BS 3247:2011+A1:2016

BSI Standards Publication

Specification for salt for spreading on highways for winter maintenance

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Date	Text affected
31 July 2013	C1. In Table 1 in the row Marine salt, Coarse, 6.3 mm has been changed to 10 mm. See Foreword.
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Full document details: BS 3247:2011+A1:2016

Contents

Foreword *iii*
1 Scope *1*
2 Normative references *1*
3 Terms and definitions *1*
4 Storing quality *1*
5 Moisture content *2*
6 Grading *2*
7 Chemical composition *3*
8 Marking *3*

Annexes
Annex A (informative) Types of salt used for winter road maintenance *4*
Annex B (informative) Particle size and effectiveness *4*
Annex C (informative) How salt works as a de-icing agent *5*
Annex D (normative) Sampling for laboratory testing *6*
Annex E (normative) Drying and determination of moisture content *6*
Annex F (normative) Grading by sieve analysis *7*
Annex G (normative) Determination of matter insoluble in water *8*
Annex H (normative) Determination of chloride content *10*
Annex I (normative) Rapid determination of soluble sulfate compounds *11*
Annex J (normative) General determination of soluble sulfate compounds *13*

Bibliography *16*

List of tables
Table 1 – Grading of salt *2*

Summary of pages
This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 16, an inside back cover and a back cover.

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Full document details: BS 3247:2011+A1:2016

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Full document details: BS 3247:2011+A1:2016

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution and came into effect on 28 February 2011. It was prepared by Technical Committee B/510, *Road materials*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

BS 3247:2011+A1:2016 supersedes BS 3247:2011, which is withdrawn.

Information about this document

A variety of spreading machines of suitable performance exist and are covered by BS 1622, which also gives advice on minimizing the environmental impact of the use of salt on highways. The purpose of BS 3247 is to specify a material which will enable such machines to give good results, especially after the salt has been stored.

In this revision of this British Standard, one of the main changes concerns the grading requirements for rock salt, with a fine grade which applies to most European salt and the retention of a coarse grade to allow a satisfactory spread on wide carriageways.

Further information on the use and storage of salt for roads can be found in "Well-maintained highways: code of practice for highway maintenance management" [1].

All testing for chemical composition is now carried out on a smaller subsample to decrease dissolution time, and to improve homogeneity, repeatability and reproducibility. Grinding of samples can further reduce dissolution time but is not essential. The drying operation has been revised to remove any hazards associated with industrial methylated spirits. This standard provides Rapid (sulfate as calcium sulfate) and General (total sulfate) methods for soluble sulfate determinations (Annex I and Annex J respectively).

A few hundred tonnes of urea are used per annum on highways in place of salt in order to protect some structures from the corrosive effects of salt. Where urea is used, special arrangements will need to be agreed between the user and the supplier.

The previous edition of this British Standard did not contain, or define, a reproducible test for the chemical analysis of salt. The assessment of the soluble sulfate content of salt can be laborious. A rapid method for determining sulfate content as calcium sulfate content has been introduced to address this (Annex I).

Text introduced or altered by Amendment No. 1 is indicated in the text by tags A1 A1. Minor editorial changes are not tagged.

WARNING. This British Standard calls for the use of substances and/or procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

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Full document details: BS 3247:2011+A1:2016

Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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Full document details: BS 3247:2011+A1:2016

1 Scope

This British Standard specifies the essential properties of salt for spreading on highways for winter maintenance and includes tests for some of these properties.

Marking requirements are also specified.

The types of salt which are used for winter road maintenance are described in Annex A. Some important considerations affecting the grade of salt to be chosen for particular purposes are given in Annex B. Information on how salt works as a de-icing agent is included in Annex C.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 410-1, *Test sieves – Technical requirements and testing – Part 1: Test sieves of metal wire cloth*

BS 5898:1980, *Specification for principles of design and construction of volumetric glassware for laboratory use*

BS EN ISO 10012, *Measurement management systems – Requirements for measurement processes and measuring equipment*

BS EN 932-1:1997, *Tests for general properties of aggregates – Part 1: Methods for sampling*

BS EN 933-1:1997, *Tests for geometrical properties of aggregates – Part 1: Determination of particle size distribution – Sieving method*

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1 friable
capable of being easily crumbled between the fingers of the hand and restored to the original grading

4 Storing quality

The salt shall contain the minimum amount of anti-caking additive necessary to ensure that the bulk remains loose after open storage for 18 months in an unprotected stockpile at least 1 m high with sides inclined at the angle of repose of the salt in a loose and usable condition. In these conditions, any non-friable crust formed shall not exceed 75 mm in thickness.

NOTE An important consideration in choosing a site for a stockpile is its potential effect on the environment. Stockpiles should preferably be on well-drained sites and precautions should be taken to ensure that the salt does not constitute a nuisance to human beings or a hazard to animals (including fish) or plant life.

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5 Moisture content

When sampled in accordance with Annex D and tested in accordance with Annex E, the moisture content of the salt on delivery shall be no greater than 4% (by mass – m/m).

NOTE Low moisture content salt may be provided following discussion between supplier and purchaser.

6 Grading

When sampled in accordance with Annex D and tested in accordance with Annex E and Annex F, the salt shall conform to Table 1. Salt shall be graded as either coarse or fine according to the results of the sieve analysis (see Annex F).

NOTE 1 Conformity to the requirements for grading ensures the suitability of the salt for spreading for the treatment of snow and ice but does not, of itself, ensure free-running or non-caking properties.

NOTE 2 Spreaders conforming to BS 1622 should be adjusted and calibrated when changing the grade of salt.

The grading for marine salt shall be similar to that specified in Table 1 for rock salt wherever possible and shall conform to the grading for marine salt (coarse).

Table 1 **Grading of salt**

Type and grade of salt		BS 410-1 test sieve	Percentage (m/m) passing test sieve
Rock Salt	Coarse	10 mm	100
		6.3 mm	75 to 95
		2.36 mm	30 to 70
		300 µm	0 to 20
	Fine	6.3 mm	100
		2.36 mm	30 to 80
		300 µm	0 to 20
Marine salt	Coarse	10 mm	100
		1.18 mm	0 to 80
		150 µm	0 to 10
Vacuum salt	Fine	1.18 mm	100
		150 µm	0 to 30

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