
DMS-6400

De-Icer/Anti-Icer

Effective Date: **July 2022**



1. DESCRIPTION

This Specification governs the Quality Monitoring Program (QMP) for de-icer/anti-icer, pre-qualification requests and procedures, disqualification, sampling, re-qualification, quality control (QC), and material requirements.

2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

3. MATERIAL PRODUCER LIST

The Materials and **Tests Division (MTD)** maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "[De-Icer/Anti-Icer](#)," require no further sampling and testing before use, unless deemed necessary by the Project Engineer or **MTD**. To obtain a place on this list, the product must be accepted into the QMP. Materials not on the list require project-specific testing.

4. BIDDERS' AND SUPPLIERS' REQUIREMENTS

The Department will purchase or allow on projects those products listed by producer and product code or designation shown on the MPL. Products not included on the MPL that are certified by the Contractor to meet this Specification can be purchased but must be tested and approved by the Department before use. Allow 30 calendar days for the Department to sample, test, and report results for products not included on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

5. PRE-QUALIFICATION PROCEDURE

5.1. **Pre-Qualification Request.** Submit a request for evaluation under [DMS-6400](#) to DMS_Prequal@txdot.gov. Include the following information in the request:

- company name;
- physical and mailing addresses;
- contact person, phone number, and email address;
- type of material;
- **current** laboratory test report with test data showing compliance of the material with the requirements stated in this Specification; and

- most recent detailed product specification sheet and Safety Data Sheet (SDS) that complies with OSHA Hazard Communication Standard 29 CFR 1910.1200.

Note: A current test report is defined as having been performed within 6 mo. of the date of submittal for evaluation.

All documents must be clearly legible.

- 5.2. **Pre-Qualification Sample.** After reviewing the request for QMP pre-qualification, MTD will request a minimum of one sample (at least 1 gal.) for each de-icer/anti-icer being considered for pre-qualification. Ship prequalification samples with current SDS to the Texas Department of Transportation, Materials and Tests Division (CP51), 9500 North Lake Creek Parkway, Austin, TX 78717.

Submit all materials for pre-qualification at no cost to the Department.

- 5.3. **Evaluation.** MTD will notify prospective bidders and suppliers after completion of material evaluation.

- 5.3.1. **Qualification.** If approved for Department use, MTD will add the material to the MPL. Producers with products on the MPL must meet the QMP requirements in Section 5.1., "Pre-Qualification Request," to maintain status on MPL.

Report changes in the composition or in the manufacturing process of any material to MTD. Significant changes reported by the producer, as determined by the Director of MTD, may require a re-evaluation of performance. The Department reserves the right to conduct whatever tests it deems necessary to identify a pre-qualified material and determine if there is a change in the composition, manufacturing process, or quality that may affect its durability or performance. In case of variance, the Department's tests will govern.

- 5.3.2. **Failure.** Producers not qualified under this Specification may not furnish materials for use on Department projects.

Producers failing to qualify may submit a request for re-evaluation after 1 mo. has elapsed from the date of the original request. MTD may modify this time limit at its discretion. In the request for re-evaluation, document the cause of the issue and corrective action taken.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of MTD will assess this cost at the time of testing and amounts due will be billed to the producer.

- 5.4. **Quality Monitoring Requirements.** Materials in the QMP are pre-qualified every year. The pre-qualification period expires every June 30th. During each pre-qualification period, the producer must provide a quality monitoring (QM) sample and quality control (QC) testing reports.

- 5.4.1. **QM Sample.** The producer must submit a sample of each pre-qualified material every pre-qualification period to MTD for testing. To allow enough time for testing, submit sample at least 1 mo. before the beginning of the pre-qualification period. Any material not submitted on time may be delayed in posting on the MPL or removed from the MPL.

- 5.4.2. **QC Testing Reports.** The Department requires that all producers in the QMP perform QC testing on their material. Testing is required for every material that is pre-qualified under the QMP. Submit previous QC testing data and a current laboratory test report with test data showing compliance of the material with the requirements stated in this Specification with each pre-qualification sample.

Note: A current test report is defined as having been performed within 6 mo. of the date of submittal for evaluation.

The reports must reflect the test data from each batch of pre-qualified de-icer regardless of the destination of the material. The reports must contain the following information:

- type of de-icer,
- date of manufacture,
- batch number, and
- QC test results.

- 5.5. **Periodic Evaluation.** The Department reserves the right to conduct random sampling and testing of pre-qualified materials to verify performance and Specification compliance, to perform random audits of documentation, and to inspect and approve the QC testing laboratory to ensure that all equipment and test procedures meet the applicable criteria. Department representatives may sample material from manufacturing plants or the project site. Producers should maintain a complete record of all test reports for the previous and current calendar year.

Failure of materials to comply with the requirements of this Specification, as a result of periodic evaluation, may be cause for removal of those materials from the MPL. In case of variance, the Department's tests will govern.

- 5.6. **Disqualification.** Causes for disqualification and removal from the MPL and QMP may include, but are not limited to:
- falsification of documentation,
 - producer fails to report any change in material composition or manufacturing process to MTD,
 - producer fails to properly submit complete QC testing reports or QM samples to MTD;
 - material fails to meet the requirements of this Specification, as a result of periodic evaluation, or
 - producer has unpaid charges for failing samples.

Disqualification will only apply to the de-icer/anti-icer type corresponding to the infraction.

MTD will remove disqualified producers from the MPL and will not allow submission of material for requalification for 6 mo., or at the discretion of the Department.

- 5.7. **Re-Qualification.** Once the disqualification period established by MTD has elapsed, producers disqualified and removed from the MPL may begin the re-qualification process by submitting a request in accordance with Section 5.1., including a test report with data certifying that the de-icer/anti-icer meets the material requirements of this Specification and additional documentation identifying the cause of the problem and corrective action taken. The re-qualification process will then follow all subsequent Sections of Article 5., "Pre-Qualification Procedure."

The Department normally bears the costs of sampling and testing; however, the disqualified producer will bear the costs associated with re-qualification. The Director of MTD will assess this cost at the time of re-evaluation and amounts due will be billed to the producer.

6. MATERIAL REQUIREMENTS

- 6.1. **Solid Sodium Chloride.**

6.1.1. **General Requirements.** The sodium chloride may be obtained from either natural deposits (rock salt) or produced artificially (evaporated, solar, or other salt). The material must be in a free-flowing, usable condition when received. Type I is rock salt for broadcasting, and Type II is salt for making brine.

The material supplies must not have constituents that would cause residual waste to meet the definition of a hazardous waste, as found in 40 CFR 261.

6.1.2. **Chemical Requirements.** Unless otherwise noted, the Department will allow appropriate industry-accepted methods of wet titration or instrumental testing.

Table 1
Chemical Requirements for Sodium Chloride
Type I and Type II Salts

Property	Requirement
Chlorides, as NaCl, % by weight, min, ASTM D 632, Annex A1 ^{1,2}	95
Sulfate ^{2,3} , %, max	3.0 for Type I 1.0 for Type II

1. Grind at least a 20-g portion of the reduced sample to pass a No. 50 (300 mm) standard sieve.
2. The Department will allow appropriate industry-accepted instrumental testing methods.
3. For Type II Salts, test % sulfate in 25% brine solution.

6.1.3. **Physical Requirements.**

Table 2
Physical Requirements for Sodium Chloride
Type I and Type II Salts

Property	Requirement	
	Type I	Type II
Particle size, ASTM C 136, ¹	% passing	% passing
1/2" (12.5 mm)	100	---
3/8" (9.5 mm)	95-100	100
No. 4 (4.76 mm)	20-90	20-100
No. 8 (2.36 mm)	10-60	10-60
No. 30 (600 μm)	0-15	0-15
Insoluble Particles, ASTM E 534, %	---	≤1.0

1. Sample must not be moistened as directed in ASTM C 136, Section 4.1.

6.2. **Premade Brine and Fracking Brine Solutions.** Provide a pre-mixed solution of salt and water in accordance with Table 3. Ensure a uniform solution with all the salt fully dissolved.

Table 3
Requirements for Premade and Fracking Brine Solutions

Property	Requirement
Total chloride salt content, % Cl ⁻ as NaCl,	Department will report % Cl ⁻ on MPL
Sulfate, %, max	1.0
Visual Inspection	Homogenous, clean, and free from extraneous matter
Settleable solids and solidification, Tex-625-J , % max	1.0
pH range	5-9

6.3. **Complex Chlorides**

6.3.1. **General Requirements.** The chloride-based de-icer/anti-icer material must be active at an ambient temperature of -15°C (5°F) or lower. The solid chloride-based product must be in a free-flowing, usable condition when received. There are liquid complex chlorides and Type III rock salt complex chloride for broadcasting.

6.3.2. **Chemical Requirements.** Unless otherwise noted, the Department will allow appropriate industry-accepted methods of wet titration or instrumental testing.

Table 4
Chemical Requirements for Complex Chloride Type III Salts and Liquid Complex Chloride

Property	Requirement
Total chloride-based salt content (mixture of calcium, magnesium, potassium, and sodium chloride), % Cl ⁻ as NaCl, ASTM D 632 ^{1,2}	92 for Type III, min 32-37 for Liquids
Cyanide ² , ppm, max	2.6
Chromium ²	Report Only
Total phosphates ²	Report Only
Cadmium ²	Report Only
Sulfate ² , %, max	3.0 for Type III 1.0 for Liquids
pH range	5-9

1. Grind at least a 20-g portion of the reduced sample to pass a No. 50 (300 mm) standard sieve.

2. The Department will allow appropriate industry-accepted instrumental testing methods.

6.3.3. **Physical Requirements.**

Table 5
Physical Requirements for Complex Chlorides Type III Salt and Liquid Complex Chlorides

Property	Requirement	
	Type III	Liquid
Visual Inspection, per PNS specification ¹	Homogenous, clean, and free from extraneous matter	Homogenous, clean, and free from extraneous matter
Particle size, ASTM C 136 ² ,	% passing	% passing
1/2" (12.5 mm)	100	---
3/8" (9.5 mm)	95-100	---
No. 4 (4.76 mm)	20-100	---
No. 8 (2.36 mm)	10-60	---
No. 30 (600 µm)	0-15	---
Corrosive property, Tex-624-J	70% less corrosive than NaCl	70% less corrosive than NaCl
Frictional analysis per PNS specification ³	---	Report Only
Settleable solids and solidification, Tex-625-J, % max	---	1.0

1. Test Method 14 from PNS specification
2. Sample must not be moistened, as directed ASTM C 136, Section 4.1.
3. Test Method 21 from PNS specification

7. DELIVERY AND EQUIPMENT

The vendor is responsible for assuring delivery and complete transfer of the material through properly calibrated metered pumps for liquids or certified scales for solids and for all necessary equipment to transfer the material to existing storage facilities.

8. PACKAGING AND LABELING

Package material as stated in the invitation to bid. Packaging must protect material from moisture under normal storage conditions and must permit safe dispensing under a variety of storage and weather conditions.

A bill of lading with the following information must accompany each shipment:

- product name, supplier, producer, and destination;
- total weight of delivery (certified scale ticket);
- lot number of products being delivered (number must enable purchaser to track a delivered product back to its manufacture point, date of manufacture, and specific batch); and
- shipper information, including the name of the shipping company; tank, trailer, or rail car number; and point and date of origin.

Upon delivery of a purchased shipment to the Department, include the following documentation:

- current, clearly legible Safety Data Sheet (SDS);
- application rate table that clearly states the producer, vendor, and supplier recommended rate for the various conditions of use at the place of delivery;

- shipper information, including the name of the shipping company; tank, trailer, or rail car number; and point and date of origin;
 - shelf life of material;
 - information on how low temperatures will affect storage of liquid material; and
 - clear documentation on proper storage.
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9. **ARCHIVED VERSIONS**

Archived versions are available.