



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at [wvOASIS.gov](http://wvOASIS.gov). As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at [WVPurchasing.gov](http://WVPurchasing.gov) with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 5

List View

**General Information** | Contact | Default Values | Discount | Document Information

Procurement Folder: 494116

SO Doc Code: CRFQ

Procurement Type: Central Master Agreement

SO Dept: 0803

Vendor ID: 000000175314

SO Doc ID: DOT1900000045

Legal Name: GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION

Published Date: 11/16/18

Alias/DBA:

Close Date: 12/13/18

Total Bid: \$203,200.00

Close Time: 13:30

Response Date: 12/11/2018

Status: Closed

Response Time: 12:09

Solicitation Description: ADDENDUM 1 6619C011-CAL  
MAG ACETATE AND A PRE-

Total of Header Attachments: 5

Apply Default Values to Commodity Lines

View Procurement Folder



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

**State of West Virginia  
 Solicitation Response**

**Proc Folder :** 494116

**Solicitation Description :** ADDENDUM 1 6619C011-CAL MAG ACETATE AND A PRE-WETTING AGENT

**Proc Type :** Central Master Agreement

Date issued	Solicitation Closes	Solicitation Response	Version
	2018-12-13 13:30:00	SR 0803 ESR12111800000002742	1

<b>VENDOR</b>
000000175314 GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION

**Solicitation Number:** CRFQ 0803 DOT1900000045

**Total Bid :** \$203,200.00      **Response Date:** 2018-12-11      **Response Time:** 12:09:53

**Comments:**

**FOR INFORMATION CONTACT THE BUYER**  
 Crystal Rink  
 (304) 558-2402  
 crystal.g.rink@wv.gov

<b>Signature on File</b>	<b>FEIN #</b>	<b>DATE</b>
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	CALCIUM MAGNESIUM ACETATE	100.00000	TON	\$1,970.000000	\$197,000.00

Comm Code	Manufacturer	Specification	Model #
47131823			

**Extended Description :** CALDIUM MAGNESIUM ACETATE FOR USE IN THE DEICING OF THE NEW RIVER GORGE BRIDGE

**Comments:** Minimum order of 22 US Ton per delivery. Deliveries will be made within 5-7 days after receipt of order.

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	LOW CORROSIVE PRE-WETTING AGENT NO CHLORIDES	800.00000	GL	\$7.750000	\$6,200.00

Comm Code	Manufacturer	Specification	Model #
47131823			

**Extended Description :** LOW CORROSIVE PRE-WETTING AGENT NO CHLORIDE FOR USE IN THE DEICING OF THE NEW RIVER GORGE BRIDGE

**Comments:** Minimum order of 1- 265 gallon tote per delivery. Deliveries will be made within 5-7 days after receipt of order.





December 11, 2018

Ms. Crystal Rink  
West Virginia Purchasing Division  
2019 Washington St. East  
Charleston, West Virginia 25305

RE: RFQ CRFQ 0803 DOT1900000045; Calcium Magnesium Acetate and a Pre-Wetting Agent

Dear Ms. Rink,

Cryotech Deicing Technology is pleased to respond herein to the subject Request for Quotation (RFQ) for Calcium Magnesium Acetate and a Pre-Wetting Agent. The products bid shall be Cryotech CMA<sup>®</sup> solid commercial deicer and Cryotech CF7<sup>®</sup> liquid commercial deicer.

CMA is 96% calcium magnesium acetate and CF7 is 50% potassium acetate with less than 1% corrosion inhibitors (active material). Both products are produced at Cryotech's Fort Madison, Iowa, production facility.

Certification documentation follows with additional information available on the Cryotech website at [www.cryotech.com](http://www.cryotech.com).

Please see enclosed documents in response to your requirements. Also enclosed, please find *Exceptions Page* for a list of exceptions.

Thank you for this opportunity to work with the West Virginia Division of Highways.

Respectfully submitted,

A handwritten signature in black ink that reads "Jane Holterhaus".

Jane Holterhaus  
Contract Process Manager

NOTICE PROPRIETARY INFORMATION: THIS DOCUMENT IS THE PROPERTY OF GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION DBA CRYOTECH DEICING TECHNOLOGY. THE INFORMATION CONTAINED HEREIN IS SUBMITTED IN CONFIDENCE. IT CONTAINS TRADE SECRETS OR CONFIDENTIAL COMMERCIAL OR FINANCIAL INFORMATION EXEMPT FROM DISCLOSURE BY 5 U.S.C. SECTION 552(B)(3) AND (4) (FREEDOM OF INFORMATION ACT), AND 18 U.S.C. SECTION 1905 (TRADE SECRETS ACT). EXCEPT WITH THE WRITTEN CONSENT OF GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION DBA CRYOTECH DEICING TECHNOLOGY (1) THIS DOCUMENT MAY NOT BE COPIED IN WHOLE OR IN PART AND WILL BE RETURNED UPON REQUEST OR WHEN NO LONGER NEEDED BY RECIPIENT AND (2) INFORMATION CONTAINED HEREIN MAY NOT BE COMMUNICATED TO OTHERS AND MAY BE USED BY RECIPIENT ONLY FOR THE PURPOSE FOR WHICH IT WAS TRANSMITTED



December 11, 2018

## **CRYOTECH DEICING TECHNOLOGY**

**RE: RFQ CRFQ 0803 DOT1900000045; Calcium Magnesium Acetate and a Pre-Wetting Agent**

### **General (Cryotech Deicing Technology)**

- Cryotech's core business is deicers. All personnel are dedicated to meeting customer needs.
- Cryotech is ISO 9001:2015 and ISO14001:2015 certified. This assures its customers that Cryotech deicers always meet a rigorous, internationally recognized quality standard and is committed to protecting the environment.
- Cryotech's web site ([www.cryotech.com](http://www.cryotech.com)) provides easy access to all company, product, safety and ISO information.
- Cryotech's welcomes customer site visits and audits.
- Cryotech provides customers with complimentary on-site product training and instructional materials.
- Cryotech's normal business hours are Monday through Friday 7:30 AM to 4:00 PM CST.
- Cryotech after hours and holiday coverage during peak season (November through March) is handled by Cryotech personnel on an on-call basis to ensure customer needs are met.
- All Cryotech carriers are required to ensure that drivers have completed appropriate safety-training programs, including spill handling. This is part of Cryotech's ISO 9001:2015 quality certification and vendor monitoring program.

### **Calcium Magnesium Acetate (Cryotech CMA®)**

- Cryotech has CMA production and storage in Fort Madison, IA to provide direct delivery to West Virginia's Oak Hill storage site within 5-7 days after receipt of order (ARO).
- Full truckload orders are shipped in approximately 20 metric ton quantities – due to the weight of the product, this is typically the maximum carriers can ship.

### **Distribution Plan for Potassium Acetate (Cryotech CF7®)**

- Cryotech has CF7 production and storage in Fort Madison, IA to provide direct delivery to West Virginia's Oak Hill storage site within 5-7 days ARO.

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## Exceptions Page

**RE: RFQ CRFQ 0803 DOT1900000045; Calcium Magnesium Acetate and a Pre-Wetting Agent**

### General Terms and Conditions

- **Item 8, Insurance:** Please see exception to wording below:  
*Thirty (30) days prior to the expiration of the insurance policies, Vendor shall endeavor to provide Agency with proof that the insurance mandated herein has been continued.*
- **Item 15, Payment Methods:** Cryotech will accept payment via electronic funds transfer. Payment terms are Net 30.
- **Item 38, Additional Agency and Local Government Use:** Cryotech prefers not to extend the prices and terms of this proposal to other public agencies.

The prices offered in this proposal are based on an estimated volume, full truckload orders, and delivery location among many other factors; therefore, without knowing who the end user is Cryotech cannot guarantee the same price and terms.

### Specifications

- **Item 6.5, Return Due to Agency Error:** Due to issues with contamination, bulk Cryotech CMA® cannot be returned once delivered and unloaded into customer storage. Cryotech CF7® in totes may be returned if original seals are intact. Cost to return product will be at the expense of the State of West Virginia.

NOTICE PROPRIETARY INFORMATION: THIS DOCUMENT IS THE PROPERTY OF GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION DBA CRYOTECH DEICING TECHNOLOGY. THE INFORMATION CONTAINED HEREIN IS SUBMITTED IN CONFIDENCE. IT CONTAINS TRADE SECRETS OR CONFIDENTIAL COMMERCIAL OR FINANCIAL INFORMATION EXEMPT FROM DISCLOSURE BY 5 U.S.C. SECTION 552(B) (3) AND (4) (FREEDOM OF INFORMATION ACT), AND 18 U.S.C. SECTION 1905 (TRADE SECRETS ACT). EXCEPT WITH THE WRITTEN CONSENT OF GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION DBA CRYOTECH DEICING TECHNOLOGY (1) THIS DOCUMENT MAY NOT BE COPIED IN WHOLE OR IN PART AND WILL BE RETURNED UPON REQUEST OR WHEN NO LONGER NEEDED BY RECIPIENT AND (2) INFORMATION CONTAINED HEREIN MAY NOT BE COMMUNICATED TO OTHERS AND MAY BE USED BY RECIPIENT ONLY FOR THE PURPOSE FOR WHICH IT WAS TRANSMITTED

**SOLICITATION NUMBER: CRFQ DOT1900000045**

**Addendum Number: 1**

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The purpose of this addendum is to modify the solicitation identified as (“Solicitation”) to reflect the change(s) identified and described below.

**Applicable Addendum Category:**

- Modify bid opening date and time
- Modify specifications of product or service being sought
- Attachment of vendor questions and responses
- Attachment of pre-bid sign-in sheet
- Correction of error
- Other

**Description of Modification to Solicitation:**

1. To provide answers to vendor questions

No other changes at this time

Bid opening date remains December 13, 2018 at 1:30 PM EST

**Additional Documentation:** Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

**Terms and Conditions:**

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

# ATTACHMENT A

Addendum #1            CRFQ DOT1900000045

Calcium Magnesium Acetate and a Pre-Wetting Agent

QUESTION 1:            In Section 5.2 regarding payment via a “Purchasing Card Program”, do we have to enroll in this? Per Section 15, it states we can be paid via EFT.

RESPONSE 1:            The WVDOH’s preferred payment processing is via the “Purchasing Card Program”; however, the WVDOH can pay the vendor via EFT as long as the Vendor is established with the West Virginia Treasurer’s Office.

QUESTION 2:            In Section 8.3 Reports, do we have to supply West Virginia with a quarterly and annual report?

RESPONSE 2:            Reports are to be supplied only upon request.

QUESTION 3a:            Do we need to return the “Purchasing Affidavit”?

RESPONSE 3a:            The Purchasing Affidavit is not required to accompany the Vendor’s bidding documents; however, it will be required from the potential successful Vendor prior to award.

QUESTION 3b:            Does this apply to deicer suppliers?

RESPONSE 3b:            The Purchasing Affidavit is required from the awarded contracted Vendor prior to award.

QUESTION 4:            The RFQ states orders will come through the OASIS system. Is there any other way to place orders such as through emails, or phone calls?

RESPONSE 4:            Section 5.1 states, “Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website.”

QUESTION 5a:            In Section 13 Registration, it talks about a \$125.00 fee to be paid Prior to the Award Contract. Does this get paid with the bid offer, before the bid offer separate from the bid, or once the Award has been announced?

RESPONSE 5a:            The \$125.00 annual fee must be paid prior to award . The prospective awarded vendor will be contacted by the West Virginia State Purchasing Division in regard to resolving any registration issues. Vendors may pay

the fee by utilizing the WVOasis.gov Vendor Self Service portal or by contacting West Virginia Purchasing Division Vendor Registration section. Please refer to <http://www.state.wv.us/admin/purchase/VendorReg.html> for more information on vendor registration.

QUESTION 5b: Are there instructions as to how to do this?

RESPONSE 5b: Complete instructions are contained by following the below link <http://www.state.wv.us/admin/purchase/VendorReg.html>

QUESTION 6: Will all 800 gallons of liquid and 100 tons of CMA be ordered at once or throughout the winter season?

RESPONSE 6: Per Section 4.2 of the solicitation specifications: Vendors should be cautioned as the quantities listed are estimates only. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery whether more or less than the quantities shown. No future use of the Contract or any individual item is guaranteed or implied.

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: DOT1900000045**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

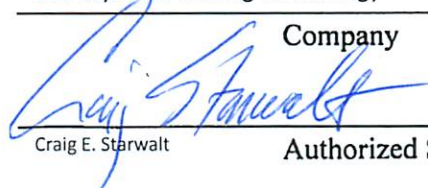
**Addendum Numbers Received:**

(Check the box next to each addendum received)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2            | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3            | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4            | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5            | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION  
dba Cryotech Deicing Technology

\_\_\_\_\_  
Company  
  
\_\_\_\_\_  
Craig E. Starwalt Authorized Signature

12/5/18

\_\_\_\_\_  
Date

**NOTE:** This addendum acknowledgement should be submitted with the bid to expedite document processing.  
Revised 6/8/2012





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

State of West Virginia  
 Request for Quotation  
 19 – Highways

Proc Folder: 494116

Doc Description: ADDENDUM 1 6619C011-CAL MAG ACETATE AND A PRE-WETTING AGENT

Proc Type: Central Master Agreement

Date Issued	Solicitation Closes	Solicitation No	Version
2018-11-16	2018-12-13 13:30:00	CRFQ 0803 DOT1900000045	2

**BID RECEIVING LOCATION**

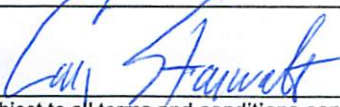
BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

Vendor Name, Address and Telephone Number:  
 GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION  
 dba Cryotech Deicing Technology  
 6103 Orthoway  
 Fort Madison, IA 52627  
 800-346-7237 or 319-372-6012

**FOR INFORMATION CONTACT THE BUYER**

Crystal Rink  
 (304) 558-2402  
 crystal.g.rink@wv.gov

Signature X  FEIN # 33-0270225 DATE 12/5/18

All offers subject to all terms and conditions contained in this solicitation

**ADDITIONAL INFORMATION:**

THE WEST VIRGINIA PURCHASING DIVISION IS SOLICITING BIDS ON BEHALF OF THE WEST VIRGINIA DIVISION OF HIGHWAYS TO ESTABLISH AN OPEN-END CONTRACT FOR CALCIUM MAGNESIUM ACETATE AND A LOW CORROSIVE PRE-WETTING AGENT TO BE USED ON THE NEW RIVER GORGE BRIDGE.

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS DISTRICT NINE FAYETTE COUNTY HEADQUARTERS 3121 MAIN ST OAK HILL WV25901 US	DIVISION OF HIGHWAYS DISTRICT NINE FAYETTE COUNTY HEADQUARTERS 3121 MAIN ST OAK HILL WV 25901 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	CALCIUM MAGNESIUM ACETATE	100.00000	TON	\$1,970.00*	\$197,000.00

\*Pricing shown above is for orders of 22 US Tons per delivery. Other pricing options available upon request.

Comm Code	Manufacturer	Specification	Model #
47131823	Cryotech	Cryotech CMA (R)	1100-10

**Extended Description :**

CALDIUM MAGNESIUM ACETATE FOR USE IN THE DEICING OF THE NEW RIVER GORGE BRIDGE

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS DISTRICT NINE FAYETTE COUNTY HEADQUARTERS 3121 MAIN ST OAK HILL WV25901 US	DIVISION OF HIGHWAYS DISTRICT NINE FAYETTE COUNTY HEADQUARTERS 3121 MAIN ST OAK HILL WV 25901 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	LOW CORROSIVE PRE-WETTING AGENT NO CHLORIDES	800.00000	GL	\$7.75*	\$6,200.00

\*Pricing shown above is for 265 gallon tote purchases.

Comm Code	Manufacturer	Specification	Model #
47131823	Cryotech	Cryotech CF7 (R)	2100-70

**Extended Description :**

LOW CORROSIVE PRE-WETTING AGENT NO CHLORIDE FOR USE IN THE DEICING OF THE NEW RIVER GORGE BRIDGE

**SCHEDULE OF EVENTS**

Line	Event	Event Date
1	QUESTION DEADLINE 10AM EST	2018-11-16

Deliveries will be made within 5-7 days after receipt of order.

<b>DOT1900000045</b>	<b>Document Phase</b> Final	<b>Document Description</b> ADDENDUM 1 6619C011-CAL MAG ACETATE AND A PRE-WETTING AGENT	<b>Page 3</b> <b>of 3</b>
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**ADDITIONAL TERMS AND CONDITIONS**

See attached document(s) for additional Terms and Conditions



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

State of West Virginia  
 Request for Quotation  
 19 - Highways

Proc Folder: 494116

Doc Description: 6619C011-CALCIUM MAGNESIUM ACETATE AND A PRE-WETTING AGENT

Proc Type: Central Master Agreement

Date Issued	Solicitation Closes	Solicitation No	Version
2018-11-13	2018-12-13 13:30:00	CRFQ 0803 DOT1900000045	1

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

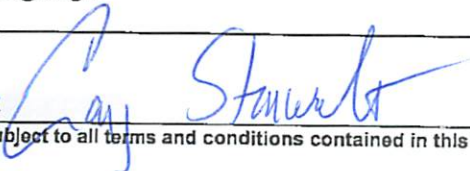
**VENDOR**

Vendor Name, Address and Telephone Number:  
 GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION  
 dba Cryotech Deicing Technology  
 6103 Orthoway, Fort Madison, IA 52627  
 800-346-7237 or 319-372-6012

**FOR INFORMATION CONTACT THE BUYER**

Crystal Rink  
 (304) 558-2402  
 crystal.g.rink@wv.gov

Signature X



FEIN # 33-0270225

DATE 12/5/18

All offers subject to all terms and conditions contained in this solicitation

**ADDITIONAL INFORMATION:**

THE WEST VIRGINIA PURCHASING DIVISION IS SOLICITING BIDS ON BEHALF OF THE WEST VIRGINIA DIVISION OF HIGHWAYS TO ESTABLISH AN OPEN-END CONTRACT FOR CALCIUM MAGNESIUM ACETATE AND A LOW CORROSIVE PRE-WETTING AGENT TO BE USED ON THE NEW RIVER GORGE BRIDGE.

INVOICE TO		SHIP TO	
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Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	CALCIUM MAGNESIUM ACETATE	100.00000	TON		See Addendum 1

Comm Code	Manufacturer	Specification	Model #
47131823	Cryotech Deicing Technology		

**Extended Description :**

CALDIUM MAGNESIUM ACETATE FOR USE IN THE DEICING OF THE NEW RIVER GORGE BRIDGE

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS DISTRICT NINE FAYETTE COUNTY HEADQUARTERS 3121 MAIN ST OAK HILL WV25901 US		DIVISION OF HIGHWAYS DISTRICT NINE FAYETTE COUNTY HEADQUARTERS 3121 MAIN ST OAK HILL WV 25901 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	LOW CORROSIVE PRE-WETTING AGENT NO CHLORIDES	800.00000	GL		See Addendum 1

Comm Code	Manufacturer	Specification	Model #
47131823	Cryotech Deicing Technology		

**Extended Description :**

LOW CORROSIVE PRE-WETTING AGENT NO CHLORIDE FOR USE IN THE DEICING OF THE NEW RIVER GORGE BRIDGE

**SCHEDULE OF EVENTS**

Line	Event	Event Date
1	QUESTION DEADLINE 10AM EST	2018-11-16

## **INSTRUCTIONS TO VENDORS SUBMITTING BIDS**

**1. REVIEW DOCUMENTS THOROUGHLY:** The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

**2. MANDATORY TERMS:** The Solicitation may contain mandatory provisions identified by the use of the words "must," "will," and "shall." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

**3. PREBID MEETING:** The item identified below shall apply to this Solicitation.

A pre-bid meeting will not be held prior to bid opening

A **NON-MANDATORY PRE-BID** meeting will be held at the following place and time:

A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the mandatory pre-bid meeting. Failure to attend the mandatory pre-bid meeting shall result in disqualification of the Vendor's bid. No one person attending the pre-bid meeting may represent more than one Vendor.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. The State will not accept any other form of proof or documentation to verify attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing.



Additionally, the person attending the pre-bid meeting should include the Vendor's E-Mail address, phone number, and Fax number on the attendance sheet. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

All Vendors should arrive prior to the starting time for the pre-bid. Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in, but are charged with knowing all matters discussed at the pre-bid.

Questions submitted at least five business days prior to a scheduled pre-bid will be discussed at the pre-bid meeting if possible. Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

**4. VENDOR QUESTION DEADLINE:** Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions must be submitted on or before the date listed below and to the address listed below in order to be considered. A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are nonbinding.

Submitted e-mails should have solicitation number in the subject line.

Question Submission Deadline: **November 16, 2018 at 10:00 AM EST**

Submit Questions to: **Crystal Rink**  
2019 Washington Street, East  
Charleston, WV 25305  
Fax: (304) 558-4115 (Vendors should not use this fax number for bid submission)  
Email: **Crystal.G.Rink@wv.gov**

**5. VERBAL COMMUNICATION:** Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

**6. BID SUBMISSION:** All bids must be submitted electronically through wvOASIS or signed and delivered by the Vendor to the Purchasing Division at the address listed below on or before the date and time of the bid opening. Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason. The Purchasing Division will not accept bids, modification of bids, or addendum acknowledgment forms via e-mail. Acceptable delivery methods include electronic submission via wvOASIS, hand delivery, delivery by courier, or facsimile.

The bid delivery address is:  
Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130

A bid that is not submitted electronically through wvOASIS should contain the information listed below on the face of the envelope or the bid may be rejected by the Purchasing Division.:

**SEALED BID:**

**BUYER:** Crystal Rink  
**SOLICITATION NO.:** CRFQ DOT1900000045  
**BID OPENING DATE:** December 13, 2018  
**BID OPENING TIME:** 1:30 PM EST  
**FAX NUMBER:** 304-558-3970

The Purchasing Division may prohibit the submission of bids electronically through wvOASIS at its sole discretion. Such a prohibition will be contained and communicated in the wvOASIS system resulting in the Vendor's inability to submit bids through wvOASIS. Submission of a response to an Expression or Interest or Request for Proposal is not permitted in wvOASIS.

**For Request For Proposal ("RFP") Responses Only:** In the event that Vendor is responding to a request for proposal, the Vendor shall submit one original technical and one original cost proposal plus n/a convenience copies of each to the Purchasing Division at the address shown above. Additionally, the Vendor should identify the bid type as either a technical or cost proposal on the face of each bid envelope submitted in response to a request for proposal as follows:

**BID TYPE:** (This only applies to CRFP)

- Technical  
 Cost

**7. BID OPENING:** Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery).

**Bid Opening Date and Time:** December 13, 2018 at 1:30 PM EST

**Bid Opening Location:** Department of Administration, Purchasing Division  
2019 Washington Street East  
Charleston, WV 25305-0130



**8. ADDENDUM ACKNOWLEDGEMENT:** Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgment Form, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

**9. BID FORMATTING:** Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

**10. ALTERNATE MODEL OR BRAND:** Unless the box below is checked, any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand should clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items may be grounds for rejection of a Vendor's bid.

This Solicitation is based upon a standardized commodity established under W. Va. Code § 5A-3-61. Vendors are expected to bid the standardized commodity identified. Failure to bid the standardized commodity will result in your firm's bid being rejected.

**11. EXCEPTIONS AND CLARIFICATIONS:** The Solicitation contains the specifications that shall form the basis of a contractual agreement. Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid. Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

**12. COMMUNICATION LIMITATIONS:** In accordance with West Virginia Code of State Rules §148-1-6.6, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

**13. REGISTRATION:** Prior to Contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division and must have paid the \$125 fee, if applicable.

**14. UNIT PRICE:** Unit prices shall prevail in cases of a discrepancy in the Vendor's bid.

**15. PREFERENCE:** Vendor Preference may be requested in purchases of motor vehicles or construction and maintenance equipment and machinery used in highway and other infrastructure projects. Any request for preference must be submitted in writing with the bid, must specifically identify the preference requested with reference to the applicable subsection of West Virginia Code § 5A-3-37, and should include with the bid any information necessary to evaluate and confirm the applicability of the requested preference. A request form to help facilitate the request can be found at:  
<http://www.state.wv.us/admin/purchase/vrc/Venpref.pdf>.

**15A. RECIPROCAL PREFERENCE:** The State of West Virginia applies a reciprocal preference to all solicitations for commodities and printing in accordance with W. Va. Code § 5A-3-37(b). In effect, non-resident vendors receiving a preference in their home states, will see that same preference granted to West Virginia resident vendors bidding against them in West Virginia. A request form to help facilitate the request can be found at:  
<http://www.state.wv.us/admin/purchase/vrc/Venpref.pdf>.

**16. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES:** For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37(a)(7) and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority-owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors. Preference for a non-resident small, women-owned, or minority owned business shall be applied in accordance with W. Va. CSR § 148-22-9.

**17. WAIVER OF MINOR IRREGULARITIES:** The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.6.

**18. ELECTRONIC FILE ACCESS RESTRICTIONS:** Vendor must ensure that its submission in wvOASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires, and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

**19. NON-RESPONSIBLE:** The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1-5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform, or lacks the integrity and reliability to assure good-faith performance.”

**20. ACCEPTANCE/REJECTION:** The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.5. and § 148-1-6.4.b.”

**21. YOUR SUBMISSION IS A PUBLIC DOCUMENT:** Vendor’s entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

**DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.**

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled “confidential,” “proprietary,” “trade secret,” “private,” or labeled with any other claim against public disclosure of the documents, to include any “trade secrets” as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

**22. INTERESTED PARTY DISCLOSURE:** West Virginia Code § 6D-1-2 requires that the vendor submit to the Purchasing Division a disclosure of interested parties to the contract for all contracts with an actual or estimated value of at least \$1 Million. That disclosure must occur on the form prescribed and approved by the WV Ethics Commission prior to contract award. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

**23. WITH THE BID REQUIREMENTS:** In instances where these specifications require documentation or other information with the bid, and a vendor fails to provide it with the bid, the Director of the Purchasing Division reserves the right to request those items after bid opening and prior to contract award pursuant to the authority to waive minor irregularities in bids or specifications under W. Va. CSR § 148-1-4.6. This authority does not apply to instances where state law mandates receipt with the bid.

## **GENERAL TERMS AND CONDITIONS:**

**1. CONTRACTUAL AGREEMENT:** Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

**2. DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

**2.1. "Agency" or "Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

**2.2. "Bid" or "Proposal"** means the vendors submitted response to this solicitation.

**2.3. "Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

**2.4. "Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.

**2.5. "Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.

**2.6. "Award Document"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

**2.7. "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

**2.8. "State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

**2.9. "Vendor" or "Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.



**4. NOTICE TO PROCEED:** Vendor shall begin performance of this Contract immediately upon receiving notice to proceed unless otherwise instructed by the Agency. Unless otherwise specified, the fully executed Award Document will be considered notice to proceed.

**5. QUANTITIES:** The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

**Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. 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.

**Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

**Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

**One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

**6. EMERGENCY PURCHASES:** The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute a breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

**7. REQUIRED DOCUMENTS:** All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

**BID BOND (Construction Only):** Pursuant to the requirements contained in W. Va. Code § 5-22-1(c), All Vendors submitting a bid on a construction project shall furnish a valid bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

**PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of 100% of the contract. The performance bond must be received by the Purchasing Division prior to Contract award.

**LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under \$100,000. Personal or business checks are not acceptable. Notwithstanding the foregoing, West Virginia Code § 5-22-1 (d) mandates that a vendor provide a performance and labor/material payment bond for construction projects. Accordingly, substitutions for the performance and labor/material payment bonds for construction projects is not permitted.

**MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

**LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits prior to Contract award, in a form acceptable to the Purchasing Division.

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications prior to Contract award regardless of whether or not that requirement is listed above.

**8. INSURANCE:** The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below and must include the State as an additional insured on each policy prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed in this section.

Vendor must maintain:

- Commercial General Liability Insurance** in at least an amount of: \$1,000,000 (SEE BELOW) per occurrence.
- Automobile Liability Insurance** in at least an amount of: \_\_\_\_\_ per occurrence.
- Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: \_\_\_\_\_ per occurrence.
- Commercial Crime and Third Party Fidelity Insurance** in an amount of: \_\_\_\_\_ per occurrence.
- Cyber Liability Insurance** in an amount of: \_\_\_\_\_ per occurrence.
- Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.
- Pollution Insurance** in an amount of: \_\_\_\_\_ per occurrence.
- Aircraft Liability** in an amount of: \_\_\_\_\_ per occurrence.
- \*\*STATE OF WV MUST BE LISTED AS ADDITIONAL INSURED ON INSURANCE CERTIFICATE\*\***
- \*\*CERTIFICATE HOLDER SHALL READ AS FOLLOWS:  
STATE OF WV  
1900 KANAWHA BLVD E, BLDG 5, CHARLESTON, WV 25305**
- 
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Notwithstanding anything contained in this section to the contrary, the Director of the Purchasing Division reserves the right to waive the requirement that the State be named as an additional insured on one or more of the Vendor's insurance policies if the Director finds that doing so is in the State's best interest.

**9. WORKERS' COMPENSATION INSURANCE:** The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

**10. [Reserved]**

**11. LIQUIDATED DAMAGES:** This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

\_\_\_\_\_ for \_\_\_\_\_

Liquidated Damages Contained in the Specifications

**12. ACCEPTANCE:** Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

**13. PRICING:** The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification.

**14. PAYMENT IN ARREARS:** Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

**15. PAYMENT METHODS:** Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

**16. TAXES:** The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

**17. ADDITIONAL FEES:** Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

**18. FUNDING:** This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

**19. CANCELLATION:** The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

**20. TIME:** Time is of the essence with regard to all matters of time and performance in this Contract.

**21. APPLICABLE LAW:** This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

**22. COMPLIANCE WITH LAWS:** Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**23. ARBITRATION:** Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

**24. MODIFICATIONS:** This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

**25. WAIVER:** The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

**26. SUBSEQUENT FORMS:** The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

**27. ASSIGNMENT:** Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

**28. WARRANTY:** The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

**29. STATE EMPLOYEES:** State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

**30. PRIVACY, SECURITY, AND CONFIDENTIALITY:** The Vendor agrees that it 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. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/default.html>.

**31. YOUR SUBMISSION IS A PUBLIC DOCUMENT:** Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

**DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.**

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

**32. LICENSING:** In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**33. ANTITRUST:** In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

**34. VENDOR CERTIFICATIONS:** By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein.

Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

**35. VENDOR RELATIONSHIP:** The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

**36. INDEMNIFICATION:** The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

**37. PURCHASING AFFIDAVIT:** In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State, Vendors are required to sign, notarize, and submit the Purchasing Affidavit to the Purchasing Division affirming under oath that it is not in default on any monetary obligation owed to the state or a political subdivision of the state.

**38. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE:** This Contract may be utilized by other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts (“Other Government Entities”), provided that both the Other Government Entity and the Vendor agree. Any extension of this Contract to the aforementioned Other Government Entities must be on the same prices, terms, and conditions as those offered and agreed to in this Contract, provided that such extension is in compliance with the applicable laws, rules, and ordinances of the Other Government Entity. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

**39. CONFLICT OF INTEREST:** Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

**40. REPORTS:** Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at [purchasing.requisitions@wv.gov](mailto:purchasing.requisitions@wv.gov).

**41. BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision. The State reserves the right to prohibit a service provider’s employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Revised 06/08/2018

Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

**42. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS:** Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
- c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
- d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

**43. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL:** In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a

“substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

**44. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE:** W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the vendor must submit to the Agency a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-award interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.



**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Jane Holterhaus, Contract Process Manager  
(Name, Title)  
Jane Holterhaus, Contract Process Manager  
(Printed Name and Title)  
6103 Orthoway, Fort Madison, IA 52627  
(Address)  
800-346-7237 (phone); 319-372-2662 (fax)  
(Phone Number) / (Fax Number)  
contracts@cryotech.com  
(email address)

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

GENERAL ATOMICS INTERNATIONAL SERVICE CORPORATION

dba Cryotech Deicing Technology  
(Company)

  
(Authorized Signature) (Representative Name, Title)

Craig E. Starwalt, President and Chief Executive Officer  
(Printed Name and Title of Authorized Representative)

12/5/18  
(Date)

800-346-7237 (phone); 319-372-2662 (fax)  
(Phone Number) (Fax Number)

ADDENDUM ACKNOWLEDGEMENT FORM  
SOLICITATION NO.: CRFQ DOT1900000045

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

*(Check the box next to each addendum received)*

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2            | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3            | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4            | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5            | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION  
dba Cryotech Deicing Technology

Company



Authorized Signature

Craig E. Starwalt

12/5/18

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.

**REQUEST FOR QUOTATION**  
**CRFQ DOT1900000045**  
**Calcium Magnesium Acetate and Low Corrosive Pre-wetting Agent**  
**(6619C011)**

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**SPECIFICATIONS**

- 1. PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of the West Virginia Division of Highways to establish an open-end contract for Calcium Magnesium Acetate and a Low Corrosive Pre-wetting Agent to be used on the New River Gorge Bridge.
  
- 2. DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.
  - 2.1 “Contract Item” or “Contract Items”** means the list of items identified in Section 3.2 below and on the Pricing Pages.
  
  - 2.2 “Pricing Pages”** means the schedule of prices, estimated order quantity, and totals contained in wvOASIS or attached hereto as Exhibit A, and used to evaluate the Solicitation responses.
  
  - 2.3 “Solicitation”** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
  
  - 2.4 “WVDOH”** used throughout this Solicitation means the West Virginia Division of Highways.
  
  - 2.8 “Contractor” or “Vendor”** used throughout this Solicitation and in any cited sections of the West Virginia Department of Transportation, Division of Highways Standard Specifications, Roads and Bridges, adopted latest Standard Spec book edition, as modified by all subsequent annual Supplemental Specifications, are interchangeable.
  
  - 2.9 “Standard Specs”** used throughout this Solicitation means the West Virginia Department of Transportation, Division of Highways Standard Specifications, Roads and Bridges, adopted latest Standard Spec book edition, as modified by all subsequent annual Supplemental Specifications.
  
- 3. GENERAL REQUIREMENTS:**
  - 3.1** The following sections of the Standard Specs shall apply to the administration of this contract: Sections 101, 102.4, 102.5, 105.1, 105.3, 105.4, 105.10, 105.11,

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105.12, 105.13, 106.3, 106.4, 106.5, 106.6, 106.7, 106.9, 107.1, 107.2, 107.3, 107.14, 107.19, 107.20, 108.8, 109.1, 109.2 and 109.20.

A hard copy of the current Standard Specs may be purchased at a cost of \$20.00 (\$15.00 for the 2017 book plus \$5.00 for the 2018 Supplemental) using the Attachment A Standard Specifications Order Form and sent to:

West Virginia Division of Highways  
Contract Administration  
Building 5, Room 722  
1900 Kanawha Boulevard, East  
Charleston, West Virginia 25305  
(Phone) 304-558-2885

A free electronic copy of the Standard Specs may be obtained by sourcing:  
<http://www.transportation.wv.gov/highways/contractadmin/specifications/2017StandSpec/Pages/default.aspx>

**3.2 Minimum Material Requirements:**

**3.2.1 Calcium Magnesium Acetate (CMA) shall conform to the following product specifications and shall be delivered in bulk.**

Composition: A nominal 3/7 CMA of this analysis:

$Ca_xMg_y(C_2H_3O_2)_2(x+y)$

x = 3 to 4

y = 7 to 6

CMA 91% Minimum

Water (Free and Hydration) 5% Maximum

Water-Insoluble Material 4% Maximum

Particle Size: Sieve 4 90% minimum

Sieve 14 10% Maximum

Particle Shape: Hard, Angular, Asymmetrical Granules

Specific Gravity: Minimum 1.2

Bulk Density: 40 lb/ft<sup>3</sup> to 44 lb/ft<sup>3</sup>

Residual Base: Maximum 0.4 meg base/gm sample

Product pH: pH 8 to 10 in a 10% solution

**3.2.2 Low Corrosive Pre-wetting Agent/No Chlorides**

Density: At 68° F. 10.7 lbs/gallon

Viscosity: At 68°F. 10 cp maximum

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At 32°F. 20 cp maximum  
Freezing Point: -76°F  
Typical pH: 11.0+/-0.5  
Specific Gravity: At 68°F. 1.25-1.30  
Container Size: 265-gallon tote

**The vendor shall provide bid product label/documentation with their bid for each item bid. WVDOH will evaluate each item on equivalency of bid product to determine if the bid product meets the required specifications.**

**3.3 Sampling and Testing:**

Upon award of this contract, the Vendor shall provide the WVDOH with the proposed source of supply. Acceptance shall be based on suppliers' certification of quality and gradation. This information shall be directed to:

West Virginia Division of Highways  
Materials Section  
190 Dry Branch Road  
Charleston, WV 25306

The WVDOH may conduct sampling and testing to verify material quality or gradation.

**4. CONTRACT AWARD:**

- 4.1 Contract Award:** The Contract is intended to provide Agency with a purchase price on both Contract Items. A Contract will be awarded to the Vendor that provides the lowest Unit Cost, per Ton, for Contract Item #1 and to the Vendor that provides the lowest Unit Cost, per Gallon, for Contract Item #2.
- 4.2 Pricing Pages:** Vendors should complete the Pricing Page by providing delivery unit prices for each Contract Item. Vendors may bid one or both items on the Pricing Page.

Vendors should be cautioned as the quantities listed are estimates only. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery whether more or less than the quantities shown. No future use of the Contract or any individual item is guaranteed or implied.

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Vendor should type or electronically enter the information into the Pricing Pages through wvOASIS, if available, or as an electronic document. In most cases, the Vendor can request an electronic copy of the Pricing Page for bid purposes by sending an email request to the following address: [crystal.g.rink@wv.gov](mailto:crystal.g.rink@wv.gov).

**5. ORDERING AND PAYMENT:**

- 5.1 Ordering:** Vendor shall accept orders through wvOASIS, regular mail, facsimile, e-mail, or any other written forms of communication. Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website. If Vendor has the ability to accept on-line orders, it should include in its response a brief description of how Agencies may utilize the on-line ordering system. Vendor shall ensure that its on-line ordering system is properly secured prior to processing Agency orders on-line.
- 5.2 Payment:** Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia. The State of West Virginia currently utilizes a Purchasing Card program, administered under contract by a banking institution, to process payment for goods and services. The Vendor must accept the State of West Virginia's Purchasing Card for payment of all orders under this Contract.

**6. DELIVERY AND RETURN:**

- 6.1 Delivery Time:** Vendor shall deliver standard orders according to the established acceptable delivery date agreed at the time of order. Vendor shall deliver emergency orders within an established acceptable time frame, agreed upon by the WVDOH and the vendor, after orders are received. Vendor shall ship all orders in accordance with the established delivery date and shall not hold orders until a minimum delivery quantity is met. If the vendor is unable to furnish material in accordance with the established delivery date, the WVDOH District Engineer/Manager shall be advised in writing within five (5) working days of the reason for failure to conform to the delivery requirements.
- 6.2 Late Delivery:** The Agency placing the order under this Contract must be notified in writing within five (5) days if orders will be delayed for any reason. Any delay in delivery that could cause harm to an Agency will be grounds for cancellation of

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the delayed order, and/or obtaining the items ordered from a third party.

Any Agency seeking to obtain items from a third party under this provision must first obtain approval of the Purchasing Division.

- 6.3 Delivery Payment/Risk of Loss:** Standard order delivery shall be F.O.B. destination to the Agency's location. Vendor shall include the cost of standard order delivery charges in its bid pricing/discount and is not permitted to charge the Agency separately for such delivery. The Agency will pay delivery charges on all emergency orders provided that Vendor invoices those delivery costs as a separate charge with the original freight bill attached to the invoice.
- 6.4 Return of Unacceptable Items:** If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion.
- 6.5 Return Due to Agency Error:** Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

**7. VENDOR DEFAULT:**

- 7.1** The following shall be considered a vendor default under this Contract.
- 7.1.1** Failure to provide Contract Items in accordance with the requirements contained herein.
- 7.1.2** Failure to comply with other specifications and requirements contained herein.

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- 7.1.3 Failure to comply with any laws, rules and ordinances applicable to the Contract Services provided under this Contract.
      - 7.1.4 Failure to remedy deficient performance upon request.
    - 7.2 The following remedies shall be available to Agency upon default.
      - 7.2.1 Immediate cancellation of the Contract.
      - 7.2.2 Immediate cancellation of one or more Delivery Orders issued under this Contract.
      - 7.2.3 Any other remedies available in law or equity.
- 8. **MISCELLENOUS:**
  - 8.1 **No Substitutions:** The Vendor shall supply only Contract Items submitted in response to the Solicitation unless a contract modification is approved in accordance with the provisions contained in this Contract.
  - 8.2 **Vendor Supply:** The Vendor must carry sufficient inventory of the Contract Items being offered to fulfill its obligations under this Contract. By signing its bid, the Vendor certifies that it can supply the Contract Items contained in its bid response.
  - 8.3 **Reports:** The Vendor shall provide quarterly reports and annual summaries to the Agency showing the Contract Items purchased, quantities of Contract Items purchased, and the total dollar value of the Contract Items purchased. The Vendor shall also provide reports, upon request, showing the Contract Items purchased during the term of this Contract, the quantity purchased for each of those Contract Items and the total value of purchases for each of those Contract Items. Failure to supply such reports may be grounds for cancellation of this Contract.
  - 8.4 **Contract Manager:** During its performance of this Contract, the Vendor must designate and maintain a primary contract manager responsible for overseeing the Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. The Vendor should list its Contract manager and his or her contact information below.



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**Contract Manager:** Jane Holterhaus

**Telephone Number:** 800-346-7237

**Fax Number:** 319-372-2662

**Email Address:** contracts@cryotech.com

**Exhibit A Pricing Page**

**CRFQ DOT1900000045**

**Item 1 Calcium Magnesium Acetate**

<b>Delivery Location</b>	<b>Estimated Quantity</b>	<b>Unit Cost Per Ton</b>	<b>TOTAL</b>
Fayette County - Oak Hill	100 Tons	\$1,970.00*	\$197,000.00

\*Minimum order of 22 US Ton per delivery.

**Item 2 Pre-Wetting Agent No-Chlorides**

<b>Delivery Location</b>	<b>Estimated Quantity</b>	<b>Unit Cost Per Gallon</b>	<b>TOTAL</b>
Fayette County - Oak Hill	800 Gallons	\$7.75*	\$6,200.00

\*Minimum order of 1- 265 gallon tote per delivery.

<b>GRAND TOTAL (Items 1 and 2)</b>	<b>\$203,200.00</b>
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**West Virginia Department of Transportation  
Division of Highways**

**Standard Specifications Order Form**

**Ordering Instructions:**

Copies of the *2017 Standard Specifications Roads and Bridges* and latest **Supplemental Specifications** may be purchased by completing this form, indicating the number of books desired, along with proper mailing and billing information.

Submit completed form by e-mail [DOHSpecifications@wv.gov](mailto:DOHSpecifications@wv.gov), or mail to:

Contract Administration Division  
1900 Kanawha Boulevard East  
Building Five, Room 840  
Charleston, WV 25305

**Order Form:**

Delivery Method (check one):      Pick-up                       Mail  (S&H fees apply – see below)

Payment Method (check one):      Invoice                       Check  (payable to: WV Division of Highways)

Number of Copies	Title	Price Each	Total
	<b>2017 Standard Specifications Roads and Bridges</b>	\$15.00	
	<b>Supplemental Specifications, Latest Edition</b>	\$5.00	
Shipping and Handling (S&H) *			
* 1-9 Items = \$5.00    10+ Items = \$10.00			
<b>Total Amount Due</b>			

NOTICE: The *2017 Standard Specifications Roads and Bridges* and *Supplemental Specifications* are available free of charge on the [Specifications Webpage](#).

**Customer Information:**

Company Name: \_\_\_\_\_  
 ATTENTION: \_\_\_\_\_  
 Street Address: \_\_\_\_\_  
 City, State, Zip Code: \_\_\_\_\_  
 Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ e-mail: \_\_\_\_\_

For Office Use Only (Do not write in the space below)				
Order Filled By: _____			Date: _____	
REC ORG	AUTH	ACT	OBJ	P/N
0064	COTH126	126	021	N

## West Virginia Ethics Commission



### Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of \$1 million or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

*"Business entity"* means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation, but does not include publicly traded companies listed on a national or international stock exchange.

*"Interested party"* or *"Interested parties"* means:

- (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
- (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
- (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

*"State agency"* means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of *W. Va. Code* § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

*This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: [ethics@wv.gov](mailto:ethics@wv.gov); website: [www.ethics.wv.gov](http://www.ethics.wv.gov).*

**West Virginia Ethics Commission**  
**Disclosure of Interested Parties to Contracts**

(Required by *W. Va. Code* § 6D-1-2)

GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION  
dba Cryotech Deicing Technology

Name of Contracting Business Entity: \_\_\_\_\_ Address: 6103 Orthoway  
Fort Madison, IA 52627

Name of Authorized Agent: \_\_\_\_\_ Address: \_\_\_\_\_

Contract Number: \_\_\_\_\_ Contract Description: \_\_\_\_\_

Governmental agency awarding contract: West Virginia Division of Highways

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (*attach additional pages if necessary*):

**1. Subcontractors or other entities performing work or service under the Contract**

Check here if none, otherwise list entity/individual names below.

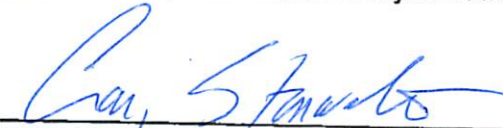
**2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)**

Check here if none, otherwise list entity/individual names below.

General Atomics Technologies Corporation

**3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)**

Check here if none, otherwise list entity/individual names below.

Signature:   
Craig E. Starwalt

Date Signed: 12/5/18

**Notary Verification**

State of Iowa, County of Lee:

I, Craig E. Starwalt, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 5 day of December, 2018.

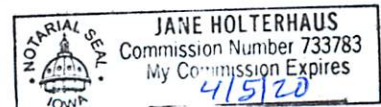
  
Notary Public's Signature

**To be completed by State Agency:**

Date Received by State Agency: \_\_\_\_\_

Date submitted to Ethics Commission: \_\_\_\_\_

Governmental agency submitting Disclosure: \_\_\_\_\_





STATE OF WEST VIRGINIA  
Purchasing Division

# PURCHASING AFFIDAVIT

**CONSTRUCTION CONTRACTS:** Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

**ALL CONTRACTS:** Under W. Va. Code §5A-3-10a, 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: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. 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.

**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.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"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.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology

Authorized Signature: *Craig E. Starwalt* Date: 12/5/18  
Craig E. Starwalt

State of Iowa

County of Lee, to-wit:

Taken, subscribed, and sworn to before me this 5 day of December, 2018.

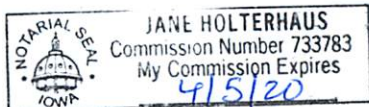
My Commission expires April 5, 2020, 20  .

AFFIX SEAL HERE

NOTARY PUBLIC

*Jane Holterhaus*

*Purchasing Affidavit (Revised 01/19/2018)*



**Exhibit A Pricing Page**

**CRFQ DOT1900000045**

**Item 1 Calcium Magnesium Acetate**

<b>Delivery Location</b>	<b>Estimated Quantity</b>	<b>Unit Cost Per Ton</b>	<b>TOTAL</b>
Fayette County - Oak Hill	100 Tons	1970.000*	197,000.00

\*Pricing shown above is for orders of 22 US Tons per delivery. Other pricing options available upon request.

**Item 2 Pre-Wetting Agent No-Chlorides**

<b>Delivery Location</b>	<b>Estimated Quantity</b>	<b>Unit Cost Per Gallon</b>	<b>TOTAL</b>
Fayette County - Oak Hill	800 Gallons	7.75*	6,200.00

\*Pricing shown above is for 265 gallon tote purchases.

<b>GRAND TOTAL (Items 1 and 2)</b>	<b>\$203,200.00</b>
------------------------------------	---------------------

# CRYOTECH

ISO 9001:2015 & 14001:2015  
Certified Company



Cryotech Deicing Technology is a division of General Atomics International Services Corporation, a San Diego-based company specializing in energy-related research and product development. In 1992, General Atomics purchased the deicing business of Chevron Chemical Company

Included in the acquisition was the production facility at Fort Madison, Iowa, plus all patents, processes, and rights developed by Chevron. The business was renamed Cryotech Deicing Technology, the root word "Cryo" meaning cold.

A world leader in acetate technology, Cryotech manufactures and markets environmentally compatible acetate-based highway, commercial, and airport runway deicers, as well as specialty acetate products for use in industrial applications. Acetates are considered safe for the environment because they readily biodegrade and exhibit low toxicity to vegetation and aquatic life. Acetates have low corrosion rates, and are ideal for application on reinforced concrete structures such as bridges and parking garages. Acetates also have a residual effect, working longer than common deicers.

Cryotech also manufactures and markets Type I, Type II, and Type IV propylene glycol based Aircraft Deicers/Anti-icers with Industry-leading performance and internationally recognized product quality.

In 1998, Cryotech's Fort Madison, Iowa plant received ISO 9001 certification for its quality process systems. Currently Cryotech is certified to the current version of the standard ISO 9001:2015 and ISO 14001:2015. ISO 14001:2015 is a detailed environmental management system which allows it to identify and take required actions that reduce environmental and health risks, while consistently improving its environmental performance. Cryotech is the first manufacturer in its industry to receive certification to both ISO standards, reaffirming its position as an industry leader.

## TO ORDER OR FOR PRODUCT INFORMATION CONTACT:

Ph: +1 319.372.6012 or +1 800.346.7237 Fax: +1 319.372.2662

E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)

**Cryotech Deicing Technology . 6103 Orthoway . Fort Madison, IA . 52627**

[WWW.CRYOTECH.COM](http://WWW.CRYOTECH.COM)

Form#MKT100 07/17/2018

CRYOTECH





## Working with Cryotech

With over 25 years in the deicing business and a wide range of products, in the commercial, aviation, and industrial markets, Cryotech is the benchmark by which others are measured.

- **Dedicated Customer Service and Sales Staff**

At Cryotech, a 24-hour customer service is a must because your needs do not always happen between 9 a.m. and 5 p.m. With a professional sales team and dependable customer service staff on duty every day of the year, Cryotech makes sure you have the deicer and information necessary to do your job successfully.

- **Technical Assistance**

Cryotech has been responsible for developing, introducing, and upgrading industry technology, including the introduction of calcium magnesium acetate and sodium acetate to the North American market. Cryotech has taken leadership roles in the industry, serving on the Society of Automotive Engineers G12 working groups, the Airport Cooperative Research Program, and the Innovative Pavement Research Foundation. Cryotech was the first company to introduce a next generation bio-based liquid runway deicer to address emerging industry concerns. This history has made Cryotech the industry leader in product development and customer service. Cryotech's technical team will answer your questions regarding material and equipment compatibility, product chemistry, product testing, or any other questions that your staff may have.

- **Tank and Storage Solutions**

Cryotech knows your needs go beyond just deicing chemicals, so the staff will provide assistance with tank storage solutions to ensure you have enough inventory when winter weather approaches.

- **On-site Training**

Cryotech wants you to be successful in applying its deicers, so you can quickly and efficiently get through your winter storm events. Complimentary training, videos, and literature are provided to meet your training needs. Please contact [Cryotech](http://www.cryotech.com) for more details.

- **An ISO 9001:2015 and 14001:2015 Certified Company**

ISO standards assure customers that all Cryotech activities - design, manufacturing, production, purchasing, quality control, packaging, handling, storage, shipping, and customer service - are appropriately managed and controlled. This means customers receive products that meet rigorous international quality standards and that Cryotech minimizes its operational impact on the environment.

- **Production Sites and Terminals Across North America**

Cryotech has an industry leading distribution system including terminals, railcars, and production sites across the United States and Canada. This ensures Cryotech customers receive the products they need, when they need them.

You can depend on Cryotech when technology, quality, customer service, and distribution systems matter most.



## CRYOTECH DEICING TECHNOLOGY SUSTAINABILITY POLICY

---

### Principles

- Maintaining a sound, profitable, and enduring business
  - Participating in environmentally preferred activities
  - Ensuring processes, products, and manufacturing practices adequately address current environmental concerns while considering future needs
  - Meeting the needs of customers, employees, and stakeholders
- 

### Approach

Cryotech's sustainability team coordinates and facilitates activities related to three pillars of sustainability:

- **Business** - Sound and ethical business practices (products, market, brand, profit, and corporate)
- **Environment** - Responsible stewardship of resources (energy, materials, and natural resources)
- **People** - Engage stakeholders (employees, customers, suppliers, distributors, community, and regulators)

Cryotech uses the ISO 9001 Quality and ISO 14001 Environmental Standards to systematize its approach to sustainability.

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### Objectives

- Create innovative approaches to minimizing environmental impacts in the areas of waste, energy, water, and air quality
  - Ensure every aspect of the supply chain has responsibly integrated social and environmental practices
  - Improve economic performance by streamlining operations
  - Give back to the community by volunteering and donating resources
-

## **General Atomics International Services Corporation** dba Cryotech Deicing Technology

### **Trade References**

Altorfer, Inc.  
2600 6<sup>th</sup> Street, SW  
Cedar Rapids, IA 52404  
(319) 365-0551 phone  
(319) 365-5639 fax  
Contact: Ted Lawler

Erco Worldwide  
101 State Hwy. 73 South  
Nekoosa, WI 54457  
(715) 887-4575 phone  
(416) 234-7435 fax  
Contact: John Keough  
Email: [jkeough@ercoworldwide.com](mailto:jkeough@ercoworldwide.com)

Potterfield Trucking  
404 US Hwy 24 & 36 East  
Monroe City, MO 63456  
(573) 735-4528 phone  
(573) 735-4399 fax  
Contact: Phillip Potterfield

Van Meter Industrial  
116 Carbide Lane  
Keokuk, IA 52632  
(319) 524-3923 phone  
(319) 524-3926 fax

Jumbo Sack/Cratex Corp.  
2677 Metro Boulevard  
Maryland Heights, MO 63043  
(314) 291-7777 phone  
(314) 291-0045 fax  
Contact: Michael Reynoso

BP-Amoco Chemical  
Company – Acetyls America  
150 W. Warrenville Road  
Naperville, IL 60563-8460  
(832) 664-3391 phone  
(330) 883-8781 mobile  
Contact: Sam Mawlawi  
Sales Manager – Northern  
US & Canada  
[Sam.mawlawi@bp.com](mailto:Sam.mawlawi@bp.com)

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
3/02/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER <b>Marsh &amp; McLennan Agency LLC</b> Marsh & McLennan Ins. Agency LLC PO Box 85638 San Diego, CA 92122	CONTACT NAME: <b>Vanessa Turner</b>
	PHONE (A/C, No, Ext): <b>858-242-5770</b> FAX (A/C, No): <b>858-529-2670</b> E-MAIL ADDRESS: <b>vanessa.turner@marshmma.com</b>
INSURED <b>General Atomic Technologies Corporation</b> See Attached 3550 General Atomics Ct San Diego, CA 92121	INSURER(S) AFFORDING COVERAGE      NAIC #
	INSURER A : Allied World National Assurance Company <b>10690</b>
	INSURER B : Starr Indemnity & Liability Company <b>38318</b>
	INSURER C :
	INSURER D :
	INSURER E :

COVERAGES      CERTIFICATE NUMBER:      REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> SIR: \$500,000 GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			03064218	02/28/2018	02/28/2019	EACH OCCURRENCE \$1,500,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,500,000 MED EXP (Any one person) \$Excluded PERSONAL & ADV INJURY \$1,500,000 GENERAL AGGREGATE \$1,500,000 PRODUCTS - COMP/OP AGG \$1,500,000 \$
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY			1000198151181 Physical Damage not covered	02/28/2018	02/28/2019	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ Deductible \$100,000
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$10000			03053651	02/28/2018	02/28/2019	EACH OCCURRENCE \$10,000,000 AGGREGATE \$10,000,000 \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	1000001073 1000002498 1000002499 1000002501	12/01/2017	12/01/2018	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE - EA EMPLOYEE \$1,000,000 E.L. DISEASE - POLICY LIMIT \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
**Evidence of insurance.**

CERTIFICATE HOLDER

**Cryotech/General Atomics**  
 6103 Ortho Way RR43  
 Fort Madison, IA 52627-0000

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

*Vanessa Turner*



# ADDITIONAL REMARKS SCHEDULE

AGENCY Marsh & McLennan Insurance Agency LLC		NAMED INSURED General Atomic Technologies Corporation Attn: Roseanne Hovey 3550 General Atomics Court San Diego, CA 92121
POLICY NUMBER		
CARRIER	NAIC CODE	EFFECTIVE DATE:

**ADDITIONAL REMARKS**

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,  
FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

**EXTENSION OF NAMED INSURED:**

Cryotech Deicing Technology, a division of General Atomics International Services Corporation





# Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison  
Iowa  
52627  
USA

Holds Certificate No:

**FM 39092**

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

The development, production and sales of environmentally benign deicing materials.

For and on behalf of BSI:

Carlos Pitanga, SVP, System Certification and Compliance

Original Registration Date: 1998-03-12

Latest Revision Date: 2017-09-29

Effective Date: 2017-11-20

Expiry Date: 2020-11-19

Page: 1 of 1



...making excellence a habit.™



By Royal Charter

# Certificate of Registration

ENVIRONMENTAL MANAGEMENT SYSTEM - ISO 14001:2015

This is to certify that:

Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison  
Iowa  
52627  
USA

Holds Certificate No:

**EMS 89384**

and operates an Environmental Management System which complies with the requirements of ISO 14001:2015 for the following scope:

The management of environmental risks associated with mixing, drying and individual and bulk packaging of benign deicing solid and liquid materials that include use of Propylene Glycol, Potassium Hydroxide, Sodium Hydroxide and Acetic Acid and minimum support for remediation from prior land owner.

For and on behalf of BSI:

Carlos Pitanga, SVP, System Certification and Compliance

Original Registration Date: 07/12/2005

Latest Revision Date: 11/14/2016

Effective Date: 11/18/2016

Expiry Date: 11/17/2019

Page: 1 of 1



...making excellence a habit.™

This certificate remains the property of BSI and shall be returned immediately upon request.

An electronic certificate can be authenticated [online](http://www.bsigroup.com/ClientDirectory). Printed copies can be validated at [www.bsigroup.com/ClientDirectory](http://www.bsigroup.com/ClientDirectory). To be read in conjunction with the scope above or the attached appendix.

Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: +44 345 080 9000  
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.  
A Member of the BSI Group of Companies.



Cryotech Deicing Technology is certified to ISO 9001:2015 and 14001:2015 standards. Customers often ask why these certifications are important enough to be made part of bid specifications. This document attempts to answer that question.

### *What is ISO?*

The abbreviation "ISO" stands for International Organization for Standardization. ISO is a series of international standards introduced in 1987 that define and structure a company's management systems. These standards apply equally to all industries and require companies seeking certification to define how their systems meet the standards' rigorous requirements. Meeting the standards assures customers that all vendor company activities – design, manufacturing, production, purchasing, quality control, packaging, handling, storage, shipping, and customer service – are appropriately managed and controlled.

### *What is the difference between ISO 9000 and 14000?*

ISO 9000 is concerned with "quality management." This means what the organization does to enhance customer satisfaction by meeting customer and applicable regulatory requirements and continually improving its performance in this regard.

ISO 14000 is primarily concerned with "environmental management." This means what the organization does to minimize harmful effects on the environment caused by its activities and continually improving its environmental performance.

### *Can any vendor be ISO-certified?*

Yes. There are approximately 250,000 companies worldwide registered to ISO standards. Any company willing to make the effort can be certified.

### *Why should I require vendors to be ISO-certified?*

- ISO is direct evidence of a company's financial and ethical commitment to provide high quality, safe products.
- ISO certified companies maintain comprehensive internal audit programs that demonstrate to customers the effectiveness of their quality and environmental efforts.
- ISO certified companies utilize systems that have been accepted for use by over 80 countries as effective means to achieve product quality and environmental stewardship.
- ISO certified companies document, review, and approve product designs that meet applicable safety, regulatory, and customer requirements.
- ISO certified companies prove their systems through audits by independent registrars. Registrars are governed by strict international codes that dictate operating practices, audit methods, and staff qualifications. Failure to maintain quality program requirements will lead to de-certification by the registrar.
- ISO certified company products reduce the need for the buyers to perform audits and reviews to determine if quality systems are in place and being maintained.
- A certificate of analysis from an ISO certified company will be supported by documented procedures and records that demonstrate its validity. This is particularly important should a customer ever have a reason to question product quality.

6103 Orthoway, Fort Madison, IA 52627 Tel: +1 (319) 372-6012 +1 (800) 346-7237 Fax: +1 (319) 372-2662  
E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com) <http://www.cryotech.com> Form #DQ013, Rev. 2/2/17



## A NOTICE AND INVITATION TO ALL EMPLOYEES AND APPLICANTS

### AFFIRMATIVE ACTION AND EQUAL EMPLOYMENT OPPORTUNITY POLICY STATEMENT


General Atomics (the "Company") has been and will continue to be an equal opportunity employer and does not discriminate against any applicants or employees on the basis of race, color, national origin, gender, age, pregnancy, religion, religious creed, ancestry, mental disability, physical disability, medical condition, genetic information, military and veteran status, marital status, sex, sexual orientation, gender identity, gender expression, or any other basis protected by local, state, or federal law. In an effort to support this policy, and as part of our requirement as a federal contractor, the Company continues to develop and implement an affirmative action plan (an "AAP") which sets forth the Company's practices and programs in an effort to achieve equal employment opportunities. To ensure full implementation of this policy and AAP, the Company assures that:

- a. Equal employment opportunity will be extended to all individuals in all aspects of the employment relationship, including recruiting, hiring, training, promoting, compensating, transferring, disciplining, demoting, laying off, terminating and all other employment decisions affecting wages, benefits, hours, and other terms, conditions, or privileges of employment.
- b. Applicants and employees shall not be subjected to harassment, intimidation, threats, coercion, or discrimination because they have: (1) filed a complaint about any act or practice made unlawful by any local, state, or federal law requiring equal employment opportunity; (2) opposed any act or practice made unlawful by any local, state, or federal law requiring equal employment opportunity; (3) assisted or participated in an investigation, compliance review hearing, or any other activity related to the administration of any local, state, or federal law requiring equal employment opportunity; or (4) exercised any other right protected by local, state, or federal law requiring equal employment opportunity.

Kellie Fontes has been selected as the Company's Equal Employment Opportunity ("EEO") Officer and as such is responsible for the day to day implementation and monitoring of our Equal Employment Opportunity Policy and our AAP. As part of that responsibility, she will periodically analyze the Company's personnel actions and their effects to ensure compliance with our equal employment policy.

If an employee or an applicant for employment has any questions about this policy or would like to file a complaint, please contact Kellie Fontes at 858-455-3735 or [kellie.fontes@ga.com](mailto:kellie.fontes@ga.com) or 3550 General Atomics Court, San Diego, CA 92121, attn: HR Compliance.

I have reviewed and fully endorse our Affirmative Action and Equal Employment Opportunity program. In closing, I ask the continued assistance and support of all of the Company's personnel to attain our objective of equal employment opportunity for all.



Craig E. Starwalt  
President and Chief Executive Officer



**NOTICE OF ANTI-HARASSMENT POLICY AND COMPLAINT PROCEDURE**

General Atomics International Service Corporation dba Cryotech Deicing Technology, (the "Company") is committed to providing a work environment free of unlawful harassment. This memo is reissued, as it is our intention to continue stressing the importance of the Company's Anti-Harassment policy and complaint procedure. Company policy prohibits harassment based on race, color, national origin, gender, age, pregnancy, religion, disability, genetic information, protected veteran status, sex, sexual orientation, gender identity, or any other basis protected by local, state or federal law. The Company's anti-harassment policy applies to all persons involved in the operation of the Company and prohibits unlawful harassment by any employee of the Company, including supervisors and managers. The Company's anti-harassment policy also applies to non-employees with whom the employees come into contact in the course of employment (e.g. service providers, vendors, contractors or customers).

The Company requires all employees to report any incidents of unlawful harassment immediately. Such reports may be made to the employee's supervisor, their supervisor's manager, Human Resources, or the Company's anonymous hotline at (866) 583-5542. Supervisors and Managers will refer all complaints of unlawful harassment to the Human Resources Department and the Company will promptly undertake a thorough investigation of the allegations.

Unlawful harassment will not be tolerated. Violations of this policy will result in disciplinary action, up to, and including termination. Additionally, the Company prohibits retaliation against an employee for making a good faith complaint under this policy or for assisting in an investigation.

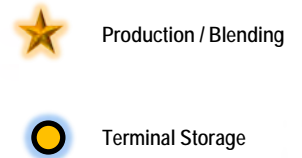
We trust and expect that all employees of the Company will continue to act responsibly to maintain a pleasant working environment free of unlawful harassment of any type. Thank you for your continued support towards these efforts.

A handwritten signature in blue ink that reads "Craig Starwalt".

Craig E. Starwalt  
President and Chief Executive Officer



# All Facilities Map





# CRYOTECH ORDER PROCEDURE

## 800-346-7237 or orders@cryotech.com

### CRYOTECH PRODUCTS

Visit [www.cryotech.com](http://www.cryotech.com) for a list of Cryotech products or contact Cryotech Customer Service.

### ORDER PROCESS

#### **Normal business hours: 7:30 a.m. to 4:00 p.m., Monday through Friday**

(after hours calls will be addressed the next business day from June 1<sup>st</sup> – August 31<sup>st</sup>)

#### **After normal business hours or during holidays: (24/7 availability Sept 1<sup>st</sup> – May 31<sup>st</sup>)**

Call Cryotech at **800-346-7237** or **319-372-6012** to reach our after-hours voicemail system. **Listen for the prompts to place an urgent order** or to leave a message for Customer Service. Cryotech will need to know:

- a. Product that you are ordering
- b. Delivery location address
- c. Requested delivery date and receiving hours
- d. Receiving location contact & phone number for delivery confirmation or questions
- e. Quantity requested
- f. Requestor name and P.O. number
- g. Other special delivery or receiving requirements (fittings, hose, etc.)

Cryotech will return your call within 20 minutes.

If after 20 minutes, you have not received a response from Cryotech, call the Cryotech cell phone numbers listed below.

CRYOTECH	CONTACTS	CELLULAR
<b>After Hours</b>	<b>800-346-7237 or as below</b>	
Customer Service	Customer Service On-Call	319-470-4631
Customer Service Manager	Ashley Rung	319-371-0694

# USAIG Certificate of Insurance

this is to certify to Whom It May Concern

whose address is

that Cryotech Deicing Technology

whose address is 3550 General Atomics Court  
San Diego, CA 92121-1194

is at this date insured with one or more member companies of the United States Aircraft Insurance Group, for the Limits of Coverage stated below, at the following locations:  
**worldwide.**

## Descriptive Schedule of Coverages

Kind of Insurance	Policy Number(s)	Expiration Date(s)	Limits of Coverage
<b>AIRCRAFT PRODUCTS LIABILITY INSURANCE</b>	<b>SIHL1-019K</b>	<b>July 1, 2019</b>	<b>\$100,000,000.00 each occurrence/annual aggregate</b>
<b>AIRPORT PREMISES LIABILITY INSURANCE</b>	<b>SIHL1-019K</b>	<b>July 1, 2019</b>	<b>\$100,000,000.00 each occurrence</b>

This certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all terms, exclusions and conditions of such policies.

**UNITED STATES AVIATION UNDERWRITERS, INC., Aviation Managers**  
**Address: 125 Broad Street, New York, New York 10004**

by  date July 11, 2017  
John T. Brogan, President

# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer



### BENEFITS

- Non-chloride based, low corrosion
- Liquid formulation works fast, on contact
- Easy to handle, no agitation required
- Can be used for anti-icing, deicing, and prewetting solid
- Good tire tracking
- Is not slippery like common deicers
- Complimentary customer training upon request

### PERFORMANCE

- Has low freeze point of -76°F (-60°C)
- Effective to -25°F (-32°C)
- When used as an anti-icer, CF7 prevents bonding of snow/ice to pavement
- When used as a deicer, CF7 breaks snow/ice bonds prior to mechanical removal
- Does not refreeze as fast as common deicers, the residual effect requires fewer applications

### ENVIRONMENT

- Non-persistent, readily biodegrades at low temperatures
- Low BOD and toxicity to fish, mammals, and vegetation
- Does not contain nitrogen or chlorides
- Recognized as “relatively harmless” by the U.S. Fish and Wildlife scale

### APPLICATION

- Prewetting: Apply at spreader outlet at a rate of 1.25 gallons per 100 lbs (130 g/kg) of solid deicer, such as Cryotech NAAC<sup>®</sup>
- Anti-icing: Commercial = 0.5 gallons/1000ft<sup>2</sup> (25-50 g/m<sup>2</sup>)  
Highway = 25-60 gallons/lane mile (25-50 g/m<sup>2</sup>)
- Deicing: Commercial = 1-3 gallons/1000ft<sup>2</sup> (50-150 g/m<sup>2</sup>)  
Highway = 60-180 gallons/lane mile (50-150 g/m<sup>2</sup>)
- Re-apply when new snow/ice accumulation shows first tendency to bond
- Plow promptly to reduce fluid dilution

### HANDLING

- CF7 should not be stored or plumbed through systems that use galvanized, zinc, or brass components (may be used on or around galvanized bridge and parking deck components, signage, and guardrails)
- Polyethylene or stainless steel containers are preferred, otherwise use carbon or low alloy steel
- Best practices include storing totes and drums in areas protected from weather and exposure to direct sunlight
- Containers must be clean and free of rust, surface deposits, and residues

See Reverse Side For Product Specifications  
Test Data Available Upon Request  
ISO 9001:2015 & 14001:2015 CERTIFIED COMPANY

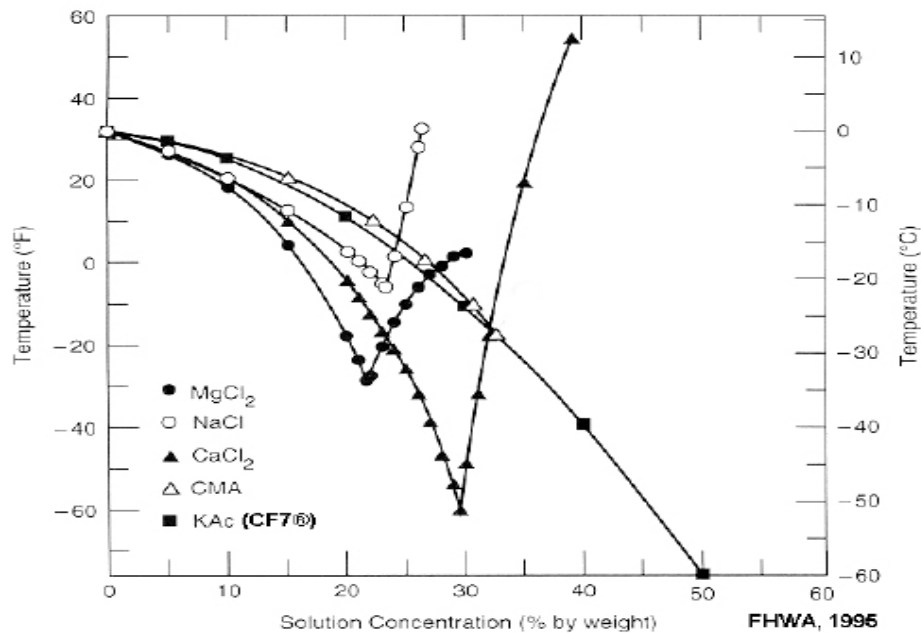


CRYOTECH CF7<sup>®</sup>

# PRODUCT SPECIFICATIONS - CRYOTECH CF7<sup>®</sup>

<b>COMPOSITION</b>	50% aqueous potassium acetate solution, by weight, plus corrosion inhibitors
<b>APPEARANCE</b>	Clear, colorless*, mobile liquid, free from matter in suspension
<b>DENSITY</b>	At 68°F (20°C) = 10.68 lbs/gallon (1.28 g/cm <sup>3</sup> )
<b>VISCOSITY</b>	At 68°F (20°C) = 10cP maximum At 32°F (0°C) = 20cP maximum
<b>FLASH POINT</b>	Nonflammable
<b>FREEZING POINT</b>	-76°F (-60°C)
<b>MISCIBILITY WITH WATER</b>	Complete
<b>TYPICAL pH</b>	10.5 to 11.5
<b>SPECIFIC GRAVITY</b>	At 68°F (20°C) = 1.25 - 1.30
<b>PACKAGING</b>	55 gallon drums (208 liters) - 4 drum minimum 265 gallon tote (1003 liters) - 1 tote minimum Bulk - 4400 gallons (16,656 liters) minimum * MAY BE DYED BLUE AT CUSTOMER REQUEST

## Refreeze Temperatures



**TO ORDER OR FOR PRODUCT INFORMATION CONTACT:**

Ph: +1 319.372.6012 or +1 800.346.7237 Fax: +1 319.372.2662

E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)

Cryotech Deicing Technology . 6103 Orthoway . Fort Madison, IA . 52627  
[WWW.CRYOTECH.COM](http://WWW.CRYOTECH.COM)



ISO 14001  
EMS 89384



ISO 9001  
FM 39092





# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 1: IDENTIFICATION

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##### PRODUCT IDENTIFIER

**CRYOTECH CF7<sup>®</sup>**  
Liquid Commercial Deicer

##### RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Deicing/anti-icing highways, bridges, parking lots, and other pavements.

##### DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

**Name/Address:** Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison, IA 52627  
United States

**Contact Information:** Telephone: (800) 346-7237  
Fax: (319) 372-2662  
Email: [deicers@cryotech.com](mailto:deicers@cryotech.com)  
Website: [www.cryotech.com](http://www.cryotech.com)

##### EMERGENCY TELEPHONE NUMBER

CHEMTREC (800) 424-9300  
Outside USA and Canada (703) 741-5970

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#### Section 2: HAZARD(S) IDENTIFICATION

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##### CLASSIFICATION ACCORDING TO OSHA HAZCOM 2012

**Hazard Class** Not classified as hazardous

##### LABEL ELEMENTS ACCORDING TO OSHA HAZCOM 2012

There are no OSHA required label elements for this product.

##### CLASSIFICATION ACCORDING TO WHMIS (Canada)

**Hazard Class** Not controlled

**WHMIS Hazard Symbols** Not applicable

**WHMIS Signal Word** Not applicable

##### POTENTIAL HEALTH EFFECTS

**Eye Contact** May cause temporary eye irritation. Corneal injury is unlikely.

**Skin Contact** Repeated contact may cause slight skin irritation or dry skin.

**Inhalation** May cause irritation or coughing.

**Ingestion** Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

**Effects of repeated exposure** No effects other than described above are expected.





# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

#### Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

##### MIXTURES

Ingredient	CAS No	Wt. %
Potassium Acetate	127-08-2	50
Water	7732-18-5	50
Corrosion Inhibitors		< 1

#### Section 4: FIRST- AID MEASURES

##### DESCRIPTION OF FIRST AID MEASURE

<b>Eye</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. If irritation persists, seek medical attention.
<b>Skin</b>	As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
<b>Inhalation</b>	If inhaled, remove to fresh air and get medical advice
<b>Ingestion</b>	If swallowed, give milk or water to drink and telephone for medical advice. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

##### MOST IMPORTANT SYMPTOMS / EFFECTS

<b>Eye</b>	May cause eye irritation. Symptoms may include temporary discomfort or pain, excess blinking and tear production, with possible redness and swelling.
<b>Skin</b>	May cause itching or irritation of any cut or abraded skin. Symptoms of prolonged contact may include dry skin.
<b>Inhalation</b>	Inhalation of aerosol during spraying may cause respiratory tract irritation and coughing. This product is not otherwise expected to be an inhalation hazard.
<b>Ingestion</b>	Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

##### INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT

<b>Note to physicians</b>	This product contains potassium acetate. Though ingestion of large amounts of potassium salts usually results in vomiting, excessive potassium absorption can cause hyperkalemia.
<b>Specific treatments</b>	If you feel unwell, seek medical advice immediately. Show the label or safety data sheet to medical personnel if possible.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 5: FIRE FIGHTING MEASURES

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##### FLAMMABILITY

**Flash Point (close cup)** Nonflammable by OSHA/WHMIS criteria  
**Auto Ignition** Not applicable

##### EXTINGUISHING MEDIA

**Suitable Extinguishing Media** Water, carbon dioxide, or dry chemical. Use extinguishing media appropriate for surrounding materials.  
**Unsuitable Extinguishing Media** Not applicable

##### SPECIAL HAZARDS

**Hazardous Combustion Products** Normal combustion forms carbon dioxide and water.  
**Explosion Limits** Data not available. Not considered to be an explosion hazard.  
**Unusual Fire Hazards** None expected

##### SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

**Special Protective Equipment for Firefighters** Wear NIOSH approved self-contained breathing apparatus (SCBA) with positive air pressure.

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#### Section 6: ACCIDENTAL RELEASE MEASURES

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##### PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES

Avoid eye/skin contact with spilled material. Refer to Section 7 for additional handling precautions

**Methods for Containment** Contain and/or absorb spill with inert material (e.g. sawdust, sand, vermiculite).  
**Methods for Cleaning-Up** Scoop up material and transfer to disposal container. If needed, wash spillage area with plenty of water.

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#### Section 7: HANDLING AND STORAGE

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##### PRECAUTIONS FOR SAFE HANDLING

**Handling** Avoid eye contact. Avoid breathing mist when spraying.

##### PRECAUTIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

**Storage** Store in tightly sealed original containers, away from direct heat and strong oxidizing agents. Do not store or handle product in systems constructed of wetted parts consisting of galvanized steel, zinc, or brass components.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

#### Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

##### EXPOSURE LIMITS

###### Exposure Limits

No specific limits have been established for this product.

##### EXPOSURE CONTROLS

###### Engineering Controls

No special ventilation is usually necessary; however if operating conditions create high airborne concentrations of this material, special ventilation may be needed to keep exposure to airborne contaminants below the exposure limit.

##### INDIVIDUAL PROTECTIVE MEASURES/PERSONAL PROTECTIVE EQUIPMENT

###### Eye Protection

Safety glasses or goggles are recommended if splashing/spraying is possible.

###### Skin Protection

No special skin protection is usually necessary. Chemical-resistant gloves and clothing should be used if prolonged exposure is possible to prevent drying of skin.

###### Respiratory Protection

No special respiratory protection is usually necessary. Breathing of mist/aerosol should be avoided. If operating conditions create high airborne concentrations of this material, the use of an approved respirator is recommended.

#### Section 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Clear, colorless to light straw colored liquid. (May be dyed blue at customer request.)
ODOR	Odorless to slight vinegar odor
ODOR THRESHOLD	No data available
pH (20°C, 68°F)	10.5 – 11.5
FREEZING POINT	-60°C (-76°F)
BOILING POINT	~ 110°C (230°F)
FLASH POINT	Not applicable
EVAPORATION RATE	No data available
FLAMMABILITY/EXPLOSION LIMITS	Not applicable
VAPOR PRESSURE (20°C)	15 mm Hg
VAPOR DENSITY (AIR = 1)	No data available
RELATIVE DENSITY	1.28
SOLUBILITY IN WATER	Completely miscible
PARTITION COEFFICIENT; n-OCTANOL/WATER	No data available
AUTO-IGNITION TEMPERATURE	No data available
DECOMPOSITION TEMPERATURE	No data available
VISCOSITY (20°C)	6.5 cP
OXIDIZING PROPERTIES	Not oxidizing
EXPLOSIVE PROPERTIES	Not explosive



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 10: STABILITY AND REACTIVITY

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##### REACTIVITY

No dangerous reactions known under conditions of normal use.

##### CHEMICAL STABILITY

Stable. Polymerization will not occur.

##### POSSIBILITY OF HAZARDOUS REACTIONS

No dangerous reactions known under conditions of normal use.

##### CONDITIONS TO AVOID

Avoid prolonged contact with reactive metals such as magnesium and zinc, especially in closed systems where hydrogen gas from the oxidation of these materials may accumulate over time.

##### INCOMPATIBLE MATERIALS

Strong oxidizing agents; strong acids.

##### HAZARDOUS DECOMPOSITION PRODUCTS

May decompose into oxides of carbon.

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#### Section 11: TOXICOLOGICAL INFORMATION

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##### ACUTE TOXICITY

LD50 rat-oral: > 5 g/kg.

##### LIKELY ROUTES OF EXPOSURE

Skin contact, eye contact, ingestion.

##### SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL, AND TOXICOLOGICAL CHARACTERISTICS

<b>Eye</b>	May cause eye irritation. Symptoms may include temporary discomfort or pain, excess blinking and tear production, with possible redness and swelling.
<b>Skin</b>	May cause itching or irritation of any cut or abraded skin. Symptoms of prolonged contact may include dry skin.
<b>Inhalation</b>	Inhalation of aerosol during spraying may cause respiratory tract irritation and coughing. This product is not otherwise expected to be an inhalation hazard.
<b>Ingestion</b>	Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

##### DELAYED AND IMMEDIATE EFFECTS AND CHRONIC EFFECTS FROM SHORT- AND LONG-TERM EXPOSURE/NUMERICAL MEASURES OF TOXICITY

<b>Skin Corrosion/Irritation</b>	Based on available data, the classification criteria are not met.
<b>Serious Eye Damage/Irritation</b>	Based on available data, the classification criteria are not met.
<b>Respiratory or Skin Sensitization</b>	Based on available data, the classification criteria are not met.
<b>Germ Cell Mutagenicity</b>	Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	This product does not contain any ingredients that are considered to be carcinogens by IARC, NTP, or OSHA.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

<b>Reproductive Toxicity</b>	Based on available data, the classification criteria are not met.
<b>STOT-Single Exposure</b>	Based on available data, the classification criteria are not met.
<b>STOT-Repeated Exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration Hazard</b>	Based on available data, the classification criteria are not met.

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#### Section 12: ECOLOGICAL INFORMATION

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##### ECOTOXICITY (AQUATIC AND TERRESTRIAL)

Not expected to cause long-term adverse effects in the aquatic or terrestrial environments.

##### PERSISTENCE AND DEGRADABILITY

Readily biodegradable. COD (TOD): 0.34 g O<sub>2</sub>/g deicer; BOD<sub>5</sub> (20°C): 0.25 g O<sub>2</sub>/g deicer

##### BIOACCUMULATIVE POTENTIAL

Bioaccumulation is not expected.

##### MOBILITY IN SOIL

Adverse effects not expected.

##### OTHER ADVERSE EFFECTS

None expected.

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#### Section 13: DISPOSAL CONSIDERATIONS

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##### WASTE TREATMENT AND METHODS OF DISPOSAL

Based on available information, this product is neither listed as a hazardous waste nor does it exhibit any of the characteristics that would cause it to be classified as a characterized hazardous waste under RCRA. This product may be absorbed onto suitable materials and disposed of in a sanitary landfill unless local, state, or provincial regulations prohibit such disposal.

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#### Section 14: TRANSPORT INFORMATION

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##### TRANSPORT INFORMATION

Not regulated as dangerous goods per US DOT or IATA.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

#### Section 15: REGULATORY INFORMATION

##### INVENTORY LISTS

All of the components in this product are on the following inventory lists: USA (TSCA), Canada (DSL/NDSL); Europe (EINECS)

##### TSCA SECTION 12(b)

None of the chemicals in this product are listed under TSCA Section 12(b).

##### CERCLA HAZARDOUS SUBSTANCES

There is no CERCLA Reportable Quantity for this material.

##### SARA 311 CATEGORIES

Immediate (Acute) Health Hazard:	Yes
Delayed (Chronic) Health Hazard:	No
Fire Hazard:	No
Sudden Release of Pressure Hazard:	No
Reactivity Hazard:	No

##### SARA 313

None of the components in this product are subject to reporting under SARA Section 313.

##### CLEAN WATER ACT

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

##### STATE RIGHT-TO-KNOW:

This product does not contain components at levels which are required to be reported under the statutes of the following states: PA, MA, MN, and NJ.

This product does not contain materials known to the State of California (Proposition 65) to cause cancer and/or reproductive harm at levels which would require a warning under the statute.

NFPA 704	
Health	1
Fire	0
Physical Hazard	0
Hazard Rating 0-4 0-least hazardous; 4-most hazardous	

HMIS – Hazardous Materials Identification System	
Health	1
Fire	0
Physical Hazard	0
Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = serious, 4 = severe	



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 16: OTHER INFORMATION

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##### **SDS REVISION DATE**

**Revision date:** August 1, 2017

**Expiration date:** August 1, 2020

Latest version of this SDS can be obtained from Cryotech.

##### **NOTE TO EMPLOYER**

This Safety Data Sheet contains environmental, health and toxicology information for your employees. Please ensure this information is provided to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this SDS must be given to the buyer or the information incorporated in your SDS. Discard any previous edition of this SDS.

##### **DISCLAIMER**

The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use or misuse are beyond our control, GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology makes no warranty, either express or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology assumes no responsibility for any injury or loss resulting from the use of the product described herein. User should satisfy himself that he has all current data relevant to his particular use.

**End of Safety Data Sheet**



## Cryotech CF7<sup>®</sup> Liquid Commercial Deicer BRIX, Refractive Index, and Freezing Point Chart

Concentration (% weight)	Concentration (% by volume)	BRIX 20°C (68°F)	Refractive Index 20°C (68°F)	Freezing Point (°C)	Freezing Point (°F)
0	0.0	0.0	1.333	0.0	32.0
5	3.9	2.1	1.336	-0.5	31.0
10	8.0	4.2	1.339	-1.4	29.6
15	12.1	6.2	1.342	-2.4	27.7
20	16.3	8.2	1.345	-3.7	25.3
25	20.6	10.2	1.348	-5.3	22.4
30	25.1	12.2	1.351	-7.1	19.1
35	29.6	14.2	1.354	-9.2	15.4
40	34.2	16.1	1.357	-11.6	11.2
45	39.0	18.0	1.360	-14.2	6.5
50	43.8	19.9	1.363	-17.1	1.3
55	48.8	21.7	1.366	-20.2	-4.3
60	53.9	23.6	1.369	-23.6	-10.4
65	59.2	25.4	1.372	-27.2	-16.9
70	64.5	27.1	1.375	-31.1	-23.9
75	70.1	28.9	1.378	-35.2	-31.4
80	75.7	30.6	1.381	-39.6	-39.4
85	81.6	32.3	1.384	-44.3	-47.8
90	87.5	34.0	1.387	-49.2	-56.6
95	93.7	35.7	1.390	-54.4	-65.9
100	100.0	37.3	1.393	-59.9	-75.7



# Technical Bulletin

## Material Compatibility and Storage of Cryotech CF7® Liquid Commercial Deicer

Customers frequently ask if materials used in their storage, handling, and application equipment are compatible with potassium acetate runway deicers. There are technical differences in the formulation of corrosion inhibitors and pH between potassium acetate deicers from various producers. Therefore, some differences in material compatibility are expected. This bulletin applies to Cryotech CF7, which is 50% potassium acetate by weight.

### **CORROSION INHIBITORS**

CF7 contains less than 1% proprietary corrosion inhibitors. These inhibitors create a protective barrier on the surface of various metals. Their performance is tied to fluid pH which for CF7 is in the range of 10.5 to 11.5.

### **EQUIPMENT CONSIDERATIONS**

The following guidelines should be considered when selecting equipment to transport, store, and apply CF7:

#### Pumps:

- Stainless steel positive displacement pumps or properly sized centrifugal pumps with mechanical seals are preferred, but not required.
- Avoid pump bodies made of brass, cast aluminum or cast iron, because some castings are poor quality and may result in reduced service life.
- Avoid large bore, low head (pressure) “trash” pumps.
- Avoid pumps with brass, zinc, or galvanized wetted parts.

#### Pipes:

- Stainless and carbon steel, PVC, polyethylene, and rubber are acceptable.
- Avoid galvanized metal piping and fittings because potassium acetate will react slowly with zinc giving off hydrogen gas.
- Pipe joints should be joined by welding or with compression fittings.
- Avoid threaded joints or use high quality pipe thread sealants.

#### Transfer Hoses:

- Wire-reinforced chemical hoses with cross-linked polyethylene lining and an EPDM rubber cover are recommended.
- Hoses should be rated for the system’s pressure and vacuum.
- Stainless steel cam and groove fittings with locking cam levers and EPDM gaskets are also recommended.

#### Tanks:

- Shipping and storage in stainless steel, fiberglass, or polyethylene is preferred.
- Carbon and alloy steel tanks may be used if clean and rust free.
- Tanks must be strong enough to hold 10.68 pounds per gallon of CF7, which is 28% heavier than water.

#### Gaskets and Seals:

- Butyl rubber, ethylene propylene rubber (EPM, EPDM), isoprene, and natural rubber are preferred.
- Nitrile (Buna N), hypalon and neoprene rubber are generally acceptable.
- Avoid butadiene, fluorocarbon rubber, fluorosilicon, polyacrylate, polyurethane rubber, SBR rubber (Buna S), and silicon rubber.

#### Electrical Components:

- CF7 is an ionized solution and is more conductive than water. Users are advised to take precautions to prevent solutions containing CF7 from entering subsurface conduits and electrical components.

# Technical Bulletin

## Material Compatibility and Storage of Cryotech CF7® Liquid Commercial Deicer

### Dispensing Equipment:

- External surfaces of equipment used to dispense CF7 should be routinely rinsed with warm water to prevent buildup of the fluid or other contaminants associated with winter airport operations. Additionally, a thorough washing with warm soapy water followed by thorough rinsing is recommended as equipment is removed from service after the deicing season.
- Diluted CF7 biodegrades naturally when exposed to air and other contaminants. This process quickens in warmer temperatures. Biodegradation can cause unsightly biological growth and superficial staining/corrosion. Frequent rinsings will prevent this.

### MATERIAL COMPATIBILITY

Materials	Compatibility
Carbon Steel	Good
Alloy Steel	Good
Stainless Steel	Excellent
Brass	Poor - Not Recommended
Galvanized Metal	Poor - Do Not Use
Zinc	Poor - Do Not Use
Polyethylene (PE)	Excellent
Polybutylene	Excellent
Polyvinylchloride (PVC)	Excellent
Fiberglass	Excellent
Butyl Rubber	Excellent
Ethylene Propylene Rubber (EPM, EPDM)	Excellent
Isoprene	Excellent
Natural Rubber	Excellent
Nitrile (Buna N)	Good
Hypalon	Good
Neoprene Rubber	Good
Butadiene	Poor - Not Recommended
Fluorcarbon Rubber, (Viton)	Poor - Not Recommended
Fluorosilicon	Poor - Not Recommended
Polyacrylate Rubber	Poor - Not Recommended
Polyurethane Rubber/Elastomers	Poor - Not Recommended
SBR rubber (Buna S)	Poor - Not Recommended

# Technical Bulletin

## Material Compatibility and Storage of Cryotech CF7<sup>®</sup> Liquid Commercial Deicer

### INSTALLATION CONSIDERATIONS

Obtain professional engineering assistance to ensure proper design and installation of tanks and components. Make certain the system has relief valves and low point drains, and that block valves can be opened without operator risk. Avoid dissimilar metals or provide properly engineered insulators to minimize the effect of galvanic corrosion. CF7 has low viscosity and low surface tension. Therefore, high quality joints are needed for a leak-free system. Welded or flanged pipe joints are recommended. But if threaded fittings are used, a high quality pipe sealant is important.

### STORAGE CONSIDERATIONS

If requested, a non-persistent, environmentally friendly blue dye is added to CF7 to provide maintenance personnel with a visual indicator both in fluid storage and during application. This dye is specially formulated to dissipate after application and not cause staining of commonly used materials. It is water soluble, washable, and can be quickly removed with a weak bleach solution. Since the blue dye is not UV resistant, it will fade when exposed to sunlight. Therefore, when using a sight glass fluid level indicator, installation with a float or bobber will be helpful as the blue color may fade over time. In uncoated steel tanks, the dye color may gradually fade after one to two years in storage. As the dye fades, a color change to purple or pink may occur. To minimize the potential for the dye fading, totes should be stored indoors; however, if outside storage is necessary, totes should be covered with an opaque tarp. The dye does not otherwise affect the product. CF7 will perform effectively even if the dye has faded. However, if desired, additional liquid dye concentrate can be purchased from Cryotech.

Undiluted CF7 kept in closed totes and drums with minimal exposure to air does not degrade and may remain effective indefinitely. Diluted CF7 biodegrades naturally when exposed to air.

### AVOID PROBLEMS

Do not use CF7 with galvanized (zinc-plated) metals.  
Do not use any deicer including CF7 on poor quality concrete.  
Do not mix CF7 with deicers from other manufacturers.

## Technical Bulletin

# Reactions Between Potassium Acetate Based Deicers and Zinc

This bulletin reviews facts about zinc's reaction with Cryotech CF7<sup>®</sup>, potassium acetate-based liquid deicer.

### SUMMARY

While routine use of Cryotech CF7 in areas where there are galvanized guardrails, sign posts, railings, etc. is not generally a problem, avoid contact between CF7 and zinc-containing materials in enclosed areas.

### ZINC REACTION

Hot-dipped galvanizing places a protective coating of zinc on the surface of steel. Brass alloys also contain zinc. Although zinc has excellent properties to resist corrosion from atmospheric conditions, it is a fairly reactive metal. As a result, potassium acetate-based deicers, like CF7, can cause a slow reaction with zinc and its alloys that proceeds with the evolution of hydrogen gas. Hydrogen gas is lighter than air, so it readily dissipates in outdoor areas or other places where there is adequate ventilation. However, it is a concern in enclosed areas where the gas can build up and/or pressurize.

### STORING CF7

Potassium acetate based deicers, like CF7, should not be stored or plumbed through systems that use galvanized coatings, or contain zinc or zinc alloys—including brass.

### FIELD USE

For a number of reasons there is seldom a reaction between potassium acetate and zinc coatings during normal deicing use in the field.

- Any evolved gas dissipates quickly in outdoor areas.
- Exposure is usually limited to short intervals.
- Precipitation rinses away any residual deicer overspray on metal structures near pavements where CF7 is used.
- Corrosion reactions are slowed significantly at cold temperatures when deicers are applied.
- Even at low temperatures, CF7 tends to biodegrade quickly after a storm.

Experience at the Zilwaukee Bridge near Saginaw, Michigan, where CF7 has been used for years, supports the conclusion that little to no reaction occurs between CF7 and galvanized materials during deicing operations. The bridge is essentially corrosion-free.

### CONCLUSION

While CF7 has, for many years, been used successfully around galvanized materials in the field, do not use galvanized, zinc, or brass containing tanks and piping for long-term storage of CF7.

# Technical Bulletin

## Proper Use of Cryotech CF7 and NAAC

Customers frequently ask how to properly use deicing chemicals when dealing with snow, freezing rain, and ice.

Liquid CF7® (potassium acetate) is generally used as an anti-icer to prevent snow and ice from bonding to the surface. The snow and ice can then be easily removed by broom or plow. Solid NAAC® (sodium acetate) is used as a deicer. It is also applied early in the storm but its purpose is to melt through an existing pack and break ice-to-pavement bonds prior to mechanical removal.

CF7 is more efficient than a solid deicer when applied as an anti-icer because it takes less energy to prevent surface bonding than to break existing bonds. Therefore, early liquid application followed by mechanical removal of snow and ice accumulation provides the best and most efficient method for combating winter storms.

“Early application” means applying just before the event or as precipitation begins to fall. CF7 rates range from 0.5-1.5 gallons per thousand square feet (25-75 grams per square meter) depending on weather conditions.

It is also important to evenly apply the fluid using low-pressure, large droplet nozzles. Surfaces can then be cleaned mechanically until bonds reform and dilution requires additional applications.

How long will it last? CF7 dilution from water generated by melt raises the solution freeze point. At some level of dilution it becomes ineffective. Other conditions such as air and surface temperatures, type and amount of precipitation, and deicer application rate also affect how long liquid deicers will last. The clearest signals that dilution has occurred are low friction and unsatisfactory snow or ice patches remaining after mechanical removal. Dilution can also be determined by computer monitored roadway sensors. Re-application is necessary when dilution occurs.

Solid NAAC is generally applied as a deicer on top of pack, but always early in the storm when possible. Pack results from surface bonding of snow and ice and is difficult to remove with liquid deicers. It is common for pack to build on roadways as well as on secondary areas like ramps that may not receive anti-icing treatments.

NAAC is applied on the wet area, ice, or pack. As it combines with moisture, NAAC changes from a solid to a liquid. This exothermic phase change – unique to NAAC – releases heat allowing each pellet to quickly penetrate the pack and break surface bonds. Application rates range from 5-15 pounds per thousand square feet (25-75 grams per square meter).

Here again, it is important to achieve even application. Because NAAC is produced as spherical pellets it spreads more evenly than flaked products. Spherical pellets are also more effective because they penetrate faster and deeper than flakes, which tend to dilute and refreeze.

In certain conditions, CF7 may be used with NAAC to assist with breaking up heavy pack. After holes are formed by NAAC, CF7 is applied over the top and thereby has a direct route to the pavement surface. This dual application speeds the deicing process.

CF7 is also recommended as a prewetting agent for NAAC to jump-start its phase change. This prewet also causes the solid to stick to the surface, minimizing product loss from wind and vehicle movements. During freezing rain, NAAC may be helpful when applied with CF7. This dual application extends operations by minimizing dilution of the liquid.

NAAC and CF7 should not be combined during routine anti-icing operations. CF7 is more efficient and the addition of NAAC is generally not helpful. The exception is use in the aforementioned freezing rain condition.

Technical assistance and on-site training are available by calling Cryotech at (800)346-7237.



### **Toxicity of Acetate-Based Deicers in Marine (Saltwater) Environments**

Toxicity of deicers to marine organisms can be important to know when deicing applications are located where run-off can flow into saltwater environments. Cryotech acetate-based solid and liquid deicers are all considered relatively harmless in this type of receiving water.

#### **CF7 Acute Toxicity Testing Results**

##### **Cryotech potassium acetate deicer for use on roads and bridges**

48-hr LC50, sheepshead minnows:	6,300 milligrams per liter (mg/L)
48-hr LC50, mysid:	1,400 mg/L

The US Fish and Wildlife Service Toxicity rating scale defines a chemical as “relatively harmless” when acute toxicity results are above 1000 milligrams per liter.

#### **E36 Acute Toxicity Testing Results**

##### **Cryotech potassium acetate runway deicer**

48-hr LC50, sheepshead minnows:	6,300 mg/L
48-hr LC50, mysid:	1,400 mg/L

The US Fish and Wildlife Service Toxicity rating scale defines a chemical as “relatively harmless” when acute toxicity results are above 1000 milligrams per liter.

#### **NAAC Acute Toxicity Testing Results**

##### **Cryotech anhydrous sodium acetate deicer for use on roads, bridges, and runways**

48-hr LC50, sheepshead minnows:	>8000 mg/L
48-hr LC50, mysid:	~8000 mg/L

The US Fish and Wildlife Service Toxicity rating scale defines a chemical as “relatively harmless” when acute toxicity results are above 1000 milligrams per liter.

#### **Chronic Toxicity Testing:**

It is generally agreed by state agencies that acetate-based deicers are readily biodegradable and dissipate rapidly. The chance of chronic long-term exposure is therefore greatly reduced. Given that and the fact that Cryotech acetate-based deicers are relatively harmless, chronic toxicity testing has not been required.

#### **Notes:**

This independent laboratory test data was generated using EPA recognized test protocols and deicer formulations provided by Cryotech.

EPA/600/4-90/027F: Method for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms; EPA/600/4-91/002: Short Term Methods of Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms and; EPA/600/4-91/003: Short Term Methods of Estimating Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms.

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**CRYOTECH CF7® LIQUID COMMERCIAL DEICER (the “Product”)  
WARRANTY**

Cryotech Deicing Technology warrants that the product to be delivered hereunder shall conform to the specifications attached hereto; and upon receipt of payment therefore, shall be free from any security interest or encumbrance. Cryotech **disclaims** all warranties and conditions, either express or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose. In no event shall Cryotech be liable to the Buyer or to any third party for any indirect, incidental, special, consequential, punitive, or exemplary damages (including without limitation lost profits, lost savings, or loss of business opportunity) arising out of or relating to the deicer, or the use or inability to use the same, even if Cryotech has been advised of the possibility of such damages.





## **Pacific Northwest Snowfighters (PNS) Approved Products**

Non-chloride Calcium Magnesium Acetate (Cryotech CMA<sup>®</sup>), Potassium Acetate (Cryotech CF7<sup>®</sup>), and Liquid CMA (A 25% mixture of Cryotech CMA<sup>®</sup> and potable water) are located on the Pacific Northwest Snowfighters (PNS) Association's approved product list. The transportation agencies of Washington, Oregon, Montana, Idaho, and the province of British Columbia formed PNS several years ago to outline specifications for deicing chemicals.

For more information regarding the PNS Association, please visit: <http://pnsassociation.org>

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## CRYOTECH CF7® CUSTOMER REFERENCES

Cryotech CF7® Liquid Commercial Deicer is used by numerous highway departments and/or cities with CF7 for FAST systems and also for direct application. The following list includes a sample of customers who have purchased CF7 (Potassium Acetate):

<b>Customer</b>	<b>Contact</b>	<b>Telephone</b>	<b>E-mail</b>
MN DOT-Detroit Lake	Ralph Berglund	218-846-3651	<a href="mailto:Ralph.berglund@state.mn.us">Ralph.berglund@state.mn.us</a>
ND DOT-Bismarck	Troy Gilbertson	701-239-8900	<a href="mailto:tgilbert@nd.us">tgilbert@nd.us</a>
Utah DOT-Provo Canyon	Niel Lundell	801-368-8312	<a href="mailto:Sta3425@utah.gov">Sta3425@utah.gov</a>

Do not hesitate to contact Cryotech or any of the above customers with questions.



## **CRYOTECH CF7<sup>®</sup>, CRYOTECH E36<sup>®</sup> LAVATORY ANTIFREEZE, AND CRYOTECH E36<sup>®</sup> LIQUID DEICING CHEMICALS**

Cryotech CF7<sup>®</sup> and Cryotech E36<sup>®</sup> Lavatory Antifreeze are materially the same chemistry as Cryotech E36<sup>®</sup> – 50% potassium acetate solution plus a proprietary inhibitor package. CF7 is sold to commercial and government markets for use on roads, bridges, parking garages, sidewalks, etc., E36 Lavatory Antifreeze is sold for use in aircraft lavatory systems, and E36 is sold to airports and military bases for use on runways and ramps.

E36 is certified to AMS 1435 for runway use; CF7 is not. Any test data that references E36 is also applicable to CF7 and E36 Lavatory Antifreeze. However, because they are used for different applications, usage rates, labels, product data, and training information are different for each product. For further information or questions, please contact Cryotech at (800)346-7237 or (319)372-6012.

# CRYOTECH CF7®

## Liquid Commercial Deicer



### BENEFITS

- Non-chloride based, low corrosion
- Liquid formulation works fast, on contact
- Easy to handle, no agitation required
- Can be used for anti-icing, deicing, and prewetting solid
- Good tire tracking
- Is not slippery like common deicers
- Complimentary customer training upon request

### PERFORMANCE

- Has low freeze point of -76°F (-60°C)
- Effective to -25°F (-32°C)
- When used as an anti-icer, CF7 prevents bonding of snow/ice to pavement
- When used as a deicer, CF7 breaks snow/ice bonds prior to mechanical removal
- Does not refreeze as fast as common deicers, the residual effect requires fewer applications

### ENVIRONMENT

- Non-persistent, readily biodegrades at low temperatures
- Low BOD and toxicity to fish, mammals, and vegetation
- Does not contain nitrogen or chlorides
- Recognized as “relatively harmless” by the U.S. Fish and Wildlife scale

### APPLICATION

- Prewetting: Apply at spreader outlet at a rate of 1.25 gallons per 100 lbs (130 g/kg) of solid deicer, such as Cryotech NAAC®
- Anti-icing: Commercial = 0.5 gallons/1000ft<sup>2</sup> (25-50 g/m<sup>2</sup>)  
Highway = 25-60 gallons/lane mile (25-50 g/m<sup>2</sup>)
- Deicing: Commercial = 1-3 gallons/1000ft<sup>2</sup> (50-150 g/m<sup>2</sup>)  
Highway = 60-180 gallons/lane mile (50-150 g/m<sup>2</sup>)
- Re-apply when new snow/ice accumulation shows first tendency to bond
- Plow promptly to reduce fluid dilution

### HANDLING

- CF7 should not be stored or plumbed through systems that use galvanized, zinc, or brass components (may be used on or around galvanized bridge and parking deck components, signage, and guardrails)
- Polyethylene or stainless steel containers are preferred, otherwise use carbon or low alloy steel
- Best practices include storing totes and drums in areas protected from weather and exposure to direct sunlight
- Containers must be clean and free of rust, surface deposits, and residues

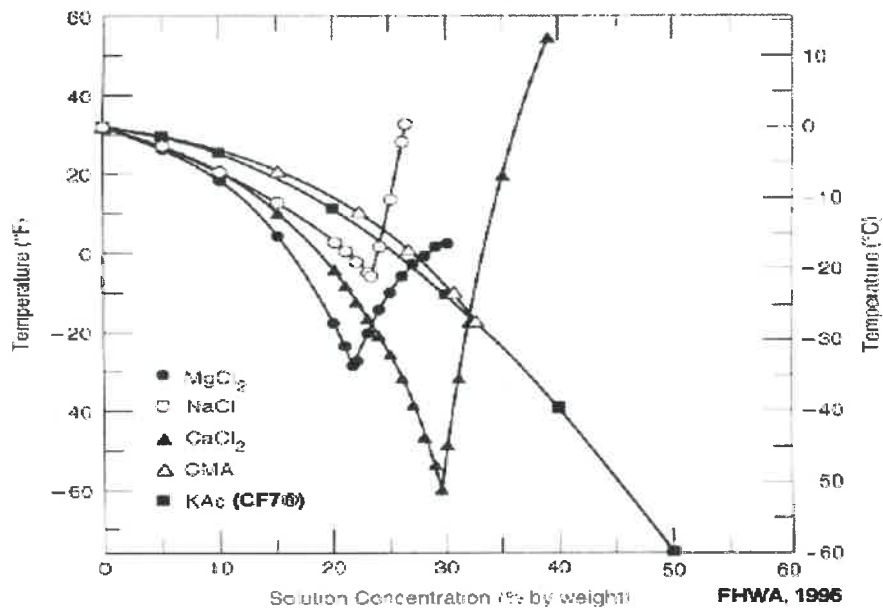
See Reverse Side For Product Specifications  
Test Data Available Upon Request  
ISO 9001:2015 & 14001:2015 CERTIFIED COMPANY



# PRODUCT SPECIFICATIONS - CRYOTECH CF7®

COMPOSITION	50% aqueous potassium acetate solution, by weight, plus corrosion inhibitors
APPEARANCE	Clear, colorless*, mobile liquid, free from matter in suspension
DENSITY	At 68°F (20°C) = 10.68 lbs/gallon (1.28 g/cm <sup>3</sup> )
VISCOSITY	At 68°F (20°C) = 10cP maximum At 32°F (0°C) = 20cP maximum
FLASH POINT	Nonflammable
FREEZING POINT	-76°F (-60°C)
MISCIBILITY WITH WATER	Complete
TYPICAL pH	10.5 to 11.5
SPECIFIC GRAVITY	At 68°F (20°C) = 1.25 - 1.30
PACKAGING	55 gallon drums (208 liters) - 4 drum minimum 265 gallon tote (1003 liters) - 1 tote minimum Bulk - 4400 gallons (16,656 liters) minimum * MAY BE DYED BLUE AT CUSTOMER REQUEST

## Refreeze Temperatures



**TO ORDER OR FOR PRODUCT INFORMATION CONTACT:**

Ph: +1 319.372.6012 or +1 800.346.7237 Fax: +1 319.372.2662

E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)

Cryotech Deicing Technology . 6103 Orthoway . Fort Madison, IA . 52627  
[WWW.CRYOTECH.COM](http://WWW.CRYOTECH.COM)



ISO 14001  
EMS 89384



ISO 9001  
FM 39092



# CRYOTECH CF7®

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 1: IDENTIFICATION

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##### PRODUCT IDENTIFIER

**CRYOTECH CF7®**

Liquid Commercial Deicer

##### RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Deicing/anti-icing highways, bridges, parking lots, and other pavements.

##### DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

**Name/Address:** Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison, IA 52627  
United States

**Contact Information:** Telephone: (800) 346-7237  
Fax: (319) 372-2662  
Email: [deicers@cryotech.com](mailto:deicers@cryotech.com)  
Website: [www.cryotech.com](http://www.cryotech.com)

##### EMERGENCY TELEPHONE NUMBER

CHEMTREC (800) 424-9300  
Outside USA and Canada (703) 741-5970

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#### Section 2: HAZARD(S) IDENTIFICATION

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##### CLASSIFICATION ACCORDING TO OSHA HAZCOM 2012

**Hazard Class** Not classified as hazardous

##### LABEL ELEMENTS ACCORDING TO OSHA HAZCOM 2012

There are no OSHA required label elements for this product.

##### CLASSIFICATION ACCORDING TO WHMIS (Canada)

**Hazard Class** Not controlled

**WHMIS Hazard Symbols** Not applicable

**WHMIS Signal Word** Not applicable

##### POTENTIAL HEALTH EFFECTS

**Eye Contact** May cause temporary eye irritation. Corneal injury is unlikely.

**Skin Contact** Repeated contact may cause slight skin irritation or dry skin.

**Inhalation** May cause irritation or coughing.

**Ingestion** Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

**Effects of repeated exposure** No effects other than described above are expected.



# CRYOTECH CF7®

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

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##### MIXTURES

Ingredient	CAS No	Wt. %
Potassium Acetate	127-08-2	50
Water	7732-18-5	50
Corrosion Inhibitors		< 1

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#### Section 4: FIRST- AID MEASURES

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##### DESCRIPTION OF FIRST AID MEASURE

<b>Eye</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. If irritation persists, seek medical attention.
<b>Skin</b>	As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
<b>Inhalation</b>	If inhaled, remove to fresh air and get medical advice
<b>Ingestion</b>	If swallowed, give milk or water to drink and telephone for medical advice. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

##### MOST IMPORTANT SYMPTOMS / EFFECTS

<b>Eye</b>	May cause eye irritation. Symptoms may include temporary discomfort or pain, excess blinking and tear production, with possible redness and swelling.
<b>Skin</b>	May cause itching or irritation of any cut or abraded skin. Symptoms of prolonged contact may include dry skin.
<b>Inhalation</b>	Inhalation of aerosol during spraying may cause respiratory tract irritation and coughing. This product is not otherwise expected to be an inhalation hazard.
<b>Ingestion</b>	Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

##### INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT

<b>Note to physicians</b>	This product contains potassium acetate. Though ingestion of large amounts of potassium salts usually results in vomiting, excessive potassium absorption can cause hyperkalemia.
<b>Specific treatments</b>	If you feel unwell, seek medical advice immediately. Show the label or safety data sheet to medical personnel if possible.





# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 5: FIRE FIGHTING MEASURES

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##### FLAMMABILITY

**Flash Point (close cup)** Nonflammable by OSHA/WHMIS criteria  
**Auto Ignition** Not applicable

##### EXTINGUISHING MEDIA

**Suitable Extinguishing Media** Water, carbon dioxide, or dry chemical. Use extinguishing media appropriate for surrounding materials.  
**Unsuitable Extinguishing Media** Not applicable

##### SPECIAL HAZARDS

**Hazardous Combustion Products** Normal combustion forms carbon dioxide and water.  
**Explosion Limits** Data not available. Not considered to be an explosion hazard.  
**Unusual Fire Hazards** None expected

##### SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

**Special Protective Equipment for Firefighters** Wear NIOSH approved self-contained breathing apparatus (SCBA) with positive air pressure.

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#### Section 6: ACCIDENTAL RELEASE MEASURES

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##### PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES

Avoid eye/skin contact with spilled material. Refer to Section 7 for additional handling precautions

**Methods for Containment** Contain and/or absorb spill with inert material (e.g. sawdust, sand, vermiculite).  
**Methods for Cleaning-Up** Scoop up material and transfer to disposal container. If needed, wash spillage area with plenty of water.

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#### Section 7: HANDLING AND STORAGE

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##### PRECAUTIONS FOR SAFE HANDLING

**Handling** Avoid eye contact. Avoid breathing mist when spraying.

##### PRECAUTIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

**Storage** Store in tightly sealed original containers, away from direct heat and strong oxidizing agents. Do not store or handle product in systems constructed of wetted parts consisting of galvanized steel, zinc, or brass components.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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##### EXPOSURE LIMITS

**Exposure Limits** No specific limits have been established for this product.

##### EXPOSURE CONTROLS

**Engineering Controls** No special ventilation is usually necessary; however if operating conditions create high airborne concentrations of this material, special ventilation may be needed to keep exposure to airborne contaminants below the exposure limit.

##### INDIVIDUAL PROTECTIVE MEASURES/PERSONAL PROTECTIVE EQUIPMENT

**Eye Protection** Safety glasses or goggles are recommended if splashing/spraying is possible.

**Skin Protection** No special skin protection is usually necessary. Chemical-resistant gloves and clothing should be used if prolonged exposure is possible to prevent drying of skin.

**Respiratory Protection** No special respiratory protection is usually necessary. Breathing of mist/aerosol should be avoided. If operating conditions create high airborne concentrations of this material, the use of an approved respirator is recommended.

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#### Section 9: PHYSICAL AND CHEMICAL PROPERTIES

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APPEARANCE	Clear, colorless to light straw colored liquid. (May be dyed blue at customer request.)
ODOR	Odorless to slight vinegar odor
ODOR THRESHOLD	No data available
pH (20°C, 68°F)	10.5 – 11.5
FREEZING POINT	-60°C (-76°F)
BOILING POINT	~ 110°C (230°F)
FLASH POINT	Not applicable
EVAPORATION RATE	No data available
FLAMMABILITY/EXPLOSION LIMITS	Not applicable
VAPOR PRESSURE (20°C)	15 mm Hg
VAPOR DENSITY (AIR = 1)	No data available
RELATIVE DENSITY	1.28
SOLUBILITY IN WATER	Completely miscible
PARTITION COEFFICIENT; n-OCTANOL/WATER	No data available
AUTO-IGNITION TEMPERATURE	No data available
DECOMPOSITION TEMPERATURE	No data available
VISCOSITY (20°C)	6.5 cP
OXIDIZING PROPERTIES	Not oxidizing
EXPLOSIVE PROPERTIES	Not explosive



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 10: STABILITY AND REACTIVITY

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##### REACTIVITY

No dangerous reactions known under conditions of normal use.

##### CHEMICAL STABILITY

Stable. Polymerization will not occur.

##### POSSIBILITY OF HAZARDOUS REACTIONS

No dangerous reactions known under conditions of normal use.

##### CONDITIONS TO AVOID

Avoid prolonged contact with reactive metals such as magnesium and zinc, especially in closed systems where hydrogen gas from the oxidation of these materials may accumulate over time.

##### INCOMPATIBLE MATERIALS

Strong oxidizing agents; strong acids.

##### HAZARDOUS DECOMPOSITION PRODUCTS

May decompose into oxides of carbon.

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#### Section 11: TOXICOLOGICAL INFORMATION

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##### ACUTE TOXICITY

LD50 rat-oral: > 5 g/kg.

##### LIKELY ROUTES OF EXPOSURE

Skin contact, eye contact, ingestion.

##### SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL, AND TOXICOLOGICAL CHARACTERISTICS

<b>Eye</b>	May cause eye irritation. Symptoms may include temporary discomfort or pain, excess blinking and tear production, with possible redness and swelling.
<b>Skin</b>	May cause itching or irritation of any cut or abraded skin. Symptoms of prolonged contact may include dry skin.
<b>Inhalation</b>	Inhalation of aerosol during spraying may cause respiratory tract irritation and coughing. This product is not otherwise expected to be an inhalation hazard.
<b>Ingestion</b>	Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

##### DELAYED AND IMMEDIATE EFFECTS AND CHRONIC EFFECTS FROM SHORT- AND LONG-TERM EXPOSURE/NUMERICAL MEASURES OF TOXICITY

<b>Skin Corrosion/Irritation</b>	Based on available data, the classification criteria are not met.
<b>Serious Eye Damage/Irritation</b>	Based on available data, the classification criteria are not met.
<b>Respiratory or Skin Sensitization</b>	Based on available data, the classification criteria are not met.
<b>Germ Cell Mutagenicity</b>	Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	This product does not contain any ingredients that are considered to be carcinogens by IARC, NTP, or OSHA.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

<b>Reproductive Toxicity</b>	Based on available data, the classification criteria are not met.
<b>STOT-Single Exposure</b>	Based on available data, the classification criteria are not met.
<b>STOT-Repeated Exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration Hazard</b>	Based on available data, the classification criteria are not met.

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#### Section 12: ECOLOGICAL INFORMATION

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##### ECOTOXICITY (AQUATIC AND TERRESTRIAL)

Not expected to cause long-term adverse effects in the aquatic or terrestrial environments.

##### PERSISTENCE AND DEGRADABILITY

Readily biodegradable. COD (TOD): 0.34 g O<sub>2</sub>/g deicer; BOD<sub>5</sub> (20°C): 0.25 g O<sub>2</sub>/g deicer

##### BIOACCUMULATIVE POTENTIAL

Bioaccumulation is not expected.

##### MOBILITY IN SOIL

Adverse effects not expected.

##### OTHER ADVERSE EFFECTS

None expected.

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#### Section 13: DISPOSAL CONSIDERATIONS

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##### WASTE TREATMENT AND METHODS OF DISPOSAL

Based on available information, this product is neither listed as a hazardous waste nor does it exhibit any of the characteristics that would cause it to be classified as a characterized hazardous waste under RCRA. This product may be absorbed onto suitable materials and disposed of in a sanitary landfill unless local, state, or provincial regulations prohibit such disposal.

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#### Section 14: TRANSPORT INFORMATION

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##### TRANSPORT INFORMATION

Not regulated as dangerous goods per US DOT or IATA.



# CRYOTECH CF7<sup>®</sup>

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 15: REGULATORY INFORMATION

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#### INVENTORY LISTS

All of the components in this product are on the following inventory lists: USA (TSCA), Canada (DSL/NDSL); Europe (EINECS)

#### TSCA SECTION 12(b)

None of the chemicals in this product are listed under TSCA Section 12(b).

#### CERCLA HAZARDOUS SUBSTANCES

There is no CERCLA Reportable Quantity for this material.

#### SARA 311 CATEGORIES

Immediate (Acute) Health Hazard:	Yes
Delayed (Chronic) Health Hazard:	No
Fire Hazard:	No
Sudden Release of Pressure Hazard:	No
Reactivity Hazard:	No

#### SARA 313

None of the components in this product are subject to reporting under SARA Section 313.

#### CLEAN WATER ACT

None of the chemicals in this product are listed as Priority Pollutants under the CWA.  
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### STATE RIGHT-TO-KNOW:

This product does not contain components at levels which are required to be reported under the statutes of the following states: PA, MA, MN, and NJ.

This product does not contain materials known to the State of California (Proposition 65) to cause cancer and/or reproductive harm at levels which would require a warning under the statute.

NFPA 704	
Health	1
Fire	0
Physical Hazard	0
Hazard Rating 0-4 0-least hazardous; 4-most hazardous	

HMIS – Hazardous Materials Identification System	
Health	1
Fire	0
Physical Hazard	0
Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = serious, 4 = severe	



# CRYOTECH CF7®

## Liquid Commercial Deicer

### Safety Data Sheet

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#### Section 16: OTHER INFORMATION

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##### **SDS REVISION DATE**

**Revision date:** August 1, 2017

**Expiration date:** August 1, 2020

Latest version of this SDS can be obtained from Cryotech.

##### **NOTE TO EMPLOYER**

This Safety Data Sheet contains environmental, health and toxicology information for your employees. Please ensure this information is provided to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this SDS must be given to the buyer or the information incorporated in your SDS. Discard any previous edition of this SDS.

##### **DISCLAIMER**

The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use or misuse are beyond our control, GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology makes no warranty, either express or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology assumes no responsibility for any injury or loss resulting from the use of the product described herein. User should satisfy himself that he has all current data relevant to his particular use.

**End of Safety Data Sheet**



## Cryotech CF7<sup>®</sup> Liquid Commercial Deicer BRIX, Refractive Index, and Freezing Point Chart

Concentration (% weight)	Concentration (% by volume)	BRIX 20°C (68°F)	Refractive Index 20°C (68°F)	Freezing Point (°C)	Freezing Point (°F)
0	0.0	0.0	1.333	0.0	32.0
5	3.9	2.1	1.336	-0.5	31.0
10	8.0	4.2	1.339	-1.4	29.6
15	12.1	6.2	1.342	-2.4	27.7
20	16.3	8.2	1.345	-3.7	25.3
25	20.6	10.2	1.348	-5.3	22.4
30	25.1	12.2	1.351	-7.1	19.1
35	29.6	14.2	1.354	-9.2	15.4
40	34.2	16.1	1.357	-11.6	11.2
45	39.0	18.0	1.360	-14.2	6.5
50	43.8	19.9	1.363	-17.1	1.3
55	48.8	21.7	1.366	-20.2	-4.3
60	53.9	23.6	1.369	-23.6	-10.4
65	59.2	25.4	1.372	-27.2	-16.9
70	64.5	27.1	1.375	-31.1	-23.9
75	70.1	28.9	1.378	-35.2	-31.4
80	75.7	30.6	1.381	-39.6	-39.4
85	81.6	32.3	1.384	-44.3	-47.8
90	87.5	34.0	1.387	-49.2	-56.6
95	93.7	35.7	1.390	-54.4	-65.9
100	100.0	37.3	1.393	-59.9	-75.7



# Technical Bulletin

## Material Compatibility and Storage of Cryotech CF7® Liquid Commercial Deicer

Customers frequently ask if materials used in their storage, handling, and application equipment are compatible with potassium acetate runway deicers. There are technical differences in the formulation of corrosion inhibitors and pH between potassium acetate deicers from various producers. Therefore, some differences in material compatibility are expected. This bulletin applies to Cryotech CF7, which is 50% potassium acetate by weight.

### **CORROSION INHIBITORS**

CF7 contains less than 1% proprietary corrosion inhibitors. These inhibitors create a protective barrier on the surface of various metals. Their performance is tied to fluid pH which for CF7 is in the range of 10.5 to 11.5.

### **EQUIPMENT CONSIDERATIONS**

The following guidelines should be considered when selecting equipment to transport, store, and apply CF7:

#### Pumps:

- Stainless steel positive displacement pumps or properly sized centrifugal pumps with mechanical seals are preferred, but not required.
- Avoid pump bodies made of brass, cast aluminum or cast iron, because some castings are poor quality and may result in reduced service life.
- Avoid large bore, low head (pressure) "trash" pumps.
- Avoid pumps with brass, zinc, or galvanized wetted parts.

#### Pipes:

- Stainless and carbon steel, PVC, polyethylene, and rubber are acceptable.
- Avoid galvanized metal piping and fittings because potassium acetate will react slowly with zinc giving off hydrogen gas.
- Pipe joints should be joined by welding or with compression fittings.
- Avoid threaded joints or use high quality pipe thread sealants.

#### Transfer Hoses:

- Wire-reinforced chemical hoses with cross-linked polyethylene lining and an EPDM rubber cover are recommended.
- Hoses should be rated for the system's pressure and vacuum.
- Stainless steel cam and groove fittings with locking cam levers and EPDM gaskets are also recommended.

#### Tanks:

- Shipping and storage in stainless steel, fiberglass, or polyethylene is preferred.
- Carbon and alloy steel tanks may be used if clean and rust free.
- Tanks must be strong enough to hold 10.68 pounds per gallon of CF7, which is 28% heavier than water.

#### Gaskets and Seals:

- Butyl rubber, ethylene propylene rubber (EPM, EPDM), isoprene, and natural rubber are preferred.
- Nitrile (Buna N), hypalon and neoprene rubber are generally acceptable.
- Avoid butadiene, fluorocarbon rubber, fluorosilicon, polyacrylate, polyurethane rubber, SBR rubber (Buna S), and silicon rubber.

#### Electrical Components:

- CF7 is an ionized solution and is more conductive than water. Users are advised to take precautions to prevent solutions containing CF7 from entering subsurface conduits and electrical components.

# Technical Bulletin

## Material Compatibility and Storage of Cryotech CF7® Liquid Commercial Deicer

### Dispensing Equipment:

- External surfaces of equipment used to dispense CF7 should be routinely rinsed with warm water to prevent buildup of the fluid or other contaminants associated with winter airport operations. Additionally, a thorough washing with warm soapy water followed by thorough rinsing is recommended as equipment is removed from service after the deicing season.
- Diluted CF7 biodegrades naturally when exposed to air and other contaminants. This process quickens in warmer temperatures. Biodegradation can cause unsightly biological growth and superficial staining/corrosion. Frequent rinsings will prevent this.

### MATERIAL COMPATIBILITY

Materials	Compatibility
Carbon Steel	Good
Alloy Steel	Good
Stainless Steel	Excellent
Brass	Poor - Not Recommended
Galvanized Metal	Poor - Do Not Use
Zinc	Poor - Do Not Use
Polyethylene (PE)	Excellent
Polybutylene	Excellent
Polyvinylchloride (PVC)	Excellent
Fiberglass	Excellent
Butyl Rubber	Excellent
Ethylene Propylene Rubber (EPM, EPDM)	Excellent
Isoprene	Excellent
Natural Rubber	Excellent
Nitrile (Buna N)	Good
Hypalon	Good
Neoprene Rubber	Good
Butadiene	Poor - Not Recommended
Fluorcarbon Rubber, (Viton)	Poor - Not Recommended
Fluorosilicon	Poor - Not Recommended
Polyacrylate Rubber	Poor - Not Recommended
Polyurethane Rubber/Elastomers	Poor - Not Recommended
SBR rubber (Buna S)	Poor - Not Recommended

# Technical Bulletin

## Material Compatibility and Storage of Cryotech CF7® Liquid Commercial Deicer

### INSTALLATION CONSIDERATIONS

Obtain professional engineering assistance to ensure proper design and installation of tanks and components. Make certain the system has relief valves and low point drains, and that block valves can be opened without operator risk. Avoid dissimilar metals or provide properly engineered insulators to minimize the effect of galvanic corrosion. CF7 has low viscosity and low surface tension. Therefore, high quality joints are needed for a leak-free system. Welded or flanged pipe joints are recommended. But if threaded fittings are used, a high quality pipe sealant is important.

### STORAGE CONSIDERATIONS

If requested, a non-persistent, environmentally friendly blue dye is added to CF7 to provide maintenance personnel with a visual indicator both in fluid storage and during application. This dye is specially formulated to dissipate after application and not cause staining of commonly used materials. It is water soluble, washable, and can be quickly removed with a weak bleach solution. Since the blue dye is not UV resistant, it will fade when exposed to sunlight. Therefore, when using a sight glass fluid level indicator, installation with a float or bobber will be helpful as the blue color may fade over time. In uncoated steel tanks, the dye color may gradually fade after one to two years in storage. As the dye fades, a color change to purple or pink may occur. To minimize the potential for the dye fading, totes should be stored indoors; however, if outside storage is necessary, totes should be covered with an opaque tarp. The dye does not otherwise affect the product. CF7 will perform effectively even if the dye has faded. However, if desired, additional liquid dye concentrate can be purchased from Cryotech.

Undiluted CF7 kept in closed totes and drums with minimal exposure to air does not degrade and may remain effective indefinitely. Diluted CF7 biodegrades naturally when exposed to air.

### AVOID PROBLEMS

- Do not use CF7 with galvanized (zinc-plated) metals.
- Do not use any deicer including CF7 on poor quality concrete.
- Do not mix CF7 with deicers from other manufacturers.

## Technical Bulletin

# Reactions Between Potassium Acetate Based Deicers and Zinc

This bulletin reviews facts about zinc's reaction with Cryotech CF7®, potassium acetate-based liquid deicer.

### SUMMARY

While routine use of Cryotech CF7 in areas where there are galvanized guardrails, sign posts, railings, etc. is not generally a problem, avoid contact between CF7 and zinc-containing materials in enclosed areas.

### ZINC REACTION

Hot-dipped galvanizing places a protective coating of zinc on the surface of steel. Brass alloys also contain zinc. Although zinc has excellent properties to resist corrosion from atmospheric conditions, it is a fairly reactive metal. As a result, potassium acetate-based deicers, like CF7, can cause a slow reaction with zinc and its alloys that proceeds with the evolution of hydrogen gas. Hydrogen gas is lighter than air, so it readily dissipates in outdoor areas or other places where there is adequate ventilation. However, it is a concern in enclosed areas where the gas can build up and/or pressurize.

### STORING CF7

Potassium acetate based deicers, like CF7, should not be stored or plumbed through systems that use galvanized coatings, or contain zinc or zinc alloys—including brass.

### FIELD USE

For a number of reasons there is seldom a reaction between potassium acetate and zinc coatings during normal deicing use in the field.

- Any evolved gas dissipates quickly in outdoor areas.
- Exposure is usually limited to short intervals.
- Precipitation rinses away any residual deicer overspray on metal structures near pavements where CF7 is used.
- Corrosion reactions are slowed significantly at cold temperatures when deicers are applied.
- Even at low temperatures, CF7 tends to biodegrade quickly after a storm.

Experience at the Zilwaukee Bridge near Saginaw, Michigan, where CF7 has been used for years, supports the conclusion that little to no reaction occurs between CF7 and galvanized materials during deicing operations. The bridge is essentially corrosion-free.

### CONCLUSION

While CF7 has, for many years, been used successfully around galvanized materials in the field, do not use galvanized, zinc, or brass containing tanks and piping for long-term storage of CF7.

# Technical Bulletin

## Proper Use of Cryotech CF7 and NAAC

Customers frequently ask how to properly use deicing chemicals when dealing with snow, freezing rain, and ice.

Liquid CF7® (potassium acetate) is generally used as an anti-icer to prevent snow and ice from bonding to the surface. The snow and ice can then be easily removed by broom or plow. Solid NAAC® (sodium acetate) is used as a deicer. It is also applied early in the storm but its purpose is to melt through an existing pack and break ice-to-pavement bonds prior to mechanical removal.

CF7 is more efficient than a solid deicer when applied as an anti-icer because it takes less energy to prevent surface bonding than to break existing bonds. Therefore, early liquid application followed by mechanical removal of snow and ice accumulation provides the best and most efficient method for combating winter storms.

"Early application" means applying just before the event or as precipitation begins to fall. CF7 rates range from 0.5-1.5 gallons per thousand square feet (25-75 grams per square meter) depending on weather conditions.

It is also important to evenly apply the fluid using low-pressure, large droplet nozzles. Surfaces can then be cleaned mechanically until bonds reform and dilution requires additional applications.

How long will it last? CF7 dilution from water generated by melt raises the solution freeze point. At some level of dilution it becomes ineffective. Other conditions such as air and surface temperatures, type and amount of precipitation, and deicer application rate also affect how long liquid deicers will last. The clearest signals that dilution has occurred are low friction and unsatisfactory snow or ice patches remaining after mechanical removal. Dilution can also be determined by computer monitored roadway sensors. Re-application is necessary when dilution occurs.

Solid NAAC is generally applied as a deicer on top of pack, but always early in the storm when possible. Pack results from surface bonding of snow and ice and is difficult to remove with liquid deicers. It is common for pack to build on roadways as well as on secondary areas like ramps that may not receive anti-icing treatments.

NAAC is applied on the wet area, ice, or pack. As it combines with moisture, NAAC changes from a solid to a liquid. This exothermic phase change – unique to NAAC – releases heat allowing each pellet to quickly penetrate the pack and break surface bonds. Application rates range from 5-15 pounds per thousand square feet (25-75 grams per square meter).

Here again, it is important to achieve even application. Because NAAC is produced as spherical pellets it spreads more evenly than flaked products. Spherical pellets are also more effective because they penetrate faster and deeper than flakes, which tend to dilute and refreeze.

In certain conditions, CF7 may be used with NAAC to assist with breaking up heavy pack. After holes are formed by NAAC, CF7 is applied over the top and thereby has a direct route to the pavement surface. This dual application speeds the deicing process.

CF7 is also recommended as a prewetting agent for NAAC to jump-start its phase change. This prewet also causes the solid to stick to the surface, minimizing product loss from wind and vehicle movements. During freezing rain, NAAC may be helpful when applied with CF7. This dual application extends operations by minimizing dilution of the liquid.

NAAC and CF7 should not be combined during routine anti-icing operations. CF7 is more efficient and the addition of NAAC is generally not helpful. The exception is use in the aforementioned freezing rain condition.

Technical assistance and on-site training are available by calling Cryotech at (800)346-7237.





### **Toxicity of Acetate-Based Deicers in Marine (Saltwater) Environments**

Toxicity of deicers to marine organisms can be important to know when deicing applications are located where run-off can flow into saltwater environments. Cryotech acetate-based solid and liquid deicers are all considered relatively harmless in this type of receiving water.

#### **CF7 Acute Toxicity Testing Results**

##### **Cryotech potassium acetate deicer for use on roads and bridges**

48-hr LC50, sheepshead minnows:	6,300 milligrams per liter (mg/L)
48-hr LC50, mysid:	1,400 mg/L

The US Fish and Wildlife Service Toxicity rating scale defines a chemical as “relatively harmless” when acute toxicity results are above 1000 milligrams per liter.

#### **E36 Acute Toxicity Testing Results**

##### **Cryotech potassium acetate runway deicer**

48-hr LC50, sheepshead minnows:	6,300 mg/L
48-hr LC50, mysid:	1,400 mg/L

The US Fish and Wildlife Service Toxicity rating scale defines a chemical as “relatively harmless” when acute toxicity results are above 1000 milligrams per liter.

#### **NAAC Acute Toxicity Testing Results**

##### **Cryotech anhydrous sodium acetate deicer for use on roads, bridges, and runways**

48-hr LC50, sheepshead minnows:	>8000 mg/L
48-hr LC50, mysid:	~8000 mg/L

The US Fish and Wildlife Service Toxicity rating scale defines a chemical as “relatively harmless” when acute toxicity results are above 1000 milligrams per liter.

#### **Chronic Toxicity Testing:**

It is generally agreed by state agencies that acetate-based deicers are readily biodegradable and dissipate rapidly. The chance of chronic long-term exposure is therefore greatly reduced. Given that and the fact that Cryotech acetate-based deicers are relatively harmless, chronic toxicity testing has not been required.

#### **Notes:**

This independent laboratory test data was generated using EPA recognized test protocols and deicer formulations provided by Cryotech.

EPA/600/4-90/027F: Method for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms; EPA/600/4-91/002: Short Term Methods of Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms and; EPA/600/4-91/003: Short Term Methods of Estimating Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms.

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**CRYOTECH CF7® LIQUID COMMERCIAL DEICER (the "Product")  
WARRANTY**

Cryotech Deicing Technology warrants that the product to be delivered hereunder shall conform to the specifications attached hereto; and upon receipt of payment therefore, shall be free from any security interest or encumbrance. Cryotech **disclaims** all warranties and conditions, either express or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose. In no event shall Cryotech be liable to the Buyer or to any third party for any indirect, incidental, special, consequential, punitive, or exemplary damages (including without limitation lost profits, lost savings, or loss of business opportunity) arising out of or relating to the deicer, or the use or inability to use the same, even if Cryotech has been advised of the possibility of such damages.





## **Pacific Northwest Snowfighters (PNS) Approved Products**

Non-chloride Calcium Magnesium Acetate (Cryotech CMA®), Potassium Acetate (Cryotech CF7®), and Liquid CMA (A 25% mixture of Cryotech CMA® and potable water) are located on the Pacific Northwest Snowfighters (PNS) Association's approved product list. The transportation agencies of Washington, Oregon, Montana, Idaho, and the province of British Columbia formed PNS several years ago to outline specifications for deicing chemicals.

For more information regarding the PNS Association, please visit: <http://pnsassociation.org>

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## CRYOTECH CF7® CUSTOMER REFERENCES

Cryotech CF7® Liquid Commercial Deicer is used by numerous highway departments and/or cities with CF7 for FAST systems and also for direct application. The following list includes a sample of customers who have purchased CF7 (Potassium Acetate):

Customer	Contact	Telephone	E-mail
MN DOT-Detroit Lake	Ralph Berglund	218-846-3651	<a href="mailto:Ralph.berglund@state.mn.us">Ralph.berglund@state.mn.us</a>
ND DOT-Bismarck	Troy Gilbertson	701-239-8900	<a href="mailto:tgilbert@nd.us">tgilbert@nd.us</a>
Utah DOT-Provo Canyon	Niel Lundell	801-368-8312	<a href="mailto:Sta3425@utah.gov">Sta3425@utah.gov</a>

Do not hesitate to contact Cryotech or any of the above customers with questions.



**CRYOTECH CF7<sup>®</sup>, CRYOTECH E36<sup>®</sup> LAVATORY ANTIFREEZE, AND  
CRYOTECH E36<sup>®</sup> LIQUID DEICING CHEMICALS**

Cryotech CF7<sup>®</sup> and Cryotech E36<sup>®</sup> Lavatory Antifreeze are materially the same chemistry as Cryotech E36<sup>®</sup> – 50% potassium acetate solution plus a proprietary inhibitor package. CF7 is sold to commercial and government markets for use on roads, bridges, parking garages, sidewalks, etc., E36 Lavatory Antifreeze is sold for use in aircraft lavatory systems, and E36 is sold to airports and military bases for use on runways and ramps.

E36 is certified to AMS 1435 for runway use; CF7 is not. Any test data that references E36 is also applicable to CF7 and E36 Lavatory Antifreeze. However, because they are used for different applications, usage rates, labels, product data, and training information are different for each product. For further information or questions, please contact Cryotech at (800)346-7237 or (319)372-6012.

# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer



### BENEFITS

- Less corrosive than tap water
- Safest deicer for concrete
- Eliminates chloride corrosion, chloride free
- Can be used on new concrete (dependent on quality), cured for at least 30 days
- Safer for pets than sodium chloride
- Manufactured as a round pellet to be less dusty than irregularly shaped deicers
- Complimentary customer training upon request

### PERFORMANCE

- Patented Unipel technology ensures uniform size, shape, and composition of each pellet
- Works best above 20°F (-7°C)
- Contains pure materials for long lasting effects, better than chloride salts
- Breaks/inhibits bond between snow/ice and pavement making snow/ice easier to remove
- Requires fewer applications than other common deicers
- Creates some brine and a dry, oatmeal-like consistency with snow for improved traction
- Applies easily, can be used straight, mixed with salt or sand, and as a liquid

### ENVIRONMENT

- Safe for vegetation
- Low toxicity to aquatic species
- Increases soil permeability, calcium and magnesium are soil amendments
- Acetate readily biodegrades to carbon dioxide water
- Minimal mobility in soil, unlikely to reach groundwater
- Does not contain nitrogen or chlorides

### APPLICATION

- Apply early in the storm to prevent snow/ice bonding
- First application: ~10 lbs/1000 ft<sup>2</sup> (50 g/m<sup>2</sup>)
- Allow time for CMA to penetrate and loosen the snow/ice pack before removing snow/ice
- Re-apply when new snow/ice accumulation shows first tendency to bond

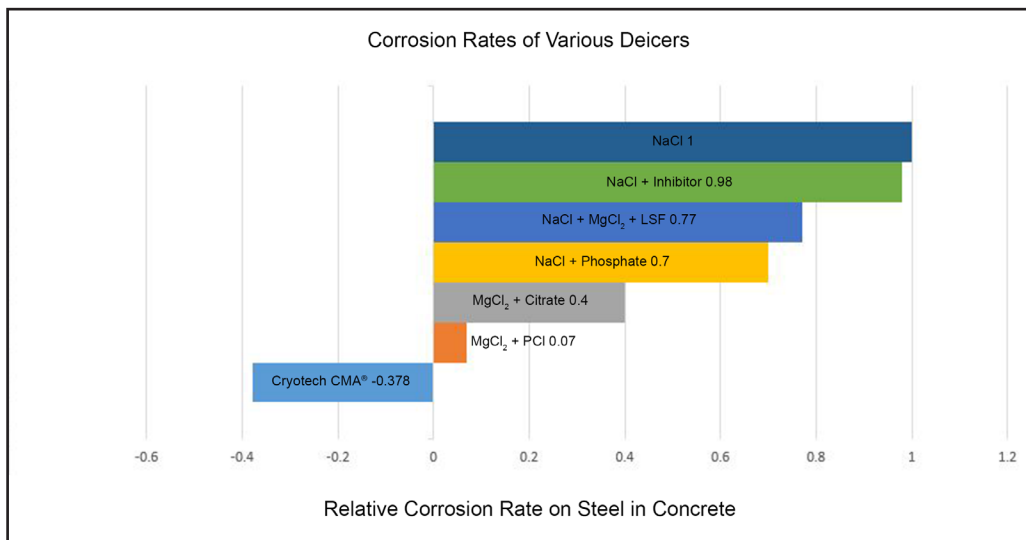
### HANDLING

- Store in original container
- Avoid excess moisture which may cause caking
- Preserve pellet integrity by not overhandling

See Reverse Side For Product Specifications  
Test Data Available Upon Request  
ISO 9001:2015 & 14001:2015 CERTIFIED COMPANY

# PRODUCT SPECIFICATIONS - CRYOTECH CMA<sup>®</sup>

<b>COMPOSITION</b>	Calcium Magnesium Acetate (CMA) 3:7 Ca to Mg molar ratio Hydrated CMA + other acetates Inert Material	96% minimum 4% maximum
<b>APPEARANCE</b>	White to off-white spherical pellet	
<b>BULK DENSITY</b>	Approximately 44 lbs/ft <sup>3</sup> (0.70 g/cm <sup>3</sup> )	
<b>PARTICLE SIZE</b>	<u>Sieve</u> 4 14	<u>Particle Passing</u> 90 10
<b>RESIDUAL BASE</b>	Maximum of 0.4 meq base/g	
<b>TYPICAL pH</b>	8 to 10 in a 10% solution	
<b>PACKAGING</b>	55 lbs (25 kg) poly bags - 40 bag minimum 2205 lbs (1000 kg) Super Sacks - 1 super sack minimum Bulk - 20 metric ton minimum	



**TO ORDER OR FOR PRODUCT INFORMATION CONTACT:**

Ph: +1 319.372.6012 or +1 800.346.7237 Fax: +1 319.372.2662

E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)

**Cryotech Deicing Technology . 6103 Orthoway . Fort Madison, IA . 52627**  
**WWW.CRYOTECH.COM**



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

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#### Section 1: IDENTIFICATION

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##### PRODUCT IDENTIFIER

**CRYOTECH CMA<sup>®</sup>**  
Solid Commercial Deicer

##### RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Deicing/anti-icing highways, bridges, parking lots, and other pavements.

##### DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

**Name/Address:** Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison, IA 52627  
United States

**Contact Information:** Telephone: (800) 346-7237  
Fax: (319) 372-2662  
Email: [deicers@cryotech.com](mailto:deicers@cryotech.com)  
Website: [www.cryotech.com](http://www.cryotech.com)

##### EMERGENCY TELEPHONE NUMBER

CHEMTREC (800) 424-9300  
Outside USA and Canada (703) 741-5970

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#### Section 2: HAZARD(S) IDENTIFICATION

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##### CLASSIFICATION ACCORDING TO OSHA HAZCOM 2012

**Hazard Class** Not classified as hazardous

##### LABEL ELEMENTS ACCORDING TO OSHA HAZCOM 2012

There are no OSHA required label elements for this product.

##### CLASSIFICATION ACCORDING TO WHMIS (Canada)

**Hazard Class** Not controlled

**WHMIS Hazard Symbols** Not applicable

**WHMIS Signal Word** Not applicable

##### POTENTIAL HEALTH EFFECTS

**Eye Contact** May cause temporary eye irritation. Corneal injury is unlikely.

**Skin Contact** Repeated contact may cause slight skin irritation or dry skin.

**Inhalation** May cause irritation or coughing.

**Ingestion** Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

**Effects of repeated exposure** No effects other than described above are expected.

**Effects of repeated exposure** No effects other than described above are expected.



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

#### Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

##### MIXTURES

Ingredient	CAS No	Wt. %
Calcium Magnesium Acetate	76123-46-1	96
which is a double-salt homogeneous blend of:		
Calcium Acetate	62-54-4	
Magnesium Acetate	142-72-3	
and small amounts of other nonhazardous acetate salts		
Moisture and water-insoluble oxides/hydroxides		<4

#### Section 4: FIRST- AID MEASURES

##### DESCRIPTION OF FIRST AID MEASURE

<b>Eye</b>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. If irritation persists, seek medical attention.
<b>Skin</b>	As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
<b>Inhalation</b>	If inhaled, remove to fresh air and get medical advice
<b>Ingestion</b>	If swallowed, give milk or water to drink and telephone for medical advice. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

##### MOST IMPORTANT SYMPTOMS / EFFECTS

<b>Eye</b>	May cause eye irritation. Symptoms may include temporary discomfort or pain, excess blinking and tear production, with possible redness and swelling.
<b>Skin</b>	May cause itching or irritation of any cut or abraded skin. Symptoms of prolonged contact may include dry skin.
<b>Inhalation</b>	Inhalation of dust during handling may cause respiratory tract irritation and coughing.
<b>Ingestion</b>	Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

##### INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT

<b>Specific treatments</b>	If you feel unwell, seek medical advice immediately. Show the label or safety data sheet to medical personnel if possible.
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# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

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#### Section 5: FIRE FIGHTING MEASURES

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##### FLAMMABILITY

**Flash Point (close cup)** Nonflammable by OSHA/WHMIS criteria  
**Auto Ignition** Not applicable

##### EXTINGUISHING MEDIA

**Suitable Extinguishing Media** Water, carbon dioxide, or dry chemical. Use extinguishing media appropriate for surrounding materials.  
**Unsuitable Extinguishing Media** Not applicable

##### SPECIAL HAZARDS

**Hazardous Combustion Products** Normal combustion forms carbon dioxide and water.  
**Explosion Limits** Data not available. Not considered to be an explosion hazard.  
**Unusual Fire Hazards** None expected

##### SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

**Special Protective Equipment for Firefighters** Wear NIOSH approved self-contained breathing apparatus (SCBA) with positive air pressure.

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#### Section 6: ACCIDENTAL RELEASE MEASURES

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##### PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES

Avoid eye/skin contact with spilled material. Refer to Section 7 for additional handling precautions

**Methods for Containment** If material is dissolved, contain and/or absorb spill with inert material (e.g. sawdust, sand, vermiculite).  
**Methods for Cleaning-Up** Scoop up material and transfer to disposal container. If needed, wash spillage area with plenty of water.

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#### Section 7: HANDLING AND STORAGE

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##### PRECAUTIONS FOR SAFE HANDLING

**Handling** Avoid eye contact. Avoid breathing dust when handling.

##### PRECAUTIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

**Storage** Store in tightly sealed original containers, away from direct heat and strong oxidizing agents. Do not store or handle product in systems constructed of wetted parts consisting of galvanized steel, zinc, or brass components.



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

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#### Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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##### EXPOSURE LIMITS

###### TWA PEL:

No specific limits have been established for this product. As a guideline, OSHA (United States) has established the following limits which are generally recognized for inert or nuisance dust. Particulates Not Otherwise Regulated (PNOR): 8-hr TWA limits of 15 mg/m<sup>3</sup> (total particulate) and 5 mg/m<sup>3</sup> (respirable fraction).

###### TWA TLV:

No specific limits have been established for this product. As a guideline, ACGIH (United States) has established the following limits which are generally recognized for inert or nuisance dust. Particulates (insoluble) Not Otherwise Classified (PNOC): 8-hr TWA limits of 10 mg/m<sup>3</sup> (as total dust) and 3 mg/m<sup>3</sup> (as respirable).

##### EXPOSURE CONTROLS

###### Engineering Controls

No special ventilation is usually necessary; however if operating conditions create high concentrations of this material, special ventilation may be needed to keep exposure to airborne contaminants below the exposure limit.

##### INDIVIDUAL PROTECTIVE MEASURES/PERSONAL PROTECTIVE EQUIPMENT

###### Eye Protection

Safety glasses or goggles are recommended if eye exposure to product or dust is possible.

###### Skin Protection

Chemical-resistant gloves and clothing should be used if prolonged exposure is possible to prevent drying of skin.

###### Respiratory Protection

Breathing of dust should be avoided. If operating conditions create high airborne concentrations of this material, the use of an approved respirator is recommended.



CRYOTECH CMA<sup>®</sup>  
Solid Commercial Deicer  
Safety Data Sheet

**Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE	White to off-white spherical pellet
ODOR	Odorless to slight vinegar odor
ODOR THRESHOLD	No data available
pH (20°C, 68°F)	8-10 (10% aqueous solution)
MELTING POINT	Decomposes
BOILING POINT	Not applicable
FLASH POINT	Not applicable
EVAPORATION RATE	No data available
FLAMMABILITY/EXPLOSION LIMITS	Not applicable
VAPOR PRESSURE (20°C)	Not applicable
VAPOR DENSITY (AIR = 1)	Not applicable
RELATIVE DENSITY	No data available
SOLUBILITY IN WATER	Partially soluble
PARTITION COEFFICIENT; n-OCTANOL/WATER	No data available
AUTO-IGNITION TEMPERATURE	No data available
DECOMPOSITION TEMPERATURE	No data available
VISCOSITY (20°C)	Not applicable
OXIDIZING PROPERTIES	Not oxidizing
EXPLOSIVE PROPERTIES	Not explosive

**Section 10: STABILITY AND REACTIVITY**

**REACTIVITY**

No dangerous reactions known under conditions of normal use.

**CHEMICAL STABILITY**

Stable. Polymerization will not occur.

**POSSIBILITY OF HAZARDOUS REACTIONS**

No dangerous reactions known under conditions of normal use.

**CONDITIONS TO AVOID**

Avoid prolonged contact with reactive metals such as magnesium and zinc, especially in closed systems where hydrogen gas from the oxidation of these materials may accumulate over time.

**INCOMPATIBLE MATERIALS**

Strong oxidizing agents; strong acids.

**HAZARDOUS DECOMPOSITION PRODUCTS**

May decompose into oxides of carbon.



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

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#### Section 11: TOXICOLOGICAL INFORMATION

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##### ACUTE TOXICITY

LD50 rat-oral: 3000 mg/kg

LC50 rat-inhalation: >5000 mg/m<sup>3</sup>

LD50 rat-dermal: >5000 mg/kg

Dermal irritation rabbit: Non-irritating

Ocular irritation rabbit: Moderate redness/discharge and some swelling of iris at 1 hr.; insignificant signs of irritation at 24 hr.; all signs cleared at 72 hr.

Sub-chronic oral: No effects after 28 consecutive days dosing at 1000 mg/kg/day.

##### LIKELY ROUTES OF EXPOSURE

Skin contact, eye contact, ingestion.

##### SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL, AND TOXICOLOGICAL CHARACTERISTICS

<b>Eye</b>	May cause eye irritation. Symptoms may include temporary discomfort or pain, excess blinking and tear production, with possible redness and swelling.
<b>Skin</b>	May cause itching or irritation of any cut or abraded skin. Symptoms of prolonged contact may include dry skin.
<b>Inhalation</b>	Inhalation of dust during handling may cause respiratory tract irritation and coughing. This product is not otherwise expected to be an inhalation hazard.
<b>Ingestion</b>	Ingestion of large quantities may cause nausea, vomiting, diarrhea and abdominal discomfort.

##### DELAYED AND IMMEDIATE EFFECTS AND CHRONIC EFFECTS FROM SHORT- AND LONG-TERM EXPOSURE/NUMERICAL MEASURES OF TOXICITY

<b>Skin Corrosion/Irritation</b>	Based on available data, the classification criteria are not met.
<b>Serious Eye Damage/Irritation</b>	Based on available data, the classification criteria are not met.
<b>Respiratory or Skin Sensitization</b>	Based on available data, the classification criteria are not met.
<b>Germ Cell Mutagenicity</b>	Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	This product does not contain any ingredients that are considered to be carcinogens by IARC, NTP, or OSHA.
<b>Reproductive Toxicity</b>	Based on available data, the classification criteria are not met.
<b>STOT-Single Exposure</b>	Based on available data, the classification criteria are not met.
<b>STOT-Repeated Exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration Hazard</b>	Based on available data, the classification criteria are not met.

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#### Section 12: ECOLOGICAL INFORMATION

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##### ECOTOXICITY (AQUATIC AND TERRESTRIAL)

Not expected to cause long-term adverse effects in the aquatic or terrestrial environments.

##### PERSISTENCE AND DEGRADABILITY

Readily biodegradable. COD (TOD): 0.75 g O<sub>2</sub>/g deicer; BOD<sub>20</sub> (2°C): 0.40 g O<sub>2</sub>/g deicer, BOD<sub>20</sub> (10°C): 0.67

##### BIOACCUMULATIVE POTENTIAL

Bioaccumulation is not expected.



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

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#### MOBILITY IN SOIL

Adverse effects not expected.

#### OTHER ADVERSE EFFECTS

None expected.

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### Section 13: DISPOSAL CONSIDERATIONS

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#### WASTE TREATMENT AND METHODS OF DISPOSAL

Based on available information, this product is neither listed as a hazardous waste nor does it exhibit any of the characteristics that would cause it to be classified as a characterized hazardous waste under RCRA. This product may be absorbed onto suitable materials and disposed of in a sanitary landfill unless local, state, or provincial regulations prohibit such disposal.

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### Section 14: TRANSPORT INFORMATION

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#### TRANSPORT INFORMATION

Not regulated as dangerous goods per US DOT or IATA.

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### Section 15: REGULATORY INFORMATION

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#### INVENTORY LISTS

All of the components in this product are on the following inventory lists: USA (TSCA), Canada (DSL/NDSL); Europe (EINECS)

#### TSCA SECTION 12(b)

None of the chemicals in this product are listed under TSCA Section 12(b).

#### CERCLA HAZARDOUS SUBSTANCES

There is no CERCLA Reportable Quantity for this material.

#### SARA 311/312 CATEGORIES

Physical hazards	
Explosive	No
Flammable (gases, aerosols, liquids or solids)	No
Oxidizer (liquid, solid or gas)	No
Self- reactive	No
Pyrophoric (liquid or solid)	No
Pyrophoric Gas	No
Self-heating	No
Corrosive to metal	No
Gas under pressure (compressed gas)	No
In contact with water emits flammable gas	No
Combustible Dust	No
Hazard Not Otherwise Classified (HNOC)	No

Health hazards	
Acute toxicity (any route of exposure)	No
Skin corrosion or irritation	No
Serious eye damage or eye irritation	No
Respiratory or skin sensitization	No
Germ cell mutagenicity	No
Carcinogenicity	No
Reproductive toxicity	No
Specific target organ toxicity (single or repeated exposure)	No
Aspiration hazard	No
Simple Asphyxiant	No
Hazard Not Otherwise Classified (HNOC)	No



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

#### SARA 313

None of the components in this product are subject to reporting under SARA Section 313.

#### CLEAN WATER ACT

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### STATE RIGHT-TO-KNOW:

This product does not contain components at levels which are required to be reported under the statutes of the following states: PA, MA, MN, and NJ.

This product does not contain materials known to the State of California (Proposition 65) to cause cancer and/or reproductive harm at levels which would require a warning under the statute.

<b>NFPA 704</b>	
Health	1
Fire	0
Physical Hazard	0
Hazard Rating 0-4 0-least hazardous; 4-most hazardous	

<b>HMIS – Hazardous Materials Identification System</b>	
Health	1
Fire	0
Physical Hazard	0
Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = serious, 4 = severe	



# CRYOTECH CMA<sup>®</sup>

## Solid Commercial Deicer

### Safety Data Sheet

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#### Section 16: OTHER INFORMATION

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##### SDS REVISION DATE

**Revision date:** February 28, 2018

**Expiration date:** February 28, 2021

Latest version of this SDS can be obtained from Cryotech.

##### NOTE TO EMPLOYER

This Safety Data Sheet contains environmental, health and toxicology information for your employees. Please ensure this information is provided to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this SDS must be given to the buyer or the information incorporated in your SDS. Discard any previous edition of this SDS.

##### DISCLAIMER

The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use or misuse are beyond our control, GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology makes no warranty, either express or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. GENERAL ATOMICS INTERNATIONAL SERVICES CORPORATION dba Cryotech Deicing Technology assumes no responsibility for any injury or loss resulting from the use of the product described herein. User should satisfy himself that he has all current data relevant to his particular use.

**End of Safety Data Sheet**



## Frequently Asked Questions

### What is CMA?

Cryotech CMA® is solid calcium magnesium acetate, a low-corrosion, environmentally safe deicer. It is used on roads, bridges, parking garages, and corporate campuses - wherever corrosion, concrete damage, or the environment are of concern. CMA can also be liquefied in the field for anti-icing applications.

### How is CMA made?

CMA is a simple combination of dolomitic lime and acetic acid (a principal component of vinegar). CMA is produced at Cryotech Deicing Technology in Fort Madison, Iowa.

### Why was CMA developed?

There has long been a concern for damage to the environment and to structures like bridges and parking garages caused by the use of chloride deicers. In the 1970's, the Federal Highway Administration (FHWA) identified calcium magnesium acetate as the only low-corrosion chemical alternative to road salt that also protected the environment. Years of research and field applications have proven CMA is less corrosive than tap water and does not harm vegetation or receiving waters.

### How does CMA work?

CMA, like road salt, works best above 20°F (-7°C), and is used at about the same rates as salt. Applied early in the storm, CMA prevents the formation of snow pack and the bonding of ice to the pavement surface. CMA interferes with the ability of snow and ice particles to adhere to each other or to the pavement, and therefore, the loose residue can be easily removed by broom or plow.

A key to successful use of CMA is a thorough understanding of the deicer's performance characteristics. Trained and experienced operators quickly adapt their applications and plowing techniques to take advantage of CMA's unique properties.

### How can CMA be used?

- CMA can be used straight for direct application.
- CMA can be prewet with Cryotech CF7® Liquid Commercial Deicer (potassium acetate-based) to enhance its performance.
- CMA can be mixed with sand for direct application at various concentrations or to prevent the sand pile from freezing.
- CMA can be mixed with salt to reduce the corrosive nature of salt and reduce the volume of salt applied.
- CMA can be liquefied for use as a prewetting agent for direct anti-icing applications.

### How long does CMA last?

CMA remains on the pavement surface longer than ordinary deicers, working longer to prevent bonding. This residual action reduces application frequency and makes snow removal easier.

The refreeze temperature of CMA solutions rises more slowly than sodium chloride, calcium chloride, or magnesium chloride. This feature makes it well suited for anti-icing treatments, especially for use in the pretreatment of bridge decks in anticipation of frosting, or localized icing conditions.

### Does CMA require any special handling or equipment?

CMA is applied with the same equipment as other deicers and can be stored indefinitely when kept dry.

### Does CMA affect health?

CMA is essentially non-toxic. A series of oral, inhalation, eye, and skin tests conducted in accordance with the U.S. Environmental Protection Agency (EPA) guidelines classify CMA as no more harmful to handle than common table salt.

### Does CMA affect the environment?

When absorbed into the soil, CMA's calcium and magnesium components benefit the soil structure, just as adding lime to a garden improves permeability. The acetate portion of CMA biodegrades naturally.

### Does CMA cause corrosion on roads, bridges, parking garages, etc.?

No significant corrosion of steel, aluminum, or concrete has been found in repeated tests with CMA sponsored by the FHWA, state Departments of Transportation, and private researchers.

## Frequently Asked Questions

### Is CMA safe for concrete and steel structures?

CMA is essentially noncorrosive. FHWA studies conclude that no chloride deicers (even inhibited) compare with CMA in minimizing corrosion to steel structures and reinforcement embedded in concrete. CMA does not chemically attack concrete, nor does it increase spalling caused by the freeze/thaw cycle of water. A study by the UK Department of Transportation concludes: "With the exception of CMA, all of the deicing chemicals tested resulted in a greater deterioration of the concrete than water alone... CMA was the only chemical on weak structural concrete which satisfied the criterion for scaling damage."

CMA cannot reverse damage caused by chloride salts, but replacing a portion of the salt with CMA can help to slow further salt damage. Laboratory studies have shown that CMA, when mixed with sodium chloride at a minimum 20% by weight, is significantly less corrosive than salt alone. This may help to extend the useful life of transportation structures while managing costs.

### How much does CMA cost?

The purchase price of CMA is more than salt. However, studies of the life-cycle costs of salt indicate that when considering corrosion damage and environmental impact, the cost of salt often exceeds that of CMA.

### Is there government awareness of CMA?

Non-chloride based Calcium Magnesium Acetate (Cryotech CMA®), Sodium Acetate (Cryotech NAAC®), and Potassium Acetate (Cryotech CF7®) deicers are eligible for matching Federal Funds under the MAP-21 act signed into law in July 2012. Through the MAP-21 act, funds are available for low corrosive anti-icing/deicing applications and environmentally preferred anti-icers/deicers used on highway bridges through 2014. MAP-21 builds on the foundation established by Federal highway and surface transportation acts for over a decade, which make federal funds available for the use of such safer deicers to help preserve and rehabilitate America's bridges.

### Is Cryotech ISO certified?

Cryotech Deicing Technology is certified to ISO 9001:2015 and 14001:2015 standards.

### TO ORDER CMA OR FOR MORE INFORMATION CONTACT:

Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison, IA 52627  
Ph: +1 319.372.6012 or +1 800.346.7237  
Fax: +1 319.372.2662  
E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)  
[WWW.CRYOTECH.COM](http://WWW.CRYOTECH.COM)

## Frequently Asked Questions

Cryotech Cryotech CMA40® is Cryotech CMA® at a concentration of 40% by weight blended with a high quality grade of salt. This product is recommended where protection from corrosion and concrete spalling is needed, but limited quantities of salt can be tolerated. CMA does not damage steel; however chlorides in salt may penetrate the concrete. Cryotech recommends using only 100% CMA where steel or steel reinforcing may be present.

### Product Information

#### What is CMA?

CMA is produced from natural dolomitic lime and acetic acid (a principal component of vinegar). CMA is produced at Cryotech's manufacturing facility in Fort Madison, Iowa.

#### Why was CMA developed?

There has long been a concern for damage to the environment and to structures like bridges and parking garages caused by the use of chloride deicers. In the 1970's, the Federal Highway Administration (FHWA) identified calcium magnesium acetate as the only low-corrosion chemical alternative to road salt that also protected the environment. Years of research and field applications have proven CMA is no more corrosive than tap water and does not harm vegetation or receiving waters.

#### Why blend CMA and sodium chloride?

Laboratory studies have shown that CMA, when mixed with sodium chloride at a minimum 20%, by weight, is significantly less corrosive than salt to exposed steel. The more CMA in the blend, the better the corrosion and concrete spalling protection.

#### What is CMA40?

Cryotech CMA40 is a blend of 40%, by weight, solid calcium magnesium acetate (Cryotech CMA), a low-corrosion, environmentally safe deicer and 60% sodium chloride (rock salt).

#### How does CMA40 work?

CMA40, like road salt, works best above 20°F (-7°C), and is used at about the same rates as salt. Applied early in the storm, CMA40 prevents the formation of snow pack and the bonding of ice to the pavement surface. CMA40 interferes with the ability of snow and ice crystals to adhere to each other or to the pavement, keeping the loose residue easily removable by broom or plow.

A key to successful use of CMA40 is a thorough understanding of the deicer's performance characteristics. Trained and experienced operators quickly adapt their applications and plowing techniques to take advantage of CMA40's unique properties.

#### How long does CMA40 last?

The refreeze temperature of a CMA40 solution rises more slowly than that of sodium chloride, calcium chloride, or magnesium chloride solutions. This tendency allows CMA40 to remain on the pavement surface longer than ordinary deicers, providing prolonged bond prevention. This residual action also reduces application frequency and makes snow removal easier.

#### Does CMA40 require any special handling or equipment?

No, CMA40 is applied with the same equipment as other deicers. Furthermore, CMA40 can be stored indefinitely when kept dry.

#### Is CMA40 safe?

CMA40 is essentially non-toxic. A series of oral, inhalation, eye, and skin tests conducted in accordance with the U.S. Environmental Protection Agency (EPA) guidelines classify CMA40 as no more harmful to handle than common table salt.

#### How much does CMA40 cost?

The purchase price of CMA40 is more than salt. However, studies of the life-cycle costs of salt indicate that when considering corrosion damage and environmental impact, the cost of salt often exceeds that of CMA40.

#### What can I do to be sure I am purchasing the correct blend?

Read Labels Closely: Many products state they are made with CMA yet only contain 1-2% CMA, by weight, and the rest of the mixture is chloride-based. This small amount of CMA would be ineffective in stopping corrosion.

Ask Questions: Your distributor should be able to provide the exact amount of each ingredient in the deicer blend to ensure you are receiving an adequate amount of pure CMA.

Double-Check Pricing: If one price quote is much lower or higher than the others, be sure to ask the above questions to verify the same amount of CMA is being used in all products.

Customers also need to be aware that some products claim they contain CMA or calcium magnesium acetate but they actually contain a physical blend of calcium acetate and magnesium acetate. Cryotech CMA is a patented formulation and each pellet contains a specific ratio of calcium and magnesium. It has undergone significant testing to show it is safe for concrete.

## Frequently Asked Questions

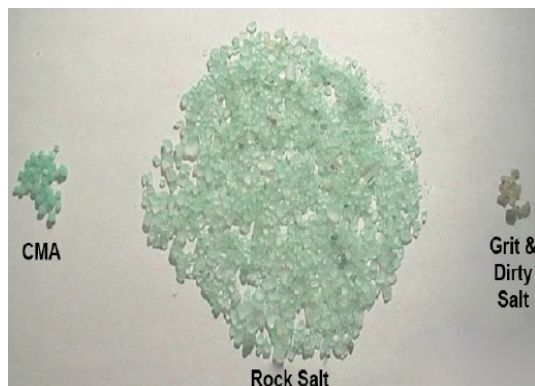
A number of laboratory tests suggest that Cryotech CMA® may significantly reduce corrosion rates when combined with salt. Although tests were different in type and duration of exposure, all indicated that a minimum of 20% CMA, by weight, is needed in a CMA/salt blend to provide acceptable corrosion protection. Testing at 20% CMA and 80% salt, by weight, resulted in a 70 to 80% reduction in corrosion over testing with pure road salt (sodium chloride). The best corrosion protection results from the use of pure CMA. In order to receive the maximum corrosion protection benefit from CMA deicer blends, it is important to verify the amount of CMA being used in the mixture. Cryotech CMA is the only commercially available pure calcium magnesium acetate produced and sold in the United States. This product is often blended with other chloride deicers and marketed as “Containing CMA” when it actually contains only a negligible amount of pure CMA. The below examples are offered to help you determine the quantity of CMA in your deicer blend.



Cryotech CMA is a minimum of 96%, by weight, hydrated calcium magnesium and other acetates with less than 4%, by weight, water-insoluble material. Notice the uniform appearance of the pellets. This is Unipel technology, a unique process which ensures each pellet receives the same distribution of active ingredient. CMA provides the most protection from concrete spalling and is less corrosive than tap water.



Cryotech CMA40 is Cryotech CMA at a concentration of 40% by weight blended with a high quality grade of salt. Notice the amount of Cryotech CMA pellets in this blend. The more CMA in the blend the better the protection.



This product that contains calcium magnesium acetate blended to less than 20%, by weight. An analysis, performed by an independent laboratory shows this blend to be less than 5% CMA, by weight, providing little or no protection against concrete spalling and corrosion.

### FOR MORE INFORMATION CONTACT:

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Fort Madison, IA 52627  
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Fax: +1 319.372.2662  
E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)  
[WWW.CRYOTECH.COM](http://WWW.CRYOTECH.COM)

## Commercial/Highway Application and Product Handling Guidelines

Cryotech CMA<sup>®</sup> is pelleted calcium magnesium acetate, a low corrosion environmental alternative to ordinary deicers like road salt, calcium chloride, magnesium chloride, and urea. CMA is selected for applications when a low corrosion, environmentally friendly deicer is preferred. Although CMA works differently than common deicers, when used according to these guidelines it is just as, if not more, effective.

### **PLEASE READ THE PRODUCT SDS PRIOR TO HANDLING**

#### **CMA Works Differently**

#### ***CMA is exothermic; heat is released as the pellets burrow to the surface:***

- Early application of CMA (as the snow begins to fall and prior to ice formation) will significantly improve its performance.
- CMA does not create a flowing brine. Instead, it prevents ice/snow crystals from sticking together, preventing them from packing and adhering to the surface.
- CMA must be allowed sufficient time to work.
- CMA will undercut ice. Plow, shovel, or sweep to remove snow or ice pack as soon as surface bond is broken.

#### **CMA Has Improved Coverage**

#### ***CMA sticks to the surface, giving residual, anti-icing action:***

- Better than salt at preventing pack.
- Uniform pellet size ensures even spreading.
- Requires fewer applications, residual anti-icing action may continue between storms.

#### ***CMA weighs 44 lbs/ft<sup>3</sup>:***

- Proper equipment calibration is important to compensate for density.
- At the same application rate, CMA provides more particles per square foot than salt.

#### **CMA Packaging/ Handling**

#### ***CMA comes in three packaging options:***

- Bulk - 20 metric ton minimum
- 2205 lb (1000 kg) Super Sacks (1 per pallet, minimum 1 pallet).
- 55 lb (25 kg) poly bags (40 per pallet, minimum 1 pallet).

#### ***Procedures for handling and emptying packages:***

CMA pellets have a natural tendency to loosely stick to one another during storage. If the package exterior feels stiff to the touch, the product may have compacted in storage. If compaction does occur, the following procedures for emptying the packages are recommended:

- 2205 lb (1000 kg) Super Sack - use forklift to lift by straps, drop bag a short distance onto the floor (2-3 times) to loosen any compacted product. Then use the drawstring chute at the bottom of the bag, or use a knife to slit the bottom, and allow product to flow.
- 55 lb (25 kg) poly bag - drop bag onto hard surface 2-3 times (similar to the way you loosen a bag of ice).

#### **Keep CMA in Dry Storage**

#### ***CMA Storage:***

- CMA may cake in equipment if it gets wet. Don't park loaded spreading equipment outside in the weather.
- Keep equipment exterior surfaces clean.
- Close open bags after use or cover bulk product.
- If overhandling causes dust, wear a paper dust mask and goggles.



## Commercial/Highway Application and Product Handling

### CMA Application

#### ***CMA Application:***

The amount of CMA to be applied is determined by surface conditions as they develop during a storm such factors as pavement temperature, air temperature, rate and type of precipitation, traffic, weather forecast, and equipment availability must be considered. Experience with local conditions is a critical factor in deicing operations. After operators gain experience, CMA applications and rates should be adjusted locally as required.

#### **Application Rates:**

- On thin ice, near freezing, typically start at 10 lbs/1000ft<sup>2</sup> (50 g/m<sup>2</sup>)
- For anti-icing apply just as surface turns white, snow begins to stick, or ice begins to form. Premature application may result in product loss from traffic or wind. Late application reduces effectiveness.
- For deicing allow enough time for CMA to penetrate to the surface and loosen the ice or snow pack before plowing, shoveling, or brooming. CMA will penetrate more quickly at higher temperatures and time should be adjusted according to temperature and quantity of the ice or snow pack. Once loosened, it is important to quickly remove the snow pack to prevent refreeze because of dilution of the deicer.
- Expect a good residual effect.
- Re-apply when new snow accumulation shows first tendency to pack or bond to the surface, or surface starts to refreeze.
- Like roadsalt, product effectiveness diminishes below 20°F (-7°C).

#### ***Prewetting CMA:***

- CMA's effectiveness is enhanced when prewetting it with Cryotech CF7<sup>®</sup> at the spreader spinner.
- Prewetting causes CMA to stick and begin melting almost immediately after application.
- The freezing point of the combined products is lower than that of pure CMA.

#### ***CMA treated surfaces are drier:***

- Lighter, fluffier snow is easier to shovel or plow.
- Dry oatmeal-like appearance means good traction - not likely to pack with traffic.
- After the storm, CMA treated surfaces are dark and markings are clearly visible.

#### ***CMA/Sand Mixtures:***

- CMA alone works best, but CMA can be mixed with sand as a traction aid. If mixing CMA with sand, blend it like salt/sand mixtures. Six parts CMA by weight to four parts sand is a common practice.
- Use 5% CMA by weight to keep sand piles free flowing in freezing weather.

### CMA Can be Prewet

### CMA Treated Snow Looks Different

### CMA and Sand

#### **FOR MORE INFORMATION CONTACT:**

Cryotech Deicing Technology  
6103 Orthoway  
Fort Madison, IA 52627  
Ph: +1 319.372.6012 or +1 800.346.7237  
Fax: +1 319.372.2662  
E-mail: [deicers@cryotech.com](mailto:deicers@cryotech.com)  
[www.cryotech.com](http://www.cryotech.com)



**CRYOTECH CMA® SOLID COMMERCIAL DEICER (the Product)  
WARRANTY**

Cryotech Deicing Technology warrants that the product to be delivered hereunder shall conform to the specifications attached hereto; and upon receipt of payment therefore, shall be free from any security interest or encumbrance. Cryotech **disclaims** all warranties and conditions, either express or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose. In no event shall Cryotech be liable to the Buyer or to any third party for any indirect, incidental, special, consequential, punitive, or exemplary damages (including without limitation lost profits, lost savings, or loss of business opportunity) arising out of or relating to the product, or the use or inability to use the same, even if Cryotech has been advised of the possibility of such damages.





## **Pacific Northwest Snowfighters (PNS) Approved Products**

Non-chloride Calcium Magnesium Acetate (Cryotech CMA<sup>®</sup>), Potassium Acetate (Cryotech CF7<sup>®</sup>), and Liquid CMA (A 25% mixture of Cryotech CMA<sup>®</sup> and potable water) are located on the Pacific Northwest Snowfighters (PNS) Association's approved product list. The transportation agencies of Washington, Oregon, Montana, Idaho, and the province of British Columbia formed PNS several years ago to outline specifications for deicing chemicals.

For more information regarding the PNS Association, please visit: <http://pnsassociation.org>

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## CRYOTECH CMA® CUSTOMER REFERENCES

Cryotech CMA® Solid Commercial Deicer is used by major U.S. Departments of Transportation, hospitals and other facilities. The following list includes a sample of customers who have purchased CMA (96% Calcium Magnesium Acetate):

<b>Customer</b>	<b>Contact</b>	<b>Telephone</b>	<b>E-mail</b>
Alabama DOT-Guntersville	Denise Estes	256-571-7215	<a href="mailto:estesd@dot.state.al.us">estesd@dot.state.al.us</a>
Blue Cross Blue Shield	Mike Schneider	248-763-5891	<a href="mailto:Mschneider@bcbsm.com">Mschneider@bcbsm.com</a>
Tennessee DOT	Natasha Word	615-350-4586	<a href="mailto:Natasha.word@state.tn.us">Natasha.word@state.tn.us</a>
City of Aurora, NE	Mike Eberhardt	402-694-2511	<a href="mailto:streets@aurora.org">streets@aurora.org</a>

Do not hesitate to contact Cryotech or any of the above customers with questions.