICITY:

NTP: Not listed

IARC: Not listed

OSHA: Not listed

OTHER: (ACGIH) Not listed

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

96-hour LC50 = 265 - 565 mg/L (daphnia magna) (low toxicity)

96-hour LC50 = 300 - 320 mg/L (bluegill sunfish) (low toxicity)

CHEMICAL FATE INFORMATION:

Biodegradability does not apply to inorganic substances.
No significant toxicity to aquatic organisms is expected.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:

When this product is discarded or disposed of, as purchased, it is neither
a characteristic nor a listed hazardous waste according to US Federal F CRA
regulations (40 CFR 261). As a non-hazardous waste the material may be
disposed of in a landfill in accordance with government regulations; check
local or state regulations for applicable requirements prior to disposal.
Any processing, usage, alteration, chemical additions to, or contamination
of, the product may alter the disposal requirements. Under Federal
regulations, it is the generator's responsibility to determine if a waste
is a hazardous waste.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)
PROPER SHIPPING NAME: Not regulated
PRIMARY HAZARD CLASS / DIVISION: Not applicable,
UN/NA NUMBER: None
LABEL(S): Not applicable
PLACARD(S): Not applicable
MARKING(S): Not applicable
ADDITIONAL INFORMATION: Hazardous Substance/RQ: Not applicable
49 STCC Number: Not applicable

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)
ADDITIONAL INFORMATION: Not regulated
ADR - EUROPEAN AGREEMENT CONCERNING THE
INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD
ADDITIONAL INFORMATION: Not regulated
INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) /
INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)
ADDITIONAL INFORMATION: Not regulated

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):
Not listed

SECTION 311 HAZARD CATEGORIES (40 CFR 370):
Immediate (Acute) Health Hazard

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):
The Threshold Planning Quantity (TPQ) for this product, if treated as a
mixture, is 10,000 lbs; however, this product contains the following
ingredients with a TPQ of less than 10,000 lbs.:
None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):
Not listed

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND
LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):
Not listed

TSCA (TOXIC SUBSTANCE CONTROL ACT)
TSCA INVENTORY STATUS (40 CFR 710):
Listed
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):
Waste Number: Refer to Section 13 "Disposal Considerations" for RCRA status.

CANADA
WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):
Product Identification Number: Not applicable
Hazard Classification / Division: Toxic, Class D, Div. 2, Subdiv. B
Ingredient Disclosure List: Listed

E NUMBERS:

E 500

EU EINECS NUMBERS:

011-005-00-2

INTERNATIONAL LISTINGS

Australia (AICS): Listed
Korea: KE-31380
Japan (ENCS): (1)-164
Philippines (PICCS): Listed
China: Listed

COMMENTS:

CLEAN WATER ACT (CWA) - SECTION 307 / 311

Not listed as a hazardous pollutant (40 CFR 116), nor as a toxic pollutant
(40 CFR 401.15)

CLEAN AIR ACT (CAA) - SECTION 112

Not regulated under the chemical accident prevention provisions (40 CFR 68)

16. OTHER INFORMATION

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

Sodium carbonate:

EC Symbols: Xi (Irritant)
EC Risk Phrases: R36 (Irritating to eyes.)
EC Safety Phrases: S2 (Keep out of the reach of children.)
S22 (Do not breathe dust.)
S26 (In case of contact with eyes, rinse immediately with plenty of
water and seek medical advice)

HMIS

Health 2
Flammability 0
Physical Hazard 0
Personal Protection (PPE) B
Protection = B (Safety glasses and gloves)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:

4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

NFPA

Health 2
Flammability 0
Reactivity 0
Special None
No special requirements

NFPA = National Fire Protection Association

Degree of Hazard Code:

4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

For Additional Information:

Contact: MSDS Coordinator - Univar USA

During business hours, Pacific Time - (425) 889-3400

NOTICE

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END OF MSDS

Subject: MSDS - #626461
From: "Deedee Hershey" <Deedee.Hershey@univarusa.com>
Date: Wed, 27 Sep 2006 11:25:36 -0700
To: "Mark Underwood" <mark.underwood@cithornburg.com>



Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date and Number for this MSDS is : 08/30/2004 - #004

PRODUCT NAME: SODIUM FLUORIDE
MSDS NUMBER: MZS3722
DATE ISSUED: 8/27/2004
SUPERSEDES: 1/23/2002
ISSUED BY: 008614

SODIUM FLUORIDE

1. PRODUCT IDENTIFICATION

SYNONYMS: FLORIDINE; SODIUM MONOFLUORIDE; DISODIUM DIFLUORIDE;
NATRIUM FLUORIDE; FLOROCID
CAS NO: 7681-49-4
MOLECULAR WEIGHT: 41.99
CHEMICAL FORMULA: NAF

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
425-889-3400

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO	PERCENT	HAZARDOUS
SODIUM FLUORIDE	7681-49-4	100%	YES

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION EFFECTS MAY BE DELAYED.

POTENTIAL HEALTH EFFECTS

IF INHALED OR SWALLOWED, THIS COMPOUND CAN CAUSE FLUORIDE POISONING. EARLY SYMPTOMS INCLUDE NAUSEA, VOMITING, DIARRHEA, AND WEAKNESS. LATER EFFECTS INCLUDE CENTRAL NERVOUS SYSTEM EFFECTS, CARDIOVASCULAR EFFECTS AND DEATH.

INHALATION:

CAUSES SEVERE IRRITATION TO THE RESPIRATORY TRACT, SYMPTOMS MAY INCLUDE COUGHING, SORE THROAT, AND LABORED BREATHING. MAY BE ABSORBED THROUGH INHALATION OF DUST; SYMPTOMS MAY PARALLEL THOSE FROM INGESTION EXPOSURE. IRRITATION EFFECTS MAY NOT APPEAR IMMEDIATELY.

INGESTION:

TOXIC! MAY CAUSE SALIVATION, NAUSEA, VOMITING, DIARRHEA, AND ABDOMINAL PAIN. SYMPTOMS OF WEAKNESS, TREMORS, SHALLOW RESPIRATION, CARDOPEDAL SPASM, CONVULSIONS, AND COMA MAY FOLLOW. MAY CAUSE BRAIN AND KIDNEY DAMAGE. AFFECTS HEART AND CIRCULATORY SYSTEM. DEATH MAY OCCUR FROM RESPIRATORY PARALYSIS. ESTIMATED LETHAL DOSE = 5-L0 GRAMS.

SKIN CONTACT:

CAUSES IRRITATION, WITH REDNESS AND PAIN. SOLUTIONS ARE CORROSIVE. EFFECTS MAY NOT APPEAR IMMEDIATELY.

EYE CONTACT:

EYE IRRITANT! MAY CAUSE IRRITATION AND SERIOUS EYE DAMAGE. EFFECTS MAY NOT IMMEDIATELY APPEAR.

CHRONIC EXPOSURE:

CHRONIC EXPOSURE MAY CAUSE MOTTILING OF TEETH AND BONE DAMAGE (OSTEOSCLEROSIS) AND FLUOROSIS. SYMPTOMS OF FLUOROSIS INCLUDE BRITTLE BONES, WEIGHT LOSS, ANEMIA, CALCIFIED LIGAMENTS, GENERAL ILL HEALTH AND JOINT STIFFNESS.

AGGRAVATION OF PRE-EXISTING CONDITIONS:

POPULATIONS THAT APPEAR TO BE AT INCREASED RISK FROM THE EFFECTS OF FLUORIDE ARE INDIVIDUALS THAT SUFFER FROM DIABETES INSIPIDUS OR SOME FORMS OF RENAL IMPAIRMENT.

4. FIRST AID MEASURES

FIRST AID PROCEDURES SHOULD BE PRE-PLANNED FOR FLUORIDE COMPOUND EMERGENCIES.

INHALATION:

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN IMMEDIATELY.

INGESTION:

ADMINISTER MILK, CHEWABLE CALCIUM CARBONATE TABLETS OR MILK OF MAGNESIA. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. CALL A PHYSICIAN IMMEDIATELY.

SKIN CONTACT:

WIPE OFF ANY EXCESS MATERIAL FROM SKIN AND THEN IMMEDIATELY FLUSH SKIN WITH LARGE AMOUNTS OF SOAPY WATER. REMOVE CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE RE-USE. APPLY BANDAGES SOAKED IN MAGNESIUM SULFATE. CALL A PHYSICIAN IMMEDIATELY.

EYE CONTACT:

IMMEDIATELY FLUSH EYES WITH GENTLE BUT LARGE STREAM OF WATER FOR AT LEAST 15 MINUTES, LIFTING LOWER AND UPPER EYELIDS OCCASIONALLY. CALL A PHYSICIAN IMMEDIATELY.

NOTE TO PHYSICIAN:
FOR LARGE EXPOSURES, SYSTEMIC EFFECTS (HYPOCALCEMIA AND HYPOMAGNESIA) MAY OCCUR.

=====

5. FIRE FIGHTING MEASURES

FIRE:
NOT CONSIDERED TO BE A FIRE HAZARD.

EXPLOSION:
NOT CONSIDERED TO BE AN EXPLOSION HAZARD.

FIRE EXTINGUISHING MEDIA:
USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE.

SPECIAL INFORMATION:
IN THE EVENT OF A FIRE, WEAR FULL PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN THE PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

=====

6. ACCIDENTAL RELEASE MEASURES

VENTILATE AREA OF LEAK OR SPILL. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AS SPECIFIED IN SECTION 8. SPILLS: PICK UP AND PLACE IN A SUITABLE CONTAINER FOR RECLAMATION OR DISPOSAL, USING A METHOD THAT DOES NOT GENERATE DUST. US REGULATIONS (CERCLA) REQUIRE REPORTING SPILLS AND RELEASES TO SOIL, WATER AND AIR IN EXCESS OF REPORTABLE QUANTITIES. THE TOLL FREE NUMBER FOR THE US COAST GUARD NATIONAL RESPONSE CENTER IS (800) 424-8802.

=====

7. HANDLING AND STORAGE

KEEP IN A TIGHTLY CLOSED CONTAINER, STORED IN A COOL, DRY, VENTILATED AREA. PROTECT AGAINST PHYSICAL DAMAGE. SEPARATE FROM ACIDS AND OXIDIZING MATERIALS. CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT RESIDUES (DUST, SOLIDS); OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR THE PRODUCT.

=====

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS:
-OSHA PERMISSIBLE EXPOSURE LIMIT (PEL):
2.5 MG(F)/M3 (TWA)

-ACGIH THRESHOLD LIMIT VALUE (TLV):
2.5 MG(F)/M3 (TWA)

VENTILATION SYSTEM:
A SYSTEM OF LOCAL AND/OR GENERAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE EXPOSURES BELOW THE AIRBORNE EXPOSURE LIMITS. LOCAL EXHAUST VENTILATION IS GENERALLY PREFERRED BECAUSE IT CAN CONTROL THE EMISSIONS OF THE CONTAMINANT AT ITS SOURCE, PREVENTING DISPERSION OF IT INTO THE GENERAL WORK AREA. PLEASE REFER TO THE ACGIH DOCUMENT, "INDUSTRIAL VENTILATION, A MANUAL OF RECOMMENDED PRACTICES", MOST RECENT EDITION, FOR DETAILS.

PERSONAL RESPIRATORS (NIOSH APPROVED):
IF THE EXPOSURE LIMIT IS EXCEEDED AND ENGINEERING CONTROLS ARE NOT FEASIBLE, A HALF FACEPIECE PARTICULATE RESPIRATOR (NIOSH TYPE N95 OR BETTER FILTERS) MAY BE WORN FOR UP TO TEN TIMES THE EXPOSURE LIMIT OR THE MAXIMUM

USE CONCENTRATION SPECIFIED BY THE APPROPRIATE REGULATORY AGENCY OR RESPIRATOR SUPPLIER, WHICHEVER IS LOWEST.. A FULL-FACE PIECE PARTICULATE RESPIRATOR (NIOSH TYPE N100 FILTERS) MAY BE WORN UP TO 50 TIMES THE EXPOSURE LIMIT, OR THE MAXIMUM USE CONCENTRATION SPECIFIED BY THE APPROPRIATE REGULATORY AGENCY, OR RESPIRATOR SUPPLIER, WHICHEVER IS LOWEST. IF OIL PARTICLES (E.G. LUBRICANTS, CUTTING FLUIDS, GLYCERINE, ETC.) ARE PRESENT, USE A NIOSH TYPE R OR P FILTER. FOR EMERGENCIES OR INSTANCES WHERE THE EXPOSURE LEVELS ARE NOT KNOWN, USE A FULL-FACEPIECE POSITIVE-PRESSURE, AIR-SUPPLIED RESPIRATOR. WARNING: AIR-PURIFYING RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERES.

SKIN PROTECTION:

WEAR IMPERVIOUS PROTECTIVE CLOTHING, INCLUDING BOOTS, GLOVES, LAB COAT, APRON OR COVERALLS, AS APPROPRIATE, TO PREVENT SKIN CONTACT.

EYE PROTECTION:

USE CHEMICAL SAFETY GOGGLES AND/OR FULL FACE SHIELD WHERE DUSTING OR SPLASHING OF SOLUTIONS IS POSSIBLE. MAINTAIN EYE WASH FOUNTAIN AND QUICK-DRENCH FACILITIES IN WORK AREA.

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:
WHITE CRYSTALS.

BOILING POINT:
1700C (3092F)

ODOR:
ODORLESS.

MELTING POINT:
993C (1819F)

SOLUBILITY:
4 G/100 ML WATER @ 15C (59F)

VAPOR DENSITY (AIR=1):
NO INFORMATION FOUND.

SPECIFIC GRAVITY:
2.78

VAPOR PRESSURE (MM HG):
1 @ 1077C (1971F)

PH:
NO INFORMATION FOUND.

EVAPORATION RATE (BUAC=1):
NO INFORMATION FOUND.

% VOLATILES BY VOLUME @ 21C (70F):
0

=====

10. STABILITY AND REACTIVITY

STABILITY:
STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE.

HAZARDOUS DECOMPOSITION PRODUCTS:
BURNING MAY PRODUCE HYDROGEN FLUORIDE VAPORS.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

INCOMPATIBILITIES:
REACTS WITH ACIDS TO FORM HYDROGEN FLUORIDE.

CONDITIONS TO AVOID:
NO INFORMATION FOUND.

=====

11. TOXICOLOGICAL INFORMATION

ORAL RAT LD50: 52 MG/KG; EYE RABBIT (STANDARD DRAIZE) 20MG/24-HR, MODERATE;
INVESTIGATED AS A TUMORIGEN, MUTAGEN, REPRODUCTIVE EFFECTOR

-----/CANCER LISTS/-----

INGREDIENT	---NTP CARCINOGEN---		IARC CATEGORY
	KNOWN	ANTICIPATED	

	NO	NO	NONE
SODIUM FLUORIDE (7681-49-4)			

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE:
NO INFORMATION FOUND.

ENVIRONMENTAL TOXICITY:
THIS MATERIAL IS NOT EXPECTED TO BE TOXIC TO AQUATIC LIFE. THE LC50/96-HOUR
VALUES FOR FISH ARE OVER 100 MG/L. LD50, ORAL (GOAT, SHEEP) 100 MG/KG;
LD50, ORAL (WILD BIRD) 110 MG/KG.

13. DISPOSAL CONSIDERATIONS

WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE MANAGED IN AN
APPROPRIATE AND APPROVED WASTE DISPOSAL FACILITY. PROCESSING, USE OR
CONTAMINATION OF THIS PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS.
STATE AND LOCAL DISPOSAL REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL
REGULATIONS.

DISPOSE OF CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE
AND LOCAL REQUIREMENTS.

14. TRANSPORT INFORMATION

DOMESTIC (LAND, D.O.T.)

PROPER SHIPPING NAME: SODIUM FLUORIDE
HAZARD CLASS: 6.1
UN/NA: UN1690
PACKING GROUP: III

INTERNATIONAL (WATER, I.M.O.)

PROPER SHIPPING NAME: SODIUM FLUORIDE, SOLID
HAZARD CLASS: 6.1
UN/NA: UN1690
PACKING GROUP: III

15. REGULATORY INFORMATION

-----/CHEMICAL INVENTORY STATUS - PART 1/-----				
INGREDIENT	TSCA	EC	JAPAN	AUSTRALIA
SODIUM FLUORIDE (7681-49-4)	YES	YES	YES	YES

-----/CHEMICAL INVENTORY STATUS - PART 2/-----				
INGREDIENT	KOREA	DSL	NDL	PHIL.
SODIUM FLUORIDE (7681-49-4)	YES	YES	NO	YES

-----/FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 1/-----				
INGREDIENT	-SARA 302- RQ	TPQ	-SARA 313- LIST	CHEMICAL CATG
SODIUM FLUORIDE (7681-49-4)	NO	NO	NO	NO

-----/FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 2/-----			
INGREDIENT	CERCLA	-RCRA- 261.33	-TSCA- 8 (D)
SODIUM FLUORIDE (7681-49-4)	1000	NO	NO

CHEMICAL WEAPONS CONVENTION: YES TSCA 12(B): NO CDTA: NO
SARA 311/312: ACUTE: YES CHRONIC: YES FIRE: NO PRESSURE: NO
REACTIVITY: NO (PURE / SOLID)

AUSTRALIAN HAZCHEM CODE: 2Z
POISON SCHEDULE: S2

WHMIS: THIS MSDS HAS BEEN PREPARED ACCORDING TO THE HAZARD CRITERIA OF
THE CONTROLLED PRODUCTS REGULATIONS (CPR) AND THE MSDS CONTAINS
ALL OF THE INFORMATION REQUIRED BY THE CPR.

=====

16. OTHER INFORMATION

NFPA RATINGS:
HEALTH: 3 FLAMMABILITY: 0 REACTIVITY: 0

For Additional Information:
Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

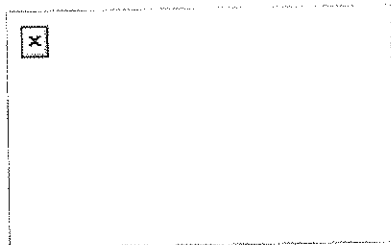
NOTICE

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Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar USA's control. Therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

END OF MSDS



Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date for this MSDS is : 03/23/2005

PRODUCT NAME: CAUSTIC SODA LIQUID (ALL GRADES)
MSDS NUMBER: OZ32415
DATE ISSUED: 2/17/2005
SUPERSEDES: 4/7/2004
ISSUED BY: 008730

Distributed by:
Univar USA Inc.
6100 Carillon Point
Kirkland, WA 98033
425-889-3400

SUBSTANCE: CAUSTIC SODA LIQUID (ALL GRADES)

TRADE NAMES:

Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%; Caustic Soda Rayon Grade 18%, 20%, 25%, 30%, 50%; 50% Caustic Soda Rayon Grade OS; Caustic Soda Membrane 6%, 18%, 20%, 25%, 48%, 50%; 50% Caustic Soda Membrane OS; 50% Caustic Soda Diaphragm OS; 25% Caustic Soda Purified; 50% Caustic Soda Purified; 50% Caustic Soda Purified OS; Caustic Soda Liquid 70/30; Membrane Blended; 50% Caustic Soda Membrane (Northeast); 50% Caustic Soda Diaphragm (West Coast)

SYNONYMS:

Sodium hydroxide solution

PRODUCT USE: metal finishing, cleaner, process chemical, petroleum industry

REVISION DATE: Feb 17 2005

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: WATER

CAS NUMBER: 7732-18-5

PERCENTAGE: 48.5-94.5

COMPONENT: SODIUM HYDROXIDE

CAS NUMBER: 1310-73-2

PERCENTAGE: 5.5-51.5

COMPONENT: SODIUM CHLORIDE
CAS NUMBER: 7647-14-5
PERCENTAGE: 0-1.3

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

HMIS RATINGS (SCALE 0-4): HEALTH=3 FLAMMABILITY=0 REACTIVITY=1

EMERGENCY OVERVIEW:

COLOR: colorless

PHYSICAL FORM: liquid

ODOR: odorless

MAJOR HEALTH HAZARDS: MAY CAUSE BURNS TO THE RESPIRATORY TRACT, SKIN, EYES AND GASTROINTESTINAL TRACT. MAY CAUSE PERMANENT EYE DAMAGE.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation (possibly severe), burns, pulmonary edema

LONG TERM EXPOSURE: to our knowledge, no effects are known

SKIN CONTACT:

SHORT TERM EXPOSURE: irritation (possibly severe), burns

LONG TERM EXPOSURE: dermatitis

EYE CONTACT:

SHORT TERM EXPOSURE: irritation (possibly severe), burns, eye damage, blindness

LONG TERM EXPOSURE: visual disturbances

INGESTION:

SHORT TERM EXPOSURE: irritation (possibly severe), burns, nausea, vomiting

LONG TERM EXPOSURE: to our knowledge, no effects are known

CARCINOGEN STATUS: OSHA: No

NTP: No

IARC: No

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardiopulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. GET MEDICAL ATTENTION IMMEDIATELY.

NOTE TO PHYSICIAN: The absence of visible signs or symptoms of burns does NOT reliably exclude the presence of actual tissue damage.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.

EXTINGUISHING MEDIA: Use extinguishing agents appropriate for surrounding fire.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive

SENSITIVITY TO STATIC DISCHARGE: Not sensitive

FLASH POINT: not flammable

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Flush spill area with water, if appropriate. Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances.

HANDLING: Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. When mixing, slowly add to water to minimize heat generation and spattering.

8. EXPOSURE CONTROLS. PERSONAL PROTECTION

EXPOSURE LIMITS:

SODIUM HYDROXIDE: 2 mg/m³ OSHA TWA

2 mg/m³ OSHA ceiling (vacated by 58 FR 35338, June 30, 1993)

2 mg/m³ ACGIH ceiling

2 mg/m³ MEXICO peak

VENTILATION: Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear chemical safety goggles with a faceshield to protect against skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Contaminated clothing should be removed, then discarded or laundered.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: butyl rubber, natural rubber, neoprene, nitrile, polyvinyl chloride (PVC), Tychem(R)
RESPIRATOR: A NIOSH approved respirator with N95 (dust, fume, mist) filters may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure.
A half facepiece air-purifying respirator may be used in concentrations up to 10X the acceptable exposure level and a full facepiece air-purifying respirator may be used in concentrations up to 50X the acceptable exposure level.
Supplied air should be used when the level is expected to be above 50X the acceptable level, or when there is a potential for uncontrolled release.
A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
APPEARANCE: clear
COLOR: colorless
ODOR: odorless
BOILING POINT: 230-291 F (110-144 C)
FREEZING POINT: -26 to 59 F (-32 to 15 C)
VAPOR PRESSURE: 13-135 mmHg @ 60 C
VAPOR DENSITY: Not available
SPECIFIC GRAVITY (water=1): 1.11-1.53 @ 15.6 C
DENSITY: 9.27-12.76 lbs/gal @ 15.6 C
WATER SOLUBILITY: 100%
PH: 14.0 (7.5% solution)
VOLATILITY: Not available
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

INCOMPATIBILITIES: acids, halogenated compounds, prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys

HAZARDOUS DECOMPOSITION: Thermal decomposition products: None known.

11. TOXICOLOGICAL INFORMATION

CAUSTIC SODA LIQUID (ALL GRADES):

TOXICITY DATA: Sodium Hydroxide: 1350 mg/kg Dermal-Rabbit LD50. 220 mg/kg (50% solution) Oral-Rat LD50. The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucous membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact. Inhalation will cause severe irritation, possible burns with pulmonary edema, which may lead to pneumonitis. Skin contact with this material may cause severe irritation and corrosion of tissue. Eye contact can cause severe

irritation, corrosion with possible corneal damage and blindness. Ingestion may cause irritation, corrosion/ulceration, nausea, and vomiting. In general, chronic effects are due to long-term irritation. This material may cause dermatitis on the skin, or recurrent corneal ulceration and visual disturbances. In rare cases reports have noted long-term inhalation causes bronchial inflammatory reaction or obstructive airway dysfunction.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: This material has exhibited moderate toxicity to aquatic organisms. For sodium hydroxide: 100 ppm LC50 Daphnia; 25 ppm 24 hours LC50 Brook trout; 48 ppm LC50 King salmon; 33 - 100 ppm 48 hours LC50 Shrimp; 330 - 1000 ppm 48 hours LC50 Cockle

FATE AND TRANSPORT:

BIODEGRADATION: This material is inorganic and not subject to biodegradation. PERSISTENCE: This material is believed to exist in the disassociated state in the environment. BIOCONCENTRATION: This material is believed not to bioaccumulate.

OTHER ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms.

13. DISPOSAL CONSIDERATIONS

Reuse or reprocess if possible. Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Sodium hydroxide solution

ID NUMBER: UN 1824

HAZARD CLASS OR DIVISION: 8

PACKING GROUP: II

LABELING REQUIREMENTS: 8

DOT HAZARDOUS SUBSTANCE(S): Sodium hydroxide 1000 lb(s) (454 kg(s))

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Sodium hydroxide solution UN NUMBER: UN 1824

CLASS: 8

PACKING GROUP/RISK GROUP: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

SODIUM HYDROXIDE: 1000 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: This product may contain contaminants known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact Customer Service.

NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW:

REPORTING REQUIREMENT:

WATER 7732-18-5 48.5-94.5%

SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

SODIUM CHLORIDE 7647-14-5 0-1.3%

RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST: SODIUM HYDROXIDE 1310-73-2 5.5-51.5%
SPECIAL HEALTH HAZARD SUBSTANCE LIST: SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

PENNSYLVANIA RIGHT TO KNOW: REPORTING REQUIREMENT:

WATER 7732-18-5 48.5-94.5%

SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

HAZARDOUS SUBSTANCE LIST:

SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

ENVIRONMENTAL HAZARDOUS SUBSTANCE LIST:

SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

SPECIAL HAZARDOUS SUBSTANCE LIST:

Not regulated.

CANADIAN REGULATIONS:

CONTROLLED PRODUCTS REGULATIONS (CPR): This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS CLASSIFICATION: D1B, E.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): All the components of this substance are listed on or are exempt from the inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDL): All components of this product are listed on the DSL.

16. OTHER INFORMATION

For Additional Information:

Contact: MSDS Coordinator - Univar USA

During business hours, Pacific Time - (425) 889-3400

NOTICE

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END OF MSDS

Subject: #635800

From: "Deedee Hershey" <Deedee.Hershey@univarusa.com>

Date: Wed, 27 Sep 2006 11:27:38 -0700

To: "Mark Underwood" <mark.underwood@cithornburg.com>



Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date and Number for this MSDS is : 02/23/2005 - #002

PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM CHLORIDE (SALT)
MSDS#: 64309
DATE ISSUED: 09/01/2002
SUPERSEDES: 12/01/1998
ISSUED BY: 008235

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Chemical Product Name	Sodium Chloride (Salt)
Chemical Family	Alkali Metal/Halide
Chemical Name	Sodium Chloride
INCI Name	SODIUM CHLORIDE
INN Name	sodium chloride
Formula	NaCl
Molecular Weight	58.44

Distributed by:
Univar USA
6100 Carillon Pt.
Kirkland, WA 98033
425 889-3400

24 Hour Emergency (CHEMTREC): 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Description
White crystalline solid

Ingredient Name

	CAS Number	Exposure Limits	Concentration (%)
Sodium Chloride	7647-14-5		100

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

None - GRAS Substance (Generally Recognized As Safe)
Potential Health Effects

Route(s) Of Entry: Ingestion, skin/eye contact, inhalation.

Human Effects and Symptoms of Overexposure:
Acute Inhalation: Irritation of the respiratory tract.

Chronic Inhalation:
No applicable information found for chronic system effects.

Acute Skin Contact:
Large amounts can cause irritation, and, if applied to damaged skin, absorption can occur with effects similar to those via ingestion.

Chronic Skin Contact:
No applicable information found for chronic system effects.

Acute Eye Contact:
Irritation with burning and tearing (salt concentrations greater than the normal saline present).

Chronic Eye Contact:
No applicable information found for chronic systemic effects.

Acute Ingestion:
intake of large amounts has generally occurred for deliberate reasons: suicide, absorption, and to induce vomiting. The following effects were observed; nausea and vomiting, diarrhea, cramps, restlessness, irritability, dehydration, water retention, nose bleed, gastrointestinal tract damage, fever, sweating, sunken eyes, high blood pressure, muscle weakness, dry mouth and nose, shock, cerebral edema (fluid on brain), pulmonary edema (fluid in lungs), blood cell shrinkage, and brain damage (due to dehydration of brain cells). Death is generally due to cardiovascular collapse or CNS damage. Less than a few grams would not be harmful. For larger quantities, drink large amounts of water or milk.

Chronic Ingestion:
No applicable information found for chronic systemic effects.

Carcinogenicity
NTP: Not listed as carcinogen or mutagen.
IARC: Not listed as carcinogen or mutagen.
OSHA: Not listed as carcinogen or mutagen.

Medical Conditions Aggravated by Exposure: In some cases of confirmed hypertension, ingestion may result in elevated blood pressure.

4. FIRST AID MEASURES

First Aid for Eyes:
For eye contact, flush with water immediately, lifting eyelids occasionally.

First Aid for Skin:
Remove clothing from affected area. Wash skin thoroughly. Rinse carefully.

First Aid for Inhalation:
If person breathes large quantities, remove to fresh air at once. If breathing stops, apply artificial respiration immediately.

First Aid for Ingestion:
Less than a few grams would not be harmful. For larger quantities, drink large amounts of water or milk.

5. FIRE AND MEASURES

Flash Point: N/A

Extinguishing Media: N/A. This product is nonflammable.

Special Fire Fighting Procedures: N/A

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures:

Contain spills to prevent contamination of water supply or sanitary sewer system. Vacuum or sweep into containers for proper disposal.

7. HANDLING AND STORAGE

Storage Temperature (min./max.):

Avoid humid or wet conditions as product will cake and become hard.

Special Sensitivity:

Avoid contact with strong acids.

Handling and Storage Precautions:

Becomes hygroscopic at 75% relative humidity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection Requirements:

Eyeglasses or goggles should be worn in dusty areas.

Skin Protection Requirements:

Protective clothing may be worn in dusty areas, but is generally not required.

Respiratory/Ventilation Requirements:

NIOSH/MSHA approved respirator for particulates.

Exposure Limits: Not listed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: White crystalline solid with slight halogen odor.

Color: White to opaque.

Odor: Halogen odor when heated.

Boiling Point (760mm Hg) (C): 1465

Melting Point/Freezing Point (C): 801

pH: 6.7 - 10.0

Solubility in Water (g/cc) (%): 26.4

Specific Gravity (H₂O = 1): 2.16

Bulk Density (lbs./ft³): 35-83

%Volatile by Weight: N/A

Vapor Pressure (mm Hg/7470C): 2.4

Vapor Density (Air=1): N/A

10. REACTIVITY

Stability:

Stable

Incompatibilities:

Avoid contact with strong acids. Becomes corrosive to metals when wet.

Decomposition Products:

May evolve chlorine gas when in contact with strong acids.

11. TOXICOLOGICAL INFORMATION

Description:

Not listed.

12. ECOLOGICAL INFORMATION

Ecotoxicity:
Not listed.

Environmental Degradation:
Not listed.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Follow applicable Federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

D.O.T. Shipping Name: Not listed.
Technical Shipping Name: Not listed.
D.O.T. Hazard Class: Not listed.
U.N./N.A. Number: Not listed.
Product Rq (lbs.): N/A
D.O.T. Label: Not listed.
D.O.T. Placard: N/A
Freight Class Bulk: N/A
Freight Class Package: N/A
Product Label: N/A

15. REGULATORY INFORMATION

OSHA Status: Not listed.

TSCA Status: Listed as non-hazardous.

CERCLA Reportable Quantity SARA Title III
Section 302 Extremely Hazardous Substances: Not listed.

Section 311/312 Hazard Categories: Not listed.

Section 313 Toxic Chemicals: Not listed.

RCRA Status: Not listed.

EINECS Number: 231-598-3
ENCS Number: 1-236
ECL Serial Number: KE-31387
SWISS Number: G-2580
HMIS Rating: 1 0 0 A

State Regulatory Information
Company Name/Cas Number Concentration State Code
N/A

16. OTHER INFORMATION

Approval Date: September 2002

For Additional Information:
Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

NOTICE

Univar USA expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or

a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar USA's control. Therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

END OF MSDS



Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date and Number for this MSDS is : 02/26/2003 - #003

PRODUCT IDENTIFICATION

PRODUCT NAME: HYDROCHLORIC ACID INHIBITED
MSDS#: P21843VS
DATE ISSUED: 3/20/95
SUPERSEDES: NEW
ISSUED BY: 008752

PRODUCT NAME :INHIBITED HYDROCHLORIC ACID
24 HOUR
EMERGENCY (415)363-1861
PHONE: CHEMTREC NUMBER: 1 800-424-9300

1. PRODUCT IDENTIFICATION

CHEMICAL NAME: Hydrochloric Acid
SYNONYMS/Common NAMES: hydrochloric Acid, Hydrogen Chloride, Inorganic Acid
CHEMICAL FAMILY: inorganic Acid
CHEMICAL FORMULA: HCl
DOT PROPER SHIPPING NAME: Hydrochloric Acid, Solution
DOT HAZARD CLASS - : Class 8, Corrosive Material
DOT LD. NUMBER: UN 1789
DOT HAZARDOUS SUBSTANCE: RQ 5,000 lb

SARA TITLE III	NEPA 704
HAZARD CATEGORY	HAZARD RATING
Immediate(ACUTE) Health: Yes	
Delayed (CHRONIC) Health: Yes	FLAMMABILITY: 0
Fire Hazard: No	HEALTH 3 REACTIVITY 0

Reactive Hazard: No ()
Sudden Release of Pressure: No

2. COMPOSITION/ INFORMATION ON INGREDIENTS

(Hazardous Components	Percent OSHA PEL ACGIH TLV	CAS Number
Hydrochloric Acid	<40 % 7 mg/m3, 7.5 mg/m3 (5ppm)	7647-01-0
Polyethylenepolyamine	1% Not Established Not Established	68603-67-8
Coco Amine	< 1% Not Established Not Established	61791-14-8
Methenamine	< 1% Not Established Not Established	100-97-0
Water	Balance Not Established Not Established	7732-18 5

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Clear, slightly yellow liquid with a sharp penetrating, irritating odor. Though not considered combustible, this product can react with common metals to evolve flammable and potentially explosive hydrogen gas. Chlorine gas is released by reaction with oxidizing agents, such as chlorine bleach and chlorine containing disinfectants.

Potential Health Effects

EYES:

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the ability of skin at point of contact to regenerate. Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

INHALATION:

Inhalation of this material can be irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in severe and/or permanent lung damage.

INGESTION:

This chemical may be harmful or fatal if swallowed. Irritation and/or burns can occur to the entire gastrointestinal tract, including the mouth, esophagus, stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and / or tissue destruction.

CHRONIC EFFECTS

The effects of long-term, low-level exposures to this product have not been determined.

Safe handling of this material on a long-term basis should emphasize the avoidance of contact with this material and unprotected body parts.

4. FIRST AID MEASURES

EYE CONTACT:

Immediately flush eyes with large quantities of clean running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Do not attempt to neutralize. Obtain medical attention as soon as possible. Oils or ointments should not be used at this time. Continue the flushing for an additional 15 minutes if a physician is not immediately available and then obtain immediate emergency medical attention.

SKIN CONTACT:

Under a safety shower, immediately flush all affected areas with large amounts

of running water for at least 15 minutes. Remove contaminated clothing and shoes. Do not attempt to neutralize with chemical agents. Get medical attention immediately. Properly dispose of contaminated clothing.

INHALATION:

If inhaled, remove to fresh air. If not breathing, clear patient's airway and apply artificial respiration. If patient is breathing, oxygen may be given from a demand-type or continuous-flow inhaler, by qualified personnel, with the direction of a physician. Get medical attention immediately.

INGESTION:

This material is corrosive. If swallowed, immediately give several glasses of water but do not induce vomiting. If vomiting does occur, give fluids again. Obtain immediate emergency medical attention. Do not give anything by mouth to an unconscious or convulsing person.

5. FIRE FIGHTING MEASURES

Flashpoint and Method: N/A

Flammable Limits: N/A

Autoignition Temperature: N/A

EXTINGUISHING MEDIA:

Use standard fire fighting techniques to extinguish fire involving this material - use water spray, dry chemicals or carbon dioxide. Fire fighters must wear appropriate respiratory and outer body protective clothing during fire suppression activity.

FIRE FIGHTING EQUIPMENT:

As in any fire, prevent human exposure to fire, smoke fumes or products of combustion.

Evacuate non-essential personnel from the fire area. Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing.

FIRE EXPLOSION HAZARDS:

Not considered flammable or combustible. Does not support combustion. However, contact with water or acids may generate sufficient heat to ignite nearby combustible materials. Contact with most common metals will evolve flammable and explosive hydrogen gas. Run-off from fire control may cause pollution. Keep fire-exposed containers cool with water spray to prevent rupture due to excessive heat. High pressure water hose may spread product from broken containers increasing contamination.

Products of combustion are irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending upon the extent of exposure.

6. ACCIDENTAL RELEASE PROCEDURES**STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED:**

Dike area to contain spill. Only trained personnel equipped with NIOSH/MSHA approved, full face piece combination dust/mist and acid gas respirators should be permitted in this area. Cover contaminated surface with soda ash or limestone. Evacuate the area.

Properly neutralized liquid residues (pH 9) may be disposed of in waste water treatment facilities which allow the discharge of neutral salt solutions. Neutralized material can be recovered by vacuum truck for disposal. Vendor recommends disposal of neutralized material in an approved hazardous waste management facility. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the clean air act, the clean water act,

the resource conservation and recovery act, as well as any other relevant Federal, State, or local laws/ regulations regarding disposal. After all visible traces have been removed, flush areas with large amounts of water.

WASTE DISPOSAL METHOD:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health and environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state and local agencies receive proper notification of spill and disposal methods.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE: N/A STORAGE PRESSURE: N/A

HANDLING:

- * When handling, wear chemical resistant gloves, a chemical suit, rubber boots, and chemical safety goggles a full length face shield and chemical resistant head covering.
- * Wear NIOSH/MSHA approved respirator for protection where mists may be generated.
- * Never touch eyes or face with hands or gloves that may be contaminated with hydrochloric acid.
- * Never enter a storage tank or container without following proper confined space entry procedures-even if it appears to be empty.
- * Do not get in eyes, on skin, on clothing. Can cause severe injury or blindness.
- * Do not breath mist .
- * Do not ingest this product.
- * Wash thoroughly after handling inhibited hydrochloric acid.

STORAGE:

Containers should be stored in a cool, dry, well ventilated area away from strong acids, flammable materials, non compatible or reactive materials and sources of heat or flame. Store away from foodstuffs or animal feed. Exercise due caution to prevent damage to or leakage from container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use general exhaust ventilation unless mists or aerosols are generated. If mists, vapors, or aerosols are generated a local exhaust ventilation system is recommended.

PERSONAL PROTECTION

RESPIRATORY PROTECTION:

Although not normally needed, if the material is used where appropriate ventilation is not available, use NIOSH/MSHA approved dust, acid mist and fume respirators to reduce exposure. Should exposure potential under poor conditions become greater, use a full face positive-pressure, air-supplied respirator.

EYE PROTECTION:

Wear safety glasses with side shields (or goggles) and a full length face shield.

SKIN PROTECTION:

Where contact is likely, wear chemical resistant gloves (Nitrile, Neoprene or PVC), a chemical suit, rubber boots, and chemical safety goggles a full length face shield, and protective head covering.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 103 C(217 F)

FREEZING POINT, C (F): 6.9 C(44.5 F)

VAPOR PRESSURE @ 20 C, mm Hg: 24 mm Hg @20 C(68 F)

VAPOR DENSITY (Air = 1): 1

SOLUBILITY IN WATER: Soluble

SPECIFIC GRAVITY @ 20 C: 1.16

pH: Less than 1

ODOR: Sharp penetrating, irritating odor.

APPEARANCE: Clear, slightly yellow liquid

PHYSICAL STATE: Liquid

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:

Stable

CONDITIONS TO AVOID

Heat, moisture and contact with hypochlorite bleaches, chlorine sanitizers, or chlorinated cleaners as well as with any incompatible materials (see list below).

INCOMPATIBILITY WITH OTHER MATERIALS:

Most common metals, amines, metal oxides, acetic anhydride, propiolactone, vinyl acetate, mercuric sulfate, calcium phosphide, formaldehyde, alkalies, carbonates, strong bases, sulfuric acid, chlorosulfonic acid.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen chloride, hydrogen chlorine.

HAZARDOUS POLYMERIZATION:

Will not occur

For Additional Information:

Contact: MSDS Coordinator - Univar USA

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of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

END OF MSDS

Material Safety Data Sheet

to be used to comply with
 OSHA's Hazard Communication Standard,
 29 CFR 1910.1200. Standard must be
 modified for specific requirements.

U.S. Department of Labor
 Occupational Safety and Health Administration
 (Non-Mandatory Form)



IDENTITY (As Used on Label and List) Hydrated Lime

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name Black River Lime Company, A Division of Dravo Lime Company	Emergency Telephone Number (Business hours) 606-472-8111 (Carntown, KY.)
Address (Number, Street, City, State, and ZIP Code) P. O. Box #1 Butler, KY. 41006	Telephone Number for Information 412-644-5580 (Pittsburgh, PA.)
Date Prepared May 21, 1986	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Ca(OH) ₂ Calcium hydroxide				96%
MgO Magnesium oxide (partly hydrated) (Present together as hydrated lime)				2%
Synonyms - high calcium hydrated lime				

Section III — Physical/Chemical Characteristics

Boiling Point N/A	Specific Gravity (H ₂ O = 1) 2.3 to 2.4
Vapor Pressure (mm Hg.) N/A	Melting Point Decomposition point 540°C
Density (AIR = 1) N/A	Evaporation Rate (Butyl Acetate = 1) N/A
Solubility in Water at 25°C 0.159g./100g. saturated solution; at 100°C 0.071g./100g. saturated sol.	
Appearance and Odor white powder; faint earthy odor	

Section IV — Fire and Explosion Hazard Data

Test Method Used N/A	Flammable Limits	LEL N/A	UEL N/A
Storing Media N/A			
Fire Fighting Procedures N/A			
Fire and Explosion Hazards N/A			

Section V — Reactivity Data

Reactivity	Unstable	Yes	Conditions to Avoid
	Stable	Yes	Avoid uncontrolled exposure to water or acids. When above conditions are avoided.
Incompatibility (Materials to Avoid) Boric oxide, Hydrogen fluoride, fluorine, Chlorine trifluoride.			
Hazardous Decomposition or Byproducts Boron trifluoride.			

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

(s) of Entry:	Inhalation?	Yes	Skin?	Yes	Ingestion?	Yes
Hazards (Acute and Chronic) Damage depends on duration of contact.						
Irritation can cause skin burns to a perspiring worker. Burns of the mucous membranes (eyes, mouth, throat, and lungs) may occur if exposed.						
Toxicity:	N/A	NTP?	ARC Monographs?		OSHA Regulated?	

Signs and Symptoms of Exposure	Redness and burning sensation on skin.
	Burning sensation in eyes, throat, etc.
Under Conditions of Exposure	N/A

Emergency and First Aid Procedures: Flush exposed area of skin with water. Flush eyes with water and call a physician. Treat lime burns as regular burns after cleaning.

Ingestion - administer large quantities of water to dilute the alkali. Do not induce vomiting.

Section VII — Precautions for Safe Handling and Use

Precautions to Be Taken in Case Material is Released or Spilled: Inland waterways - recovery of spilled material is futile. Agitation in spill site will facilitate dilution. Land spills can be recovered by scooping or shoveling. Avoid contact with skin.

Disposal Method: Approved chemical landfill.

Precautions to Be Taken in Handling and Storing: Avoid contact with skin or eyes.
With moist skin, burns can occur. Also see above.

Precautions: Keep away from children. Suggest handling by experienced and/or informed users only.

Section VIII — Control Measures

Respiratory Protection (Specify Type) Protective Filter Mask with High Efficiency Respiratory Filter.			
Engineering Controls	Local Exhaust	Adequate ventilation.	Special
	Keep Dust Below 2 mg/m3.		N/A
Administrative Controls	Mechanical (General)	Dust pickup at conveyor belt transfer points.	Other
			Vent to collector where possible.
Personal Protective Equipment - Gloves	Gauntlet Type Work Gloves.	Eye Protection	Tight Fitting Safety Goggles.
Protective Clothing or Equipment: Long Sleeve Shirt with Buttoned Collar; Long Pants Extending Over Work Shoes.			
Hygienic Practices: Protective Cream on Exposed Skin.			



P.O. BOX 11331 • CINCINNATI, OHIO 45211
(513) 253-2000 • FAX (513) 253-1050

Material Safety Data

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION PAGE 1 OF 6

PRODUCT NAME: MAINTAIN STABILIZER, AQUAMATE STABILIZER, STABILIZER

PRODUCT ID: 5100

SYNONYMS: Cyanuric Acid Powder, Cyanuric Acid Granular, Isocyanuric Acid, Cyanuric Acid

REVISED DATE: 08-18-2003

CHEMICAL FAMILY: Isocyanurate

DESCRIPTION: Chlorine Stabilizer for Swimming Pool Use.

OSHA Hazard Classification: Skin Irritant, Eye Irritant

Company Identification

Baleco International Inc.
3200 Stateline Rd
North Bend, Oh 45052

EMERGENCY PHONE NUMBERS
24-HOUR PHONE NUMBER: 517-636-4400
CHEMTREC: 1-800-424-9300
INFORMATION (304)746-3000

Preparer: Todd Hammersmith

SECTION 2 COMPOSITION INFORMATION ON INGREDIENTS

CAS or Chemical Name: Cyanuric acid
CAS Number: 108-80-5
Percentage Range: 90-99%
Hazardous PER 29 CFR 1910.1200: No
Exposure Standards: None Established

CAS or Chemical Name: Ammelide
CAS Number: 645-93-2
Percentage Range: 0-0.5%
Hazardous PER 29 CFR 1910.1200: No
Exposure Standards: None Established

CAS or Chemical Name: Water
CAS Number: 7732-18-5
Percentage Range: 0-10%
Hazardous PER 29 CFR 1910.1200: No
Exposure Standards: None Established

CAS or Chemical Name: Ammeline
CAS Number: 645-92-1
Percentage Range: 0-0.5%
Hazardous PER 29 CFR 1910.1200: No
Exposure Standards: None Established

CAS or Chemical Name: Sulfuric acid
CAS Number: 7664-93-9
Percentage Range: 0-1%
Hazardous PER 29 CFR 1910.1200: Yes
Exposure Standards: OSHA (PEL): TWA =1.0 ppm mg/m3 ACGIH (ThV): TWA =1.0 ppm mg/m3
Ceiling =3.0 ppm mg/m3

SECTION 3**HAZARD IDENTIFICATION**

ROUTES OF EXPOSURE: Ingestion, skin and eye contact

ADVERSE HUMAN HEALTH EFFECTS: Do not take internally. May cause mild skin and eye irritation. Inhalation of dust may cause mild mucous membrane and respiratory irritation.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The IDLH concentration has not been established for this product.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

EYE - Contact with the eyes may cause slight irritation consisting of redness, swelling and mucous discharge to the conjunctiva. No corneal damage or visual impairment.

SKIN - Skin contact may cause a mild irritation consisting of transient redness. This irritation effect would not be expected to result in permanent damage.

INHALATION - No significant adverse effects to health would be expected to occur from inhalation with normal use of this product. However, if dust is created and inhaled, inhalation may cause mild irritation to the throat, mucous membranes and upper respiratory tract.

INGESTION - Ingestion may cause gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy or diarrhea.

SECTION 4**FIRST AID MEASURES**

YES: Immediately flush with large amounts of water for at least 20 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and it should be laundered before re-use.

INGESTION: Immediately drink water to dilute. Consult a physician.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

SECTION 5**FIRE FIGHTING MEASURES**

FLAMMABILITY DATA:

FLAMMABLE: No

COMBUSTIBLE: No

PYROPHORIC: No

FLASH POINT: Not Applicable

AUTOIGNITION TEMPERATURE: Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:

BALECO INT'L:

5100 CYANURIC ACID

page 3 of 6

Health: 1
Flammability: 0
Reactivity: 0
Personal Protection: B

EXTINGUISHING MEDIA: Not Applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. Use extinguishing agent suitable for surrounding material.

SECTION 6 ACCIDENTAL RELEASE MEASURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
No extra protection required beyond that listed in Section 8, Exposure Controls/ Personal Protection. In case of fire, use normal fire fighting equipment, including self-contained breathing apparatus (SCBA).

PROCEDURES:

AIR RELEASE: Not Applicable

WATER RELEASE: This material is heavier than water. This material is very slightly soluble in water.

LAND SPILL: Keep spill materials dry and free of all foreign matter. Containerize in a clean, dry container.

SECTION 7 HANDLING AND STORAGE

HANDLING CONDITIONS: Do not take internally. Avoid contact with skin, eyes, and clothing. Upon contact with skin or eyes, wash off with water.

STORAGE CONDITIONS: Store in a cool, dry area. Do not store at temperatures above 60°C/140°F. Product has an unlimited shelf-life limitation.

SECTION 8 EXPOSURE CONTROLS PERSONAL PROTECTION

RESPIRATORY PROTECTION: A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. None required under normal conditions. If significant dusting occurs, wear a NIOSH/MSHA approved dust respirator.

EYE PROTECTION: Use chemical safety goggles to avoid eye contact.

HAND PROTECTION: Avoid contact with skin. Neoprene gloves should be worn when using this substance. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Rinse and remove gloves immediately after use. Wash hands with soap and water.

VENTILATION: Use local exhaust ventilation to minimize dust levels.

OTHER PROTECTIVE EQUIPMENT: Safety shower and eye bath should be provided. Do not eat, drink or smoke until showering and changing clothes.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: White
STATE: Granules or powder
ODOR: None
MELTING POINT: Sublimes at 320-330°C (608-626°F)
BOILING POINT: Not Applicable
DECOMPOSITION TEMPERATURE: Not Applicable
SPECIFIC GRAVITY: 2.5
BULK DENSITY: 0.79-0.85(g/cc)
pH: 3.8-4.0
VAPOR PRESSURE @ 25°C: Not Applicable
SOLUBILITY IN WATER: 0.27% @ 25°C
VOLATILES, PERCENT BY VOLUME: Not Applicable
EVAPORATION RATE: Not Applicable
VAPOR DENSITY: Not Applicable
MOLECULAR WEIGHT: 129.08
COEFFICIENT OF OIL/WATER DISTRIBUTION: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of storage, shipment and/or use. See Handling and Storage, Section 7, for specified conditions. Avoid temperatures above 330°C (626°F).

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, nitrogen oxides, and cyanic acid.

HAZARDOUS POLYMERIZATION: Will Not Occur

INCOMPATIBILITY: Oxidizers

MECHANICAL SHOCK OR IMPACT: NO

ELECTRICAL (STATIC) DISCHARGE: NO

SUMMARY OF REACTIVITY:

OXIDIZER:	No	PYROPHORIC:	No
ORGANIC PEROXIDE:	No	WATER REACTIVE:	No

SECTION 11 TOXICOLOGICAL INFORMATION**ACUTE TOXICITY**

INHALATION LC₅₀ - No available data

DERMAL LD₅₀ - >2 g/kg (rabbit)

ORAL LD₅₀ - >5 g/kg (rat)

IRRITATION - May cause mild eye and skin irritation

TARGET ORGAN TOXICITY

No organs known to be damaged from exposure to this product. May cause mild skin and eye irritation. Based on data from toxicological investigations, CYANURIC acid does not result in direct target organ damage. Damage to the kidneys and bladder has been observed in rats when these animals are provided a saturated solution (5375 ppm) of CYANURIC acid for their drinking water. During excretion of high amounts by the kidney, stones of CYANURIC acid can form (calculi) resulting in mechanical damage,

which is secondary to stone formation. This effect would not pose a risk to humans during manufacturing, use as a disinfectant in swimming pools, and even consumption of dilute solutions (1-10 ppm) of CYANURIC acid. CYANURIC acid is excreted unchanged rapidly via the kidneys. It lacks the potential to bioaccumulate in the body.

REPRODUCTIVE TOXICITY

There are no known or reported effects on reproductive function or fetal development from exposure to this product. Monosodium cyanurate (the sodium salt of cyanuric acid) has been tested by oral gavage in pregnant rats and rabbits. No teratogenic effects were seen in the offspring of either species.

Sulfuric acid aerosol (95.7% purity) was tested in pregnant mice and rabbits exposed to concentrations of 0, 5 and 20 mg/cubic meter by inhalation on gestational days 6-15 and 6-18, respectively. No reproductive or effects were seen in either species at any of the exposure concentrations utilized.

CARCINOGENICITY

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA. Laboratory toxicological studies in rats and mice (lifetime exposure) indicate that cyanuric acid is not carcinogenic.

Sulfuric acid is not known or reported to be carcinogenic by any reference source including: IARC, OSHA, NTP, or EPA. IARC evaluated several epidemiology studies where individuals in a variety of industries had been exposed to a mixture of strong inorganic acid mists are carcinogenic to humans. Because cancer has not been observed in animals when they are exposed only to sulfuric acid mist, exposure to sulfuric acid by itself was not determined to be carcinogenic to humans.

MUTAGENICITY

This product is not known or reported to be mutagenic. Cyanuric acid was demonstrated to be non-mutagenic in the Ames assay, both with and without metabolic activation. Monosodium cyanurate (the sodium salt of cyanuric acid) has been tested in a battery of mutagenicity/genotoxicity assays and no mutagenic or genotoxic activity was detected in any of these assays.

SECTION 12 ECOLOGICAL INFORMATION

AQUATIC TOXICITY - Cyanuric acid:

Bluegill sunfish: 96 hr. LC_{50} : > 2,100 mg/l
Fathead minnow: 96 hr. LC_{50} : > 2,100 mg/l
Rainbow trout: 96 hr. LC_{50} : > 2,100 mg/l
Daphnia magna: 48 hr. LC_{50} : 1,000 mg/l
Algae: 96 hr. EC_{50} : 655 mg/l

AVIAN TOXICITY - Monosodium cyanurate (sodium salt of cyanuric acid):

Mallard duck: 8 day dietary LC_{50} : > 10,000 ppm
Bobwhite quail: 8 day dietary LC_{50} : > 10,000 ppm

SECTION 13 WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. As a non-hazardous solid waste it should be disposed of in accordance with local, state, and federal regulations by disposal in a secure chemical landfill.

Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and non-hazardous wastes.

BALECO INT'L:

5100 CYANURIC ACID

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SECTION 14 TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT REGULATED AS A DOT HAZARDOUS MATERIAL.

SECTION 15 REGULATORY INFORMATION

WORKPLACE CLASSIFICATION: This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA TITLE III: Section 311/312 Categorization (40 CFR 370.2): This product is categorized as an immediate health hazard.

SARA TITLE III: Section 313 Information (40 CFR 372): This mixture or trade name product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. (See Section 2 for Composition)

CHEMICALS LISTED ARE: Sulfuric Acid

UNITED STATES: This product is subject to regulation under the US Toxic Substances Control Act Inventory listing requirements.

SECTION 16 OTHER INFORMATION

DATE OF LAST REVISION: 04/30/99

MSDS REVISION STATUS: MSDS has been reformatted into 16 sections.

This material safety data sheet (msds) has been prepared in compliance with the Federal OSHA hazard communication standard, 29 CFR 1910.1200. This product may be considered to be a hazardous chemical under that standard. (Refer to the OSHA classification in section 1). This information is required to be disclosed for safety in the workplace. The exposure to the community, if any, is quite different.

The information in this material safety data sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations and management and for persons working with or handling this product. Baleco believes this information to be reliable and up to date as of the date of publication, but makes no warranty that it is. Additionally, if this material safety data sheet is more than three years old, you should contact Baleco at the phone number listed below to make certain that this sheet is current.