

# DIN EN 16811-1:2016-10 (E)

## Winter service equipment and products - De-icing agents - Part 1: Sodium chloride - Requirements and test methods

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
Introduction .....		5
1	Scope .....	6
2	Normative references .....	6
3	Terms and definitions .....	7
4	Requirements for sodium chloride .....	7
4.1	Chemical Requirements .....	7
4.2	Moisture .....	7
4.3	Sieve analysis .....	8
4.4	General requirements .....	8
4.5	Marking and product description .....	9
5	Requirements for brine .....	10
5.1	Chemical Requirements .....	10
5.2	General requirements .....	10
5.3	Marking and product description .....	11
6	Sampling .....	12
7	Test methods .....	12
7.1	General .....	12
7.2	NaCl .....	12
7.2.1	General .....	12
7.2.2	Direct method .....	12
7.2.3	Indirect method .....	12
7.3	Sulfate .....	12
7.4	Moisture .....	12
7.5	Sieve analysis .....	13
7.6	Anti-caking agent .....	13
7.7	Heavy metals, etc .....	13
7.8	Hydrocarbons .....	13
7.9	TOC (total organic carbon) .....	13
7.10	pH .....	13
7.11	Water insoluble matter .....	13
7.12	Bulk density .....	13
7.13	Density .....	13
Annex A (normative) Product descriptions .....		14
A.1	Product description for sodium chloride .....	14
A.2	Product description for brine .....	17
Annex B (normative) Sampling .....		19
B.1	Solid sodium chloride .....	19
B.1.1	Package shipments .....	19

B.1.2	Bulk shipments .....	19
B.2	Brine .....	19
B.3	Labelling and distribution of samples .....	19
B.4	Sampling report .....	19
Annex C (normative) Analytical methods .....		21
C.1	Determination of sodium chloride (potentiometric method) .....	21
C.1.1	Scope and field of application .....	21
C.1.2	Principle .....	21
C.1.3	Reagents .....	21
C.1.4	Apparatus .....	22
C.1.5	Sampling and samples .....	22
C.1.6	Procedure .....	22
C.1.7	Expression of results .....	23
C.2	Determination of aluminium, arsenic, cadmium, calcium, chromium, cobalt, copper, lead, magnesium, nickel, sulfate, zinc (inductively coupled plasma optical emission spectrometry (ICP/OES)) .....	24
C.2.1	General .....	24
C.2.2	Principle .....	25
C.2.3	Reagents .....	25
C.2.4	Apparatus (informative) .....	25
C.2.5	Sampling and samples .....	26
C.2.6	Procedure .....	26
C.2.7	Expression of results .....	29
C.2.8	Remarks .....	32
C.3	Determination of total mercury (cold vapour atomic absorption spectrometry) .....	32
C.3.1	General .....	32
C.3.2	Principle .....	33
C.3.3	Reagents .....	33
C.3.4	Apparatus (informative) .....	34
C.3.5	Procedure .....	35
C.3.6	Expression of results .....	36
C.4	Determination of anti-caking agent (molecular absorption spectrometry) .....	38
C.4.1	General .....	38
C.4.2	Principle .....	39
C.4.3	Reagents .....	39
C.4.4	Apparatus .....	39
C.4.5	Sampling and samples .....	40
C.4.6	Procedure .....	40
C.4.7	Expression of results .....	41
Bibliography .....		43