

Specification for

Salt for spreading on highways for winter maintenance

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Road Engineering Standards Policy Committee (RDB/-) to Technical Committee RDB/27, upon which the following bodies were represented:

- Agricultural Engineers' Association
- Chemical Industries' Association
- County Surveyors' Society
- Department of Transport
- Federation of Manufacturers of Construction Equipment and Cranes
- Institute of Wastes Management
- Institution of Civil Engineers
- Institution of Highways and Transportation

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Foreword

This British Standard has been prepared under the direction of the Road Engineering Standards Policy Committee. It supersedes BS 3247:1984 which is withdrawn.

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 introduced which applies to most continental salt and a coarse grade to allow a satisfactory spread on wide carriageways.

Some important considerations affecting the grade of salt to be chosen for particular purposes are given in Appendix H. Further information on the use and storage of salt for roads may be found in the Department of Transport publication "Winter Maintenance of Motorways and Trunk Roads: A Statement of Service and Code of Practice"¹⁾.

All testing for chemical composition is now carried out on the same subsample, with the stirring time specified to improve repeatability and reproducibility, and the drying operation has been slightly amended to take account of the hazards associated with the use of industrial methylated spirits.

This British Standard calls for the use of substances and/or procedures that may 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.

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.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ Available from the Department of Transport, Room 3/18, 2 Monck Street, London, SW1P 2BQ

0 Introduction

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 sulphate content of salt has caused particular problems. Much testing has been carried out both by Highway Authorities and the salt supply industry and a solution time of 2 h, without crushing, has given the most reproducible results for what is a naturally occurring material with a natural variation in composition. The amount of sulphate found in the test solution is time-dependent and the requirement for the maximum allowable soluble sulphate content has been fixed to equate with the previous edition where a shorter dissolution time was often used.

1 Scope

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

Marking requirements are also specified.

The types of salt which are used for winter road maintenance are listed in Appendix A.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definition

For the purposes of this British Standard, the following definition applies.

friable

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

3 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.

4 Moisture content

When sampled in accordance with Appendix B and tested in accordance with Appendix C, the moisture content of the salt on delivery shall not exceed 4 % (*m/m*).

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

5 Grading

When sampled in accordance with Appendix B and tested in accordance with Appendix C and Appendix D, the salt shall comply with the requirements given in Table 1. Salt shall be graded as either coarse or fine according to the results of the sieve analysis (see Appendix D).

NOTE 1 Compliance with 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 complying with BS 1622 need to be adjusted and calibrated when changing the grade of salt.

Table 1 — Grading of salt

Type and grade of salt		BS 410 test sieve	Percentage (<i>m/m</i>) passing test sieve
Rock salt	Coarse	10 mm	100
		6.3 mm	75 to 95
		2.36 mm	30 to 70
		300 μ m	0 to 20
	Fine	6.3 mm	100
		2.36 mm	30 to 80
		300 μ m	0 to 20
Vacuum salt and marine salt	Coarse	10 mm	100
		1.18 mm	0 to 80
		150 μ m	0 to 10
	Fine	1.18 mm	100
		150 μ m	0 to 30

6 Chemical composition

When sampled in accordance with Appendix B, and tested in accordance with Appendix C, Appendix E, Appendix F and Appendix G using reagents of analytical reagent quality, the chemical composition of the salt by dry mass shall be as follows.

a) Soluble chloride compounds (including sodium chloride (NaCl), magnesium chloride (MgCl₂), calcium chloride (CaCl₂) etc. expressed as sodium chloride): not less than 90.0 %.

b) Soluble sulphate compounds [expressed as calcium sulphate (CaSO₄)]: not more than 2.5 %.