

ICS 91.100.10

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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 20472-2006

**[GB/T 20472-2006] Sulphoaluminate cement
(English Translation)**

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1 Scope

This standard specifies the terms and definitions, constituent materials, strength grades, self-stress grades, technical requirements, test methods, inspection rules, packaging, marking, transportation, storage of sulphoaluminate cement.

This standard applies to sulphoaluminate cement.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard;

however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable.

For undated references, the latest edition of the referenced document applies.

GB/T 205 Test method for analysis of high alumina cement

GB/T 1346-2001 Test methods for water requirement of normal consistency, setting (eqv ISO 9597:1989)

GB/T 2419-2005 Test method for fluidity of cement mortar

GB/T 5483-1996 Gypsum and anhydrite (eqv ISO 1587:1975)

GB 9774 Sacks for packing cement

GB/T 12573 Sampling method for cement

GB/T 17671-1999 Method of testing cements - Determination of strength (idt

ISO 679:1989)

JC/T 313-1982 (1996) Test method for determining expansive ratio of expansive cement

JC/T 453 Method of physical test for self-stressing cement

JC/T 681 Mixer for mixing mortars

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1

Sulphoaluminate cement

A hydraulic cementing material, which is obtained by finely grinding the cement clinker -- using anhydrous calcium sulphoaluminate and dicalcium silicate as the main mineral components, which is obtained by calcining the raw materials of appropriate composition -- by mixing with different amounts of limestone and appropriate amount of gypsum. Sulphoaluminate cement is divided into rapid hardening sulphoaluminate cement, low alkalinity sulphoaluminate cement, self-stressing sulphoaluminate cement.

3.2

Rapid hardening sulphoaluminate cement

A hydraulic cementitious material, with high early strength, which is obtained by finely grinding the sulphoaluminate cement clinker of appropriate composition, a small amount of limestone, an appropriate amount of gypsum.

It is coded R - SAC.

Note: The amount of limestone added shall not exceed 15% of the cement mass.

3.3

Low alkalinity sulphoaluminate cement

A hydraulic cementitious material with low alkalinity, which is obtained by finely grinding the sulphoaluminate cement clinker of appropriate composition, a large amount of limestone, an appropriate amount of gypsum.

It is coded L - SAC.

Note: The amount of limestone added shall not be less than 15% of the cement mass AND not greater than 35% of the cement mass. Low alkalinity sulphoaluminate cement is mainly used to

make glass fiber reinforced cement products. When used for concrete products and structures, such as steel fibers, steel bars, steel meshes, steel embedded parts, the steel used shall be stainless steel.

3.4

Self-stressing sulphoaluminate cement

6.1 and 8.2:

a) The water consumption is determined, according to the water-cement ratio of 0.47 (211.5 mL) AND the fluidity of the mortar reaching 165 mm ~ 175 mm. When the fluidity of the mortar, which is prepared according to the water-cement ratio of 0.47, exceeds the specified range, the water- cement ratio shall be increased or decreased, by an integral multiple of

0.01, to make the fluidity reach the specified range. The fluidity of mortar is determined, according to GB/T 2419-2005, wherein the preparation of standard sand, lime-sand ratio, mortar is performed according to GB/T

17671-1999.

b) After the test object is formed, place the mold in a curing box, at a temperature of $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ AND a relative humidity of not less than 90%, for 6 hours. Then remove the mould. If the mould removal may cause damage to the test object, the mould removal time can be appropriately extended, but records shall be kept.

7.4.2 Strength test of self-stressing sulphoaluminate cement

It is carried out according to JC/T 453.

7.5 Alkalinity of low alkalinity sulphoaluminate cements

It is carried out according to the provisions of Appendix B.

7.6 The 28d free expansion rate of low alkalinity sulphoaluminate cement

It is carried out according to JC/T 313-1982 (1996). However, the following supplements and provisions are made to Chapter 3, Chapter 4, Chapter 5:

a) The temperature of the test chamber shall be kept at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, the relative humidity shall not be less than 50%; the temperature of the humidity curing box shall be kept at $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, the relative humidity shall not be less than 90%; the temperature of the curing water shall be kept within $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$.

b) It shall make a set of three cement expansion test pieces. The test mortar consists of: 1000 g of cement, 500 g of medium sand of 0.5 mm ~ 1.0 mm in the ISO standard sand; the amount of water added shall be based on the water consumption of the standard

cement consistency, which is determined by GB/T 1346-2001.

c) The mortar is prepared with a JC/T 681 mixer.

d) The test piece, together with mold, is placed in a moisture curing box for 6 hours, before releasing the mold. Measure the initial length. Then place it in water for curing. The curing age of the specimen is 28 days. The measurement time is calculated from the time, when the initial length of the test piece is measured.

7.7 The free expansion rate, self-stress value, 28d self-stress increase rate of

self-stressing sulphoaluminate cement are carried out, according to JC/T 453.

8.1 Exit-factory inspection

Carry out the exit-factory inspection, according to the method specified in

Chapter 7 of this standard. The inspection items include all the technical requirements of Chapter 6.

8.2 Group-batching and numbering

Sulphoaluminate cement shall be group-batched and numbered, according to the same variety and grade, before leaving the factory. Bagged cement and bulk cement shall be group-batched and numbered separately. Each number is a sampling unit. The exit-factory number of the cement is based on the annual production capacity of the cement plant. When the daily output exceeds 180 t, use one number for those not more than 180 t; when it is less than 180 t, use one number for those not more than the daily output.

The sampling method is carried out according to GB/T 12573. Sampling shall be representative AND can be taken continuously; or equal samples can be taken from more than 20 different parts, with a total amount of at least 12 kg.

8.3.1 Qualified products

When the exit-factory inspection results meet the technical requirements of Chapter 6, the exit-factory inspection is judged to be qualified.

8.3.2 Discarded products

8.3.2.1

If any of the alkalinity and 28d free expansion rate, in the low alkalinity sulphoaluminate cement, does not meet the requirements of this standard, it shall be judged as a discarded product.