

Quicklime, hydrated lime and natural calcium carbonate

Part 101. Methods for preparing samples for testing

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Committees responsible for this British Standard

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- Autoclaved Aerated Concrete Products Association
- British Aggregate Construction Materials Industries
- British Lime Association
- Department of the Environment (Building Research Establishment)
- Ministry of Agriculture, Fisheries and Food
- Mortar Producers' Association
- Water Services Association of England and Wales

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Foreword

This Part of BS 6463 has been prepared by Subcommittee B/516/11, Lime, under the direction of Technical Committee B/516, Cement and lime. It supersedes BS 6463 : Part 1 : 1984 which is withdrawn.

The first edition of BS 6463 was published in four Parts dealing primarily with test methods for the types of lime used in the construction industry to support the specification for building lime in BS 890. The test methods were also applicable to lime and natural calcium carbonate for use in other industries, e.g. water treatment, food, agriculture, steel and chemical. The European Committee for Standardization (CEN) has subsequently published a specification for building lime supported by methods of test. These European Standards have been implemented in the UK as DD ENV 459-1 : 1995 and BS EN 459-2 : 1995. In consequence BS 890 : 1995 refers to the test methods in BS EN 459-2 : 1995 for building lime. BS 6463 has been revised to complement BS EN 459-2 : 1995 and still includes those methods that can be used for lime other than for building purposes.

This revision of BS 6463 is published in three Parts, as follows:

Part 101. *Methods for preparing samples for testing*

Part 102. *Methods for chemical analysis*

Part 103. *Methods for physical testing*

This Part gives methods for the sampling of quicklime, hydrated lime, milk of lime, lime putty and natural calcium carbonate. Emphasis is placed on the need for the laboratory sample to be truly representative of the bulk from which it is taken, with particular reference to:

- a) granular and lump quicklime and natural calcium carbonate; and
- b) producing composite samples of these types.

This Part incorporates the method adopted in BS EN 459-2 : 1995 for the spot sampling of powders, milk of lime and lime putty for use in assessing conformity. That standard in turn adopts the method of BS EN 196-7 : 1992 for the spot sampling of powders.

For preparing spot samples of granular and lump natural calcium carbonate, this Part adopts the method of BS 812 : Section 103.1 : 1985. For preparing spot samples of granular and lump quicklime, a method based on that standard is also used.

This Part of BS 6463 incorporates the appropriate methods from BS EN 196-7 as they apply to powders. This entails the introduction of the terms 'increment, sample, spot sample, composite sample, laboratory spot sample and laboratory composite sample' and their relationships. This Part applies the terms 'increment, spot sample, composite sample, laboratory spot sample and laboratory composite sample' to the sampling of granular and lump materials not dealt with in BS EN 196-7.

Examples of the application of these methods are given in annex D (informative).

This Part of BS 6463 specifies requirements for the information to be provided with a sample. A typical sampling certificate is given in annex B (informative). The protective measures recommended in annex A (informative) have been brought into line with current practice.

Part 102 gives methods for chemical analysis of quicklime, hydrated lime, milk of lime, lime putty and natural calcium carbonate.

Part 103 gives the physical tests for quicklime, hydrated lime, lime putty and natural calcium carbonate, of which the tests for quicklime, hydrated lime and lime putty were previously included in Part 3 and Part 4 of BS 6463.

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

1 Scope

This Part of BS 6463 describes methods for preparing samples of powdered, granular and lump quicklime and natural calcium carbonate, and of powdered hydrated lime, milk of lime and lime putty. They are valid for consignments of up to 1000 tonnes.

Where samples of powdered products are taken, the equipment and procedures for homogenization, sample division and packaging given in BS EN 196-7 apply.

Where samples of limes and/or natural calcium carbonate are taken for acceptance purposes from a consignment supplied as agricultural liming materials, attention is drawn to the Fertilisers (Sampling and Analysis) Regulations 1991 [1].

NOTE. Recommended protective measures in handling quicklime and hydrated lime are given in annex A. When handling lime putty and milk of lime the same precautions should be taken as for hydrated lime.

2 References

2.1 Normative references

This Part of BS 6463 incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited

publications apply to this Part of BS 6463 only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This Part of BS 6463 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 6463 the following definitions apply. Figure 1 illustrates the relationships between the terms.

NOTE. The definitions in this Part of BS 6463 have been adapted from those given in BS EN 196-7 : 1992.

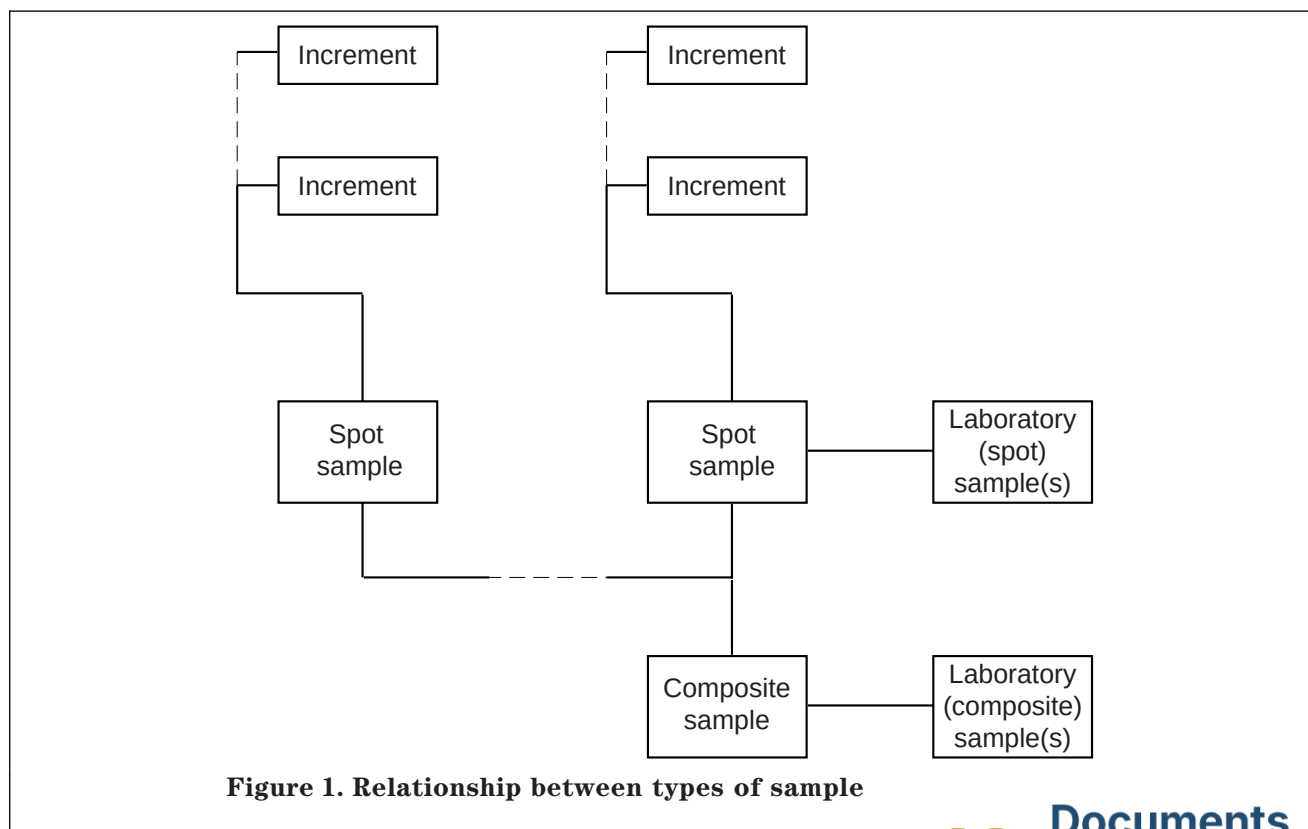
3.1 increment

Quantity of material taken in a single operation of the sampling equipment used.

3.2 sample

Quantity of material taken without bias, or in accordance with a sampling plan, from a larger quantity (silo, stock of bags, wagon, truck, etc.) or from a fixed lot relating to intended tests.

NOTE. A sample may consist of one or more increments.



3.3 spot sample

Sample taken on the same occasion, and from one and the same place, relating to the intended tests. It can be obtained by combining and blending one or more immediately consecutive increments.

3.4 composite sample

Sample prepared by thoroughly blending a number of spot samples taken at different places or at different times from a larger mass of the same material.

3.5 laboratory spot sample

Sample prepared by thoroughly blending a spot sample, and intended for the laboratory undertaking the tests.

3.6 laboratory composite sample

Sample prepared by thoroughly blending a composite sample, and intended for the laboratory undertaking the tests.

3.7 package

Small container, such as a bag or drum.

4 Materials

For the purposes of this Part of BS 6463, all material to be sampled shall be described as follows:

- a) lumps of quicklime or natural calcium carbonate, of maximum particle size greater than 20 mm; or
- b) granules of quicklime or natural calcium carbonate, of maximum particle size greater than 2 mm; or
- c) powders of quicklime, hydrated lime or natural calcium carbonate, of maximum particle size less than 2 mm; or
- d) milks of lime and lime putties (suspensions of hydrated lime in water).

5 General requirements for sampling and sample preparation

5.1 Principle

Figure 1 illustrates the relationship between increments, spot samples, composite samples and laboratory spot or composite samples.

Laboratory spot or composite samples of the required number, quantity and particle size are prepared by blending, dividing and crushing or grinding the increments, spot samples and/or composite samples. It is essential for preparing representative laboratory spot or composite samples that both the number and size of increments taken to prepare spot and composite samples are sufficient.

5.2 Blending

Increments and/or spot samples shall be blended using the techniques described in 6.5 or 8.5, as appropriate. Spot samples for use in preparing a composite sample shall be blended only after the required number has been taken.

5.3 Reduction of sample quantity

5.3.1 Where the increment quantity is too large to be handled conveniently or where the specified number and size of increments would result in unacceptably large laboratory spot or composite samples, the quantity of increments, spot samples and/or composite samples shall be reduced using the appropriate method described in 6.6, 7.6 or 8.6.

5.3.2 Where the quantity of lump or granular samples required for determining particle size distribution needs to be reduced, the samples shall not be crushed or ground to reduce the particle size before reducing the quantity.

5.3.3 Where the quantity of lump or granular samples required for determining particle size distribution and chemical analysis or reactivity testing needs to be reduced, the samples shall be divided into the appropriate number of sub-samples as described in 6.7.

The particle size distribution shall be determined on one of the sub-samples, reducing the quantity if necessary.

The chemical analysis or reactivity test shall be carried out on the other sub-sample(s), reducing the particle size by crushing or grinding, and reducing the quantity as appropriate.