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**APPROVAL OF PROPRIETARY WINTER ANTI AND DE-ICING CHEMICALS  
(INCLUDING ADDITIVES)**

**SCOPE**

This document outlines the procedure and requirements for approval of proprietary winter chemicals for use by the Iowa DOT. All chemicals need to be approved every five years and must be on the PNS (Pacific Northwest Snowfighters) Qualified List. New products can be submitted before June 30th for the upcoming winter season. This deadline is set to insure testing and evaluation can be completed in a timely manner. A checklist and sample label has been developed to assist vendors and/or manufacturers in supplying the required information.

**ACCEPTANCE**

Acceptance of anti/de-icing chemicals and release agents for use on Iowa Department of Transportation projects is based on manufacturer and brand name approval. The Iowa DOT requires three- 8 ounce liquid samples or two (2) pounds of the dry chemical samples that must be submitted to the Iowa DOT's Central Materials Laboratory. The samples must be clearly labeled and a copy of the Material Safety Data Sheet and product data sheet should be included.

Product Samples must be submitted to the Iowa DOT's Central Materials Lab concurrently with the Winter Chemical Approval Packet (see check list in Appendix A). Please label all samples using the sample label shown in the Appendix A and identify any proprietary information.

The product sample should be sent to the IA DOT's Central Materials Lab at:  
Office of Materials  
800 Lincoln Way  
Ames, IA 50010.  
Attn: Proprietary Winter Chemical Approval.

Approved manufacturers and brand names are listed in Appendix B.

**MANUFACTURER & BRAND NAME APPROVAL**

Product approval is based on information and test results supplied by the producer and the results of the tests performed at the Iowa DOT Central Materials Laboratory. Requests for approval shall be made to the Office of Materials in Ames, Iowa, and shall be accompanied by the items listed in Appendix A of this IM. The approval process includes:

**1. Vendor Submittal**

All samples with compositional information or data (and MSDS) must be received by the Materials Laboratory of the Iowa DOT. Provide the information outlined in the Certification Checklist (Appendix A) with your sample submission.

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## 2. Prescreening Process

The information submitted will be reviewed by the Iowa DOT Central Materials Laboratory, Office of Traffic & Safety, Office of Maintenance, and the Office of Location and Environment.

## 3. Lab Testing and Environmental Assessment

Testing and assessment will be completed in approximately 60-90 days. Iowa DOT Laboratory tests will evaluate the product to determine levels of Magnesium, Sodium, Potassium, Calcium, and Sulfate salts. Hazardous or harmful compounds will be assessed.

## 4. Field Testing

If the product is approved for field testing it will be added to the Iowa DOT's Approved Proprietary Winter Chemicals List under "Testing" (Appendix B, of this IM). The chemical will be evaluated in a field test environment for at least one winter season.

## 5. Product Certification

Products that perform well in the field tests will be added to the Iowa DOT approved list if field problems such as leaching, equipment problems, or variation in product are not experienced.

## SPECIFICATION LIMITS

The product chemical constituents shall not exceed the following concentrations. Liquid products must be tested as received, whereas solid products must be diluted to 25 wt.% solution and then tested as if the product was a liquid sample. Do not back calculate the concentrations to a dry material. If the product to be purchased is premixed with salt brine, provide the following concentrations for both the salt brine alone and the finished premixed product.

	Limit in ppm	(in µg/L)
Cyanide*	0.20	(200)
Arsenic	0.05	(50)
Barium	10.00	(10,000)
Cadmium*	0.20	(200)
Chromium*	1.00	(1,000)
Copper	0.20	(200)
Lead	0.01	(10)
Mercury	0.0005	(0.5)
Selenium*	5.00	(5,000)
Zinc*	10.00	(10,000)
Phosphorus	10.0	(10,000)

\* = Same limit as PNS certification.

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In addition, following limits for magnesium and sulfur shall apply:

	Product type	Limit	Test method
Magnesium (Mg) <sup>A,B</sup>	Liquid	1.25 wt.%	XRF or 'wet chemistry'
	Solid	5.0 wt.%	XRF or 'wet chemistry'
Sulfate ion as (SO <sub>4</sub> ) <sup>C</sup>	Liquid	1.0 wt.%	XRF or 'wet chemistry'
	Solid	2.0 wt.%	XRF or 'wet chemistry'

<sup>A</sup> Magnesium can be calculated from MgO concentration by multiplying by 0.603.

<sup>B</sup> Magnesium can be calculated from MgCl<sub>2</sub> concentration by multiplying by 0.255.

<sup>C</sup> Sulfates that are reported as Sulfur Trioxide (SO<sub>3</sub>) can be recalculated to t sulfate ion as (SO<sub>4</sub>) using the following formula:

$$\text{Sulfate ion as (SO}_4\text{)} = 1.2 \cdot \text{Sulfur Trioxide (SO}_3\text{)}$$

### **MONITOR SAMPLING & TESTING**

The Office of Materials may sample and test deicing chemicals to verify compliance with specifications.

### **DISCLAIMERS**

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ONCE A COMPANY IS ADDED TO THE APPROVED VENDORS LIST, THIS IN NO WAY OBLIGATES THE IOWA DOT TO PURCHASE ANY GOODS OR SERVICES.