METHODS OF SAMPLING AND TESTING
MT 408-10
METHOD OF SAMPLING AND FIELD TESTING BRINE DEICING MATERIAL

1 Scope

1.1 This method covers the sampling and testing of brine deicing material in the field.

2 Reference Documents

ASTM
D891 Standard Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals
E126 Standard Test Method for Inspection, Calibration, and Verification of ASTM Hydrometer

Other Standards
Clear Roads Document - Clear Roads Snow and Ice Control Chemical Products, Specifications, and Test Protocols (https://clearroads.org/wp-content/uploads/12-10-Final-CR-SPECS-wCategory4.pdf).

3 Terminology

3.1 Deicer – a device or a chemical substance for preventing or removing ice.

4 Apparatus

4.1 1-gallon jug (NEW, not used) and a label

4.2 Hydrometer compliant with ASTM E126 specifications with an appropriate scale that includes the target range

4.3 Hydrometer Cylinder

4.4 Personal protection equipment (rubber gloves, eye protection, etc)

4.5 Deicer sampling checklist

5 Field Inspection

5.1 Document and maintain records on all deliveries, including those that are rejected.

5.2 Check to ensure that the product is being delivered according to the terms of the contract. Document the following information:

Bill of Lading with the following information:
Name of product
Supplier and manufacturer of product
Delivery Destination
Total number of units being delivered
Total weight of delivery using certified scale tickets or certified flow meter.
Lot number of product
Date of the order,
Date and time of delivery,
Verification of advance delivery notification,
Delivered in allowable times,
Name of Delivery Company and license plate numbers,

Are any price adjustment assessments required,
Is the product being delivered what was ordered,
Document all procedures prior to unloading,
Verify that all papers required of a delivery are present, complete and legible,
Legible and current MSDS,
Certified weight slip.

6 Unloading

6.1 Visually inspect the discharge valve prior to unloading for the presence of any foreign material.

6.2 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 and record any pertinent information. Conduct the following procedures if the material is to be rejected.

6.2.1 If the product fails the field inspection or testing, reload the product and reject the load.

6.2.2 If reloading can't be accomplished, (mixed with previous product) note the amount of the product pumped into the tank and total product now in the tank.

6.2.3 Circulate the contents of the tank and then take 2- one gallon (4 liter) samples of the contaminated product now in the tank.

6.2.4 Determine and record the specific gravity of the samples.

6.2.5 Take appropriate action as needed to ensure the integrity of the product on hand if possible. Determine if all products on hand will have to be removed.

6.2.6 Forward all sample directly to MDT's Materials laboratory for testing.

6.2.7 Immediately advise the Purchasing Services Bureau of any ordering, delivery, storage, or product quality issues.

7 Sampling

7.1 Remove one gallon of sample from the supplier's truck. Visually inspect the sample and reject the delivery if any foreign material is present.

7.2 Purge a minimum of one gallon of product to ensure hoses are free of contamination. Take a one gallon sample from the transfer hose in three equal parts, compositely mixed together, to make up the sample that will be submitted to the laboratory for testing. Collect the samples during unloading as the first third, the second third and the last third of the product is being delivered. If the trailer or pup has compartments, take the three equal samples from only one of the compartments to complete the sample.

7.3 Determine the specific gravity of the sample, as described in Section 8. Retain the sample in case of dispute. Dispose of samples after notification by the Purchasing Services Bureau.

8 Specific Gravity Determination

8.1 Carefully pour a sufficient quantity of deicer into a clean hydrometer cylinder, taking care to avoid the formation of air bubbles.

8.2 Slowly lower the hydrometer in the liquid and release it. After the hydrometer stabilizes and floats freely away from the walls of the cylinder, read the specific gravity at the point the meniscus intersects the hydrometer in accordance to ASTM D891.

8.3 Record your results on the Deicer Sampling Checklist.

Magnesium Liquid Deicer Sampling Checklist

1 Which tank will product be pumped into?_____

Gallons of de-icer in tank prior to pumping_____

Gallons after delivery_____

2 Before pumping any material, take a 1-gallon pre-sample. Visually inspect the sample for contamination with foreign material. Determine the specific gravity. Allow pumping to start and dispose of pre-sampled material and go to step 3. Re-sample the material if the sample appears to be contaminated or if it fails the specific gravity. If the second sample appears contaminated or fails the specific gravity, politely inform the delivery driver his product does not meet MDT specification and you must reject the load. If product is rejected immediately contact your supervisor. Retain the second sample for the supervisor.

Specific gravity of pre-sample _____

3 Choose one compartment from either truck or trailer to take the official sample. Purge a minimum of one gallon of product to ensure hoses are free of contamination. Take a one-gallon sample in three equal parts, compositely mixed together, to make up the sample that will be submitted to the laboratory for testing. Collect the samples during unloading as the first third, the second third and the last third of the product is being delivered. If the trailer or pup has compartments, take the three equal samples from only one of the compartments to complete the sample. Clean the outside of the sample container and attach the label.

4 Determine the specific gravity of the sample. This must be done in view of the delivery driver.

5 Record the following:

Samplers Name:_____Date: _____

Time:_____ Location:_____

Specific Gravity _____Tons of product delivered _____

Truck _____ or trailer _____ # the sample was taken from.

Delivery driver's signature: _____

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