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

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

Contents

Page

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