



**MATERIAL SPECIFICATION FOR  
SODIUM CHLORIDE SOLID AND SODIUM CHLORIDE SOLUTION**

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**2502.01 SCOPE**

This specification covers the requirements for sodium chloride solid and sodium chloride solution for use in snow and ice control.

**2502.01.01 Specification Significance and Use**

This specification has been developed for use in provincial- and municipal-oriented Contracts. The administration, testing, and payment policies, procedures, and practices reflected in this specification correspond to those used by many municipalities and the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

**2502.01.02 Appendices Significance and Use**

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

## **2502.02 REFERENCES**

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

### **ASTM International**

D 1293-99 Standard Test Methods for pH of Water  
D 1429-08 Standard Test Methods for Specific Gravity of Water and Brine

### **Others:**

2004 Pacific Northwest Snowfighters Snow and Ice Control Chemical Products Specifications and Test Protocols:  
Test Method C-Percent Total Settleable Solids and Percent Solids Passing on a No. 10 Sieve

## **2502.05 MATERIALS**

### **2502.05.01 Sodium Chloride Solid**

Sodium chloride solid (rock salt) shall be in a free-flowing state until used and meet the requirements of Table 1. An anti-caking agent may be used to keep the salt in a free-flowing state.

**2502.05.02 Sodium Chloride Solution**

Sodium chloride solution used shall:

- a) Contain 23.3% by mass of sodium chloride solid mixed homogeneously within a tolerance of -1.0% to +0.3%.
- b) Meet the requirements of Table 2.

**2502.07 PRODUCTION**

**2502.07.01 Packaging and Delivery**

When delivery in bags is specified in the Contract Documents or purchasing order, as appropriate, the sodium chloride solid shall be delivered in moisture-proof bags.

When delivery in bulk is specified in the Contract Documents or purchasing order, as appropriate, the sodium chloride solid shall be delivered by ship, rail, or truck, whichever method is specified. The loads shall be covered with weathertight coverings.

Sodium chloride solution shall be delivered by railway tank car or truck tank. The tanker shall be equipped with a meter that measures in litres and has been calibrated within the past 12 months.

**2502.07.02 Marking**

Bags shall be legibly marked with the following information:

- a) Name of manufacturer.
- b) Production date codes with key to decrypt the date codes.
- c) Net content mass.
- d) Salt grade (i.e., coarse crushed rock salt or fine crushed rock salt).

**2502.08 QUALITY ASSURANCE**

**2502.08.01 Inspection, Sampling, and Testing**

Sodium chloride solid and sodium chloride solution may be subjected to sampling and testing for conformity to the specified requirements. All materials that fail to meet the specified requirements may be rejected by the Owner. Rejected materials shall be replaced at no extra cost to the Owner. Materials currently in storage that have been contaminated by the rejected materials shall also be replaced at no extra cost to the Owner. All costs incurred by the Owner for service or repairs or both to Owner's equipment as a result of damages caused by the rejected material shall be paid by the supplier.

**2502.08.01.01 Sampling Sodium Chloride Solid**

Samples of the material may be taken on delivery and throughout the duration of the Contract by the Owner. The supplier shall be furnished at no cost with copies of the results of all testing undertaken by the Owner.

**2502.08.01.02            Sampling Sodium Chloride Solution**

Not less than three samples from each tank of each shipment shall be taken by the Owner. Each sample shall be representative of the contents of the tank. Sample size shall be a minimum of 2 litres. Precautions shall be taken during the sampling operation to avoid exposing the samples unduly to atmospheric moisture. Immediately after collecting the three samples, the individual samples shall be mixed thoroughly to form a composite sample of material and then be stored and sealed in a suitable glass or plastic container. The supplier shall be furnished at no cost with copies of the results of all testing undertaken by the Owner.

**2502.08.01.02.01        Manufacturer's Certificate**

Upon request, a manufacturer's certificate of analysis, signed by the manufacturer's representative, stating that the solution has been tested and found to be in complete conformance with this specification shall be provided.

**2502.09                    OWNER PURCHASE OF MATERIAL**

**2502.09.01                Inspection, Sampling, and Testing**

Prior to the first delivery, the supplier shall provide the Owner with a 2 kg solid or 2 litre liquid sample, as appropriate, that is representative of the material to be supplied during the term of the purchasing order.

**2502.09.02                Measurement and Payment**

**2502.09.02.01          Sodium Chloride Solid**

Sodium chloride solid shall be measured by mass in tonnes as specified in the purchasing order.

When shipped in bulk, sodium chloride solid shall be weighed at the source of supply and the mass shall be substantiated by bills of lading in as many copies as the Owner may require.

Payment at the price specified in the purchasing order shall be for the supply of the sodium chloride solid delivered to the destination on the date and time specified.

The cost of all testing, except that performed in the Owner's laboratory, shall be included in the price.

**2502.09.02.02          Sodium Chloride Solution**

Sodium chloride solution shall be measured by volume in litres of solution.

Sodium chloride solution shall be weighed at the source of supply and the mass shall be substantiated by bills of lading in as many copies as the Owner may require.

When shipping is by railway tank car, railway scales shall be as specified in the purchasing order.

When shipping is by truck tank, the mass shall be determined as specified in the purchasing order.

As an alternative to weighing for measurement in tonnes, the sodium chloride solution may be measured by means of a metering device specified in the purchasing order by volume and reported in litres.

Specific gravity of 1.176 shall be used for a solution of 23.3%.

When volumetric measurement is used, the Owner shall be provided with a bill of lading produced by an electronic metering device located on the discharge piping from the tanker, for each tank load of solution delivered. The invoice shall contain a note, signed by the delivery person as the official representative of the supplier of sodium chloride solution, indicating the total volume in litres of the delivery tanker and certifying the actual volume in litres of sodium chloride solution delivered in each tank load.

Payment at the price specified in the purchasing order shall be for the supply of the sodium chloride solution delivered to the destination on the date and time specified.

The cost of all testing, except that performed in the Owner's laboratory, shall be included in the price.

**TABLE 1**  
**Material Properties**  
**Sodium Chloride Solid**

<b>Gradation Requirements</b>		
<b>MTO Sieve Designation</b>	<b>Per Cent Passing by Weight</b>	
	<b>Coarse Crushed Rock Salt</b>	<b>Fine Crushed Rock Salt</b>
9.5 mm	100	-
4.75 mm	30 - 100	100
2.36 mm	5 - 65	-
1.18 mm	0 - 30	35 min.
600 µm	0 - 10	-

**Notes:**

A. Coarse and fine crush rock salt chemical composition, by mass:

- Moisture content, not more than 1.5%
- Sodium chloride content, dry mass basis, not less than 96.0%
- Insoluble matter, dry mass basis, not more than 4.0%

B. Sodium chloride solid from the mines in the Lake Huron basin can contain up to 3% combined magnesium chloride and calcium chloride.

**TABLE 2**  
**Material Properties**  
**Sodium Chloride Solution**

<b>Material Property</b>	<b>Solution</b>	<b>Range</b>	<b>Test Procedure</b>
Sodium Chloride %	23.3	-1.0 / +0.3	Atomic Absorption Spectrometric Method
Specific Gravity	1.176	-	ASTM D 1429 Test Method A 20 °C ± 1 °C
Combined Magnesium and Calcium Chloride % Maximum	< 1%	-	-
Total Settleable Solids	< 1%	-	PNS Test Method C
pH range (Note1)	-	6 - 9	ASTM D 1293
<b>Note:</b>			
1. Dilute 1 part product to 4 parts distilled water before attempting a reading.			

**Appendix 2502-A, November 2010  
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

**Note:** This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

**Designer Action/Considerations**

The designer should specify the following in the Contract Documents or purchasing order:

- Packaging and delivery requirements. (2502.07.01)

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

**Related Ontario Provincial Standard Drawings**

No information provided here.