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**GB/T 1596-2017**

Replacing GB/T 1596-2005

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**Fly ash used for cement and concrete**

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## Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 1596-2005 *Fly ash used for cement and concrete*.

Compared with GB/T 1596-2005, the main technical changes in this Standard are as follows:

- modified “reference sample: complies with GSB 14-1510 Cement standard sample used for strength testing” to “reference cement: Portland cement or ordinary Portland cement that complies with GSB 14-1510, or is of strength grade of 42.5 specified in GB 175 and this Standard” (see 3.2 of this Edition, 3.2 of Edition 2005);
- in technical requirements, added indicators of “SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub> total mass fraction, density and strength activity” in “mixed fly ash for concrete and mortar”; the Grade II fly ash fineness index was modified from “45μm square hole sieve residue is not greater than 25%” to “45μm square hole sieve residue is not greater than 30%”; Grade III fly ash loss was modified from “not greater than 15.0%” to “not greater than 10.0%” (see 6.1 of this Edition, 6.1 of Edition 2005);
- in technical requirements, added indicators of “SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub> total mass fraction and density” in “fly ash used for cement activity mixed materials” (see 6.2 of this Edition);
- modified the radioactive indicators from “qualified” to “meet building body material requirements in GB 6566” (see 6.2 of this Edition, 6.3 of Edition 2005);
- when using dry or semi-dry desulfurization process, the resulting fly ash shall be subjected to the detection of hemihydrate calcium sulfite content; added specified indicators and test methods (see 6.4 and 7.5 of this Edition);
- added radioactive test sample ratio (see 7.9 of this Edition);
- modified the reference cement mortar fluidity in fly ash water ratio test from “130mm ~ 140mm” to “145mm ~ 155mm”; modified the test procedures at the same time (see Annexes A.3 and A.5 of this Edition; Annexes B.3 and B.5 of Edition 2005).

This Standard was proposed by China Building Materials Federation.

# Fly ash used for cement and concrete

## 1 Scope

This Standard specifies the terms and definitions, classification, grade, technical requirements, test methods, inspection rules, packaging, marks, transport and storage of fly ash used for cement and concrete.

This Standard is applicable to the fly ash used as admixture when mixing mortar and concrete as well as the fly ash used as active mixed material in cement production.

## 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.

GB 175, *Common Portland Cement*

GB/T 176, *Method for Chemical Analysis of Cement*

GB/T 208, *STANDARD test method for cement density*

GB/T 1345, *The Test Sieving Method for Fineness of Cement*

GB/T 1346, *Standard test method for water requirement for normal consistency setting time and soundness of the Portland cement*

GB/T 2419, *Test method for fluidity of cement mortar*

GBT 5484, *Methods for chemical analysis of gypsum*

GB 6566, *Limits of radionuclides in building materials*

GB/T 12573, *Sampling method for cement*

GB/T 17671-1999, *Method of testing cements - Determination of strength*

GSB 08-1337, *China ISO standard sand*

GSB 08-2506, *Standard sample used for fly ash fineness*

## 8 Inspection rules

### 8.1 Numbering and sampling

Before leaving factory, the numbering and sampling of fly ash shall be carried out according to same category and same grade. Bulk fly ash and bagged fly ash shall be separately numbered and sampled. Not exceeding 500t shall be one number. Each number shall be a sampling unit. When the bulk fly ash transport capacity exceeds the exit-factory number of tons specified by the factory, the quantity of this number is allowed to exceed the number of tons for sampling. The fly ash mass is calculated according to the dry ash (the water content is less than 1%) mass.

Sampling method is in accordance with GB/T 12573. The sampling shall be representative. It can be taken continuously. Or same amount of samples shall be taken from more than 10 different parts. The total mass shall at least be 3 kg.

NOTE: For the fly ash used for mixing concrete and mortar, when necessary, the purchaser shall perform random sampling inspection.

### 8.2 Exit-factory inspection

**8.2.1** For the fly ash used for mixing concrete and mortar, the exit-factory inspection items shall be all items in Table 1 of 6.1 except the loss and strength activity index. Add 6.4 hemihydrate calcium sulfite ( $\text{CaSO}_3 \cdot 1/2\text{H}_2\text{O}$ ) for the fly ash discharged by using dry or semi-dry desulfurization process.

**8.2.2** For the fly ash used for cement activity mixed material, the exit-factory inspection items shall be all items in Table 2 of 6.1 except strength activity index. Add 6.4 hemihydrate calcium sulfite ( $\text{CaSO}_3 \cdot 1/2\text{H}_2\text{O}$ ) for the fly ash discharged by using dry or semi-dry desulfurization process.

### 8.3 Type inspection

**8.3.1** The type inspection items for the fly ash used for mixing concrete and mortar shall be specified in Table 1 of 6.1, 6.2 and 6.4.

**8.3.2** The type inspection items for the fly ash used for cement activity mixed material shall be specified in Table 2 of 6.1, 6.2 and 6.4.

**8.3.3** Type inspection shall be performed in one of the following situations:

- great changes in raw material, technique which may affect product performances;
- not less than once of every half year of normal production of products

from the date of issue of the fly ash, and report the result of the strength activity index within 32 days.

## **8.6 Arbitration**

When the quality of fly ash is controversial, the relevant organizations shall sign the approved samples and submit them to the quality supervision and inspection agencies approved by the country at the provincial level or above for arbitration and inspection.

# **9 Packaging, marks, transport and storage**

## **9.1 Packaging**

Fly ash can be bulk or bagged. The net content per bag is 25 kg or 40 kg. The net content of each bag shall not be less than 99%. Other packaging specifications shall be determined negotiated by the supplier and the purchaser.

## **9.2 Marks**

Bulk fly ash should provide a card, including product name, classification, grade, net content, batch number, the implementation number of standards, the name and address of the manufacturer, production date.

Packaged bag of fly ash shall be marked with the same content as bulk fly ash card.

## **9.3 Transport and storage**

Fly ash in the transport and storage shall not be damp and mixed with debris, and shall prevent pollution to the environment.