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British Standard Specification for

Clinker and furnace bottom ash aggregates for concrete

Agrégats du clinker et du mâchefer pour béton — Spécifications

Zuschlagstoffe für Beton aus Hochofenschlacke und -asche

Foreword

This British Standard has been prepared under the direction of the Cement, Gypsum, Aggregates and Quarry Products Standards Committee and is a revision of BS 1165 : 1966 which is withdrawn. It differs from the previous edition in that the scope has been extended to include furnace bottom ash.

The two types of aggregate defined in this standard are produced by the burning of coal. Although somewhat different processes in different types of plant are employed, the properties and conditions of utilization are sufficiently similar for them both to be within the scope of this standard.

In view of the conditions of production and utilization of these types of aggregate, no specification of grading requirements of general applicability can usefully be included. It is generally accepted that a high proportion of fines is undesirable in clinker or furnace bottom ash aggregates but the permissible proportion may vary widely with the circumstances. It is, moreover, common practice for any grading or crushing of oversize material to be carried out by the user after delivery. Therefore any requirements for graded clinker or furnace bottom ash are outside the scope of this standard and should be agreed between purchaser and customer.

The number of classes of aggregate has been reduced to two, differentiated according to their intended use by their maximum loss-on-ignition. The use of these aggregates is not recommended in concrete containing embedded metal or concrete required to have high durability.

Some clinkers derived from lump coal burnt in older types of furnaces may contain nodules of lime which, if occurring on or near the surface of concrete, could react with wet plaster finishes to cause localized 'popping'. Such clinker and those from old deposits should therefore be used with discretion.

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

1 Scope

This British Standard specifies requirements for sampling, testing, sulphate content and loss of mass on ignition for two classes of furnace clinker and furnace bottom ash for use as aggregate in concrete.

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

2 Definitions

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

2.1 clinker. A well-burnt furnace residue which has been fused or sintered into lumps.

NOTE. It excludes residues from furnaces fired with pulverized coal.

2.2 furnace bottom ash. A well-burnt furnace residue from furnaces fired with pulverized coal.

NOTE. Solid material extracted from flue gases as defined in BS 3892 : Part 1 is excluded.

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3 Sampling

The samples for testing shall be taken in accordance with BS 3681 : Part 2.

4 Testing

If the clinker or furnace bottom ash when sampled, prepared and tested in accordance with the appropriate clauses of BS 3681 : Part 2, fails to comply with any of the requirements of clauses **5** and **6** of this standard, the test or tests in which it fails shall be repeated on each of two further portions of the same sample.

If both of these further portions satisfy the appropriate requirements, the consignment shall be deemed to comply with this standard.

If one or both of these further portions fail to satisfy the requirements then the consignment shall be deemed not to comply with this standard.

5 Sulphate content

The content of sulphate, determined in accordance with BS 3681 : Part 2, shall not exceed 1.0 % when expressed as sulphur trioxide.

6 Loss of ignition

The percentage loss of mass on ignition, determined in accordance with BS 3681 : Part 2, shall not exceed the values given in table 1.

Table 1. Percentage loss of mass on ignition of clinker and furnace bottom ash aggregates

Class	Use	Loss of mass on ignition
		%
A	Aggregate for use in concrete for general purposes	Not greater than 10
B	Aggregate for use in concrete for interior work not normally exposed to damp conditions	Not greater than 25