

Chapter 5

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Field Testing Procedures

The following guidelines are provided to help maintain anti-icing/deicing chemical testing, sampling accuracy and consistency when conducted by field personnel. If there are any disputes with contract vendors, certain procedural documentation is necessary to ensure compliance with the current Roadway Snow & Ice Control Products contract.

When to take a deicer sample:

Take a one-gallon sample from every tanker load of liquid chemical deicer received. For dry products, take one sample for every field order. For field orders exceeding 300 tons, take one sample for every 300 tons delivered. For liquid samples, it is recommended that a plastic container with a small lid be used to minimize product leakage. Use electrical tape to further seal the container to prevent leakage. For dry samples, a wide-mouth plastic container would be appropriate. Please store material samples on-site for future random testing. Do not send any random samples to the Materials Lab until they have been requested by Headquarters M&O. In the case of “Just Cause”, take 2 samples, retain one and send in the second to Headquarters M&O. Be sure to notify your supervisors of any problems immediately. Have someone from the affected Maintenance Area contact Monty Mills at headquarters (360-705-7803) to notify him that a “Just Cause” sample has been sent in for testing.

In the case of any disputes from Materials lab findings:

Archived samples will help to determine the extent of product failure. If sample failures start to occur, specific sites will be asked by Headquarters M&O to send additional samples taken at time of delivery, to the Headquarters M&O office. If the failed samples continue, notification will be sent to all areas using that “failed” product. Additional lab testing will be done until the chemical meets specifications or corrective action has been completed.

Procedures Checklist:

A copy of the Sampling Procedures Checklist needs to be kept at all locations receiving deicer deliveries (Appendix 2). This checklist may be needed along with the Product Sampling Transmittal Form (Appendix 1) in case of disputes with lab findings or to determine the extent of product failure. Keep extra copies of forms and file away completed forms at the Maintenance Area offices.

Field Inspection:

Before allowing any product to be unloaded, it is necessary to adhere to the following procedures.

1. Document and maintain records on all deliveries, including those that are rejected. This may include the following:
 - a) Date of the order
 - b) Date and time of delivery
 - c) Verification of advance delivery notification
 - d) Name of trucking company and license plate numbers
 - e) Product being delivered is what you ordered
 - f) Document all significant procedures prior to unloading of product
 - g) Copies of all required delivery paper work, are complete, and legible
2. Visually inspect the load to determine if there are any obvious reason why the load should be rejected.

3. Verify separation of non-separation of product.
4. No excess foreign material, floating in the liquid or settled on the bottom, will be accepted. Any problems must be noted at the point of delivery. Notification must be relayed to area management and Headquarters M&O.

Unloading:

If all required information is in order and the product appears to be correct as ordered, document the amount of product currently in storage prior to unloading and begin the unloading process.

1. **Specific Gravity:** For liquid products, the specific gravity needs to be checked **prior to unloading**, to verify compliance with the specification. If the delivery truck has the ability to circulate the load, do so for five minutes prior to taking the sample for a specific gravity test. Specific gravity, weights and concentrations for all contract products are in Appendix 3.
2. **Acceptable Limits:** Per the state contract, the concentration can be off by plus or minus 1 percent. If your load is not within the specification, then you should take a second sample. If the second sample fails, notify vendor and discuss with your supervisor your next course of action. Product specification guidelines are located in Appendix 3.
3. **Unloading Issues:** Visually inspect the delivered product again while unloading. If problems are noted that are a cause for rejection of the load, immediately halt the unloading process. Take photos if applicable and record any pertinent information.

Conduct the following procedures if the material is to be rejected:

1. If there is a problem and reloading can't be done, (mixed with previous material) note the amount of product (liquid only) pumped into the tank and total product now present in the tank.
2. Circulate the tank and then pull two one-gallon (4 liter) samples of the contaminated deicer material now in the tank.
3. Check and record the specific gravity of the samples
4. Secure the product as needed to assure its integrity. Determine if all products on hand will have to be removed.
5. Contact Jim Anderson or Jay Wells at Headquarters M&O.
6. Immediately advise the Region Purchasing officer of any ordering, delivery, storage or product quality issues.

Rejecting Loads:

The level of authority permitted to reject a load should be decided at the start of the season before deliveries commence. If the decision is made to reject a load, notify the vendor and the Region's Purchasing Officer before the load is sent back. A list of current contract suppliers and their phone numbers are in Appendix 3

Shipping:

Sample containers must be new, clean and free of leaks. Use new sample containers only. They must be properly labeled, packaged and secured before shipment to prevent contamination and spillage. The deicer transmittal form must be included with all material samples.

Sample Procedure Forms

Deicer Sample Transmittal Form

Contracts: # 02708 "Roadway Snow and Ice Control Products"

HQ Lab # _____

Lab Contract Number: MS 4929, Group 01, Work Op: 6099, Org code: 343022

Sampling Person: _____ Date: _____

Location: _____ Region: _____

Contact Person: _____ Phone: _____

Chemical Deicers (Check One):

Category 1 (Magnesium Chloride): FreezGard _____

Category 2 (Calcium Chloride): Calcium Chloride w/Boost _____

Category 8 (Uninhibited Sodium Chloride): Salt _____

Experimental or Other Category: _____

Additional Information Required From Maintenance Area:

Product Tested: _____ Quantity Delivered _____

Date of Order: _____ Date of Delivery: _____

Advance Delivery Notification? Yes _____ No _____

Was Time of Delivery Acceptable? Yes _____ No _____

Delivery Location: _____ Lot Number _____

Vendors Name: _____

Trucking Company: _____ License Plate #: _____

Sampling Procedures:

- 1. The tester has a copy of the current procedures on hand? Yes___ No___
- 2. Has the material been circulated (if applicable)? Yes___ No___
- 3. Specific gravity or weight verified before unloading? Yes___ No___
- 4. Specific gravity of pre-sample:_____
- First Attempt: Pass___ Fail___ Second Attempt: Pass___ Fail___
- 5. Sample size meets agency requirements (1 gallon minimum) Yes ___ No___
- 6. Location of tank or stockpile where the product is off loaded:_____
- 7. Sample labeled as required? Yes ___No___

Signature of Tester _____ **Date** _____

Comments / Observations:

Send Samples to the Headquarters M&O: Attention: Jay Wells or Jim Andersen

Samples via WSDOT Courier: Mail Stop 47358
Samples by U.S. Postal Service: PO Box 47358, Olympia, WA 98504 (or)
Sending by Fed X or UPS: 310 Maple Park Avenue SE Olympia WA 98504-7358

Sample Procedures Checklist

Visual Inspection of Delivered Loads: Prior to unloading or accepting the shipment:

- For liquid products, take specific gravity reading
- Verify that there is no product separation
- Verify that there are no precipitates or foreign objects floating in solution or settled on the bottom of the container
- For dry solid products, look for foreign material, large chunks, or excess moisture
- If material appears not to meet specifications, contact maintenance supervisor or management for direction on load shipment acceptance.

Sample Requests / Procedures:

* **Dry Bulk Solid Deicing Materials:** Samples of the materials should be obtained from a complete cross section of the load. Samples should be taken from the delivered load prior to it being added to the stockpile. The sample should be made up of at least three increments taken from the top third, at the midpoint, and at the bottom third of the volume of the load using a sampling tube. Sampling tubes are typically constructed of P.V.C pipe 1 ½ diameter and no less than 20” long with a tapered 45 degree edge on one end. (ASTM 75-03).

The sample should be placed into a new, clean and dry wide mouth 1 gallon container with a screw top lid. The lid should be sealed with electrical tape to avoid exposing the sample to moisture. Sample portions shall be taken from the top, center and bottom of the load in proportion to the cross section area. The optimal method is to cut completely through the stack when practical. It is important to obtain a complete and representative sample each time.

* **Liquid Deicing Materials:** A one gallon sample will be taken from the transfer hose in three equal parts. Each part will be compositely mixed together with the other parts to make up a one gallon sample. The sample will be collected during the unloading of the delivered product by taking a sample from the first third, second third and last third of the load. If the trailer or pup has compartments, then three equal samples shall be taken from only one of the compartments to complete the sample.

- **Save samples:** in your maintenance area until it is requested by Headquarters M&O.
- **Random samples:** will be called for by Headquarters M&O throughout the winter season.
- **Ship random samples:** to Jay Wells or Jim Andersen at Headquarters M&O
- **Problems with loads:** automatically ship “Just Cause” samples to Headquarters M&O to be tested, notify supervisors.
- **Non-compliant loads:** if a load appears to be visibly out of spec, take additional samples and notify your supervisors and Headquarters M&O.

- **Mark Sample Containers:** Use a Black Felt Tip Pen and Write Legibly

State Contract Number # **02708**
Product Name
Date Sample Taken
Lot Number
Specific Gravity
Sampling Person / Phone Number
Sampling Location

Product Analysis:

Once the Materials Lab has completed their tests, Headquarters M&O will notify the affected areas and vendor of lab results. If there are product compliance issues, Headquarters M&O will work with the Office of State Procurement, PMMO (Purchasing Materials Management Office), and the affected areas to facilitate possible liquidated damages.

Send Samples to Headquarters M&O: Attention: Jay Wells or Jim Andersen

Samples via WSDOT Courier:	Mail Stop 47358
Samples by U.S. Postal Service:	PO Box 47358, Olympia, WA 98504
Sending by Fed X or UPS:	310 Maple Park Avenue SE Olympia WA 98504-7358

Deicing Product Sampling Containers

Sample Containers/Testing Materials:

Dry Bulk Solid Deicing Products: 1 Gallon Wide Mouth Containers

For assistance contact your Regional Purchasing Office.

Liquid Deicing Products: 1-Gallon Narrow Mouth Containers

For assistance contact your Regional Purchasing Office.

Hydrometers: VWR Catalog Number 34640-003

Hydrometer Cylinders: VWR 24661-255

Sampling Product Suppliers:

ULINE Contact Information: 1-800-958-5463

VWR Contact Information: 1-800-932-5000

Label Master Labels: 1-800-621-5808

*** If you find other suppliers, please feel free to let us know and we will add them to the supplier list.

Product Limits Specification

Vendor	Contact Phone #	Chemical Name	Product Name	Percent Concentration	Specific Gravity Specifications	Weight Specifications Lbs/Gallon
Roadwise	877-260-1151	Magnesium Chloride	Freeze Gard	30 %	Lower Limit 1.25	Lower Limit 10.5
					Target Limits 1.29 - 1.31	Target Limit 10.85
					Upper Limit 1.32	Upper Limit 11.0
America West	888-547-5475	Calcium Chloride	Calcium Chloride w/ Boost	32 %	Lower Limit 1.28	Lower Limit 11.0
					Target Limits 1.34 – 1.35	Target Limits 11.2
					Upper Limit 1.37	Upper Limit 11.5