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# NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

## 中华人民共和国国家标准

GB 175–2007 Replace: GB 175-1999, GB 1344-1999, GB 12958-1999

# Common Portland Cement 通用硅酸盐水泥

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#### Foreword

The items 7.1, 7.3.1, 7.3.2, 7.3.3, 9.4 are the mandatory provisions, the rests are recommended items.

The standard and Europe cement standard EN 197-1:2000 "universal Portland cement" are not equal effect.

This standard replaces following three criteria since it becomes effective: GB 175-1999 " Portland cement and Ordinary Portland Cement," GB 1344-1999 "Slag Portland cement, Pozzolana Portland Cement, Fly ash Cement," GB 12958 -- 1999 "Composite Portland Cement".

Comparing with GB 175-1999, GB 1344-1999, GB 12958-1999, the major changes of this standard are as follows:

- The whole mandatory contents are changed to mandatory provisions (foreword of this edition);
- Add the definition of Common Portland Cement (section 3 of this edition);
- The cancellation of the definition of types of cement (Chapter 3 in original editions of GB 175-1999, GB 1344-1999, GB 12958-1999);
- Sections of composition and material are mergered into one chapter (Chapter 4 in original edition of GB 175-1999, GB 1344-1999, GB 12958-1999, and Chapter 5 in this edition);
- For Ordinary Portland Cement, "the active additions are on more than 15% of the cement quality, it is permitted to replace the active additions by kiln dust no more than 5% of the cement quality or by inactive additions no more than 10% of the cement quality " changes to " the active additions are more than 5% and no more than 20% of the cement quality, it is permitted to replace the active additions by inactive additions no more than 8% of the cement quality in line with 5.2.4 of this standard or by kiln dust no more than 5% of the cement quality in line with 5.2.5 of this standard(section 3.2 in the original edition of GB175-1999 and section 5.1 of this edition);
- Change the mixed amount of slag in Portland Slag Cement from "20% 70%" to "> 20%, and≤ 70%", furthermore, Portland Slag Cement has been divided into A and B types. The mixed amount of A type slag is > 20% and ≤ 50%, code number is P·S·A; B type is > 20% and ≤ 70%, code number is P·S·B(section 3.1 in the original edition of GB 1344-1999; section 5.1 in this edition);
- Change the mixed amount of Pozzolana in the Portland Pozzolana Cement from "20% to 50%" to "> 20%and≤ 40%" (section 3.2 in the original edition of GB 1344-1999,and section 5.1 in this edition);
- Change the amount of mixed materials in the composite Portland cement from the "should be more than 15%, but no more than 50%" to "> 20%,and ≤ 50%" (chapter 3 in the original edition of GB 12958-1999,section 5.1 of this edition);
- Add granulated blast furnace slag in the material (section 5.2.3, 5.2.4 in this edition);
- Cancellation of the fine grain of chromium slag iron, granulated calcium, liquid residue, granulated carbon ferrochrome slag, granulated titanium blast furnace slag etc., as well as the new developed mixed material in Appendix A, and Appendix A is canceled.(original GB 12958-1999, section 4.2, 4.3 and Appendix A)

- Add the M type mixed gypsum, cancel the A type hard gypsum (Chapter 3 in the original edition of GB 175-1999, GB 1344-1999, and GB 12958-1999, section 5.2.2.1 in this edition);
- The mixed amount of grinding aid is changed from "no more than 1% of cement quality" to "no more than 0.5% of cement quality" (section 4.5 in the original edition of GB 175-1999, GB 1344-1999, and GB 12958-1999, section 5.2.6 of this edition);
- 32.5 and 32.5 R have been removed from the cement strength grade of the Ordinary Portland Cement(Chapter 5 in original edition of GB 175-1999, and Chapter 6 in this edition);
- Change the " content of magnesia in clinker" to "content of magnesia in cement" in Portland Slag Cement, Portland Pozzuolana Cement, Portland Fly ash Cement and Composite Portland Cement, among which the content of magnesia in types of P·S·A, P·P and P·C is on more than 6.0%, and adding explanation b " if the content of magnesia in cement is more than 6.0%, the test of steam pressure should be done and qualified", no the same requirement for P·S·B(section 6.1 in the original edition of GB 1344-1999 and GB 12968-1999, and section 7.1 of this edition );
- Add the limited amount of chloride ion, that is, the content of chloride ion in cement is no more than 0.06 percent (section 7.1 of this edition);
- Match the strengthen grades of Ordinary Portland Cement to those of Portland Cement, and match the strength grades of Composite Portland Cement to those of Portland Slag Cement, Portland Pozzuolana Cement, Portland Fly ash Cement(section 6.6 9 in the original edition of GB12958-1999, and section 7.3.3 of this edition);
- Add the selectable index: the residue of 45µm sieve is no more than 30% (7.3.4 section in this edition)
- Add the principles for selecting cement component test method and the requirements of regular checking (section 8.1 of this edition);
- The principle of "the water demand is decided according to the water-cement ratio of 0.5 and the fluidity of mortar no less than 180mm" is also applicable for Portland Pozzuolana Cement, Portland Fly ash Cement, Composite Portland Cement and Ordinary Portland Cement mixed with pozzuolana (section 7.5 in original edition of GB 1344-1999, section 8.5 of this edition);
- The grade of the year production more than 200x10<sup>4</sup>t is added in the code number and samples, that is : more than 200x10<sup>4</sup>t, no more than 4000t belongs to one code number; change "one code for more than 1.2 million ton, no more than 1200 ton " to "120x10<sup>4</sup>t-200x10<sup>4</sup>t, no more than 2400t blongs to one code number"(section 8.1 in the original edition of GB175-1999, GB1344-1999, GB12958-1999, section 9.1 of this edition);
- Change the " cement products should be guaranteed with the strengthen grade, the other technical requirements should be in line with the relative requirements in this edition " to " before the cement products leave the plant, all technical indexes and packing quality must be consistent with the requirements" (section 8.2 in the original edition of GB175-1999, GB1344-1999, GB12958-1999, Section 9.2 of this edition);
- Add the leaving factory inspection items (section 9.3 of this edition)
- Cancel the waste determination (section 8.3 in the original edition of GB175-1999, GB1344-1999, GB12958-1999);
- Remove the requirements of fineness and the mixed amount of additions in the judgment of unqualified products, the judgment principle is changed to " products consistent with standards specified in sections 7.1,7.3.1,7.3.2,7.3.3 are qualified, those inconsistent with any

of the technical requirements specified in sections 7.1,7.3.1,7.3.2,7.3.3 are unqualified" (section 8.3.2 of the original GB 175-1999, GB 1344-1999, GB 12958-1999, Section 9.4.1, 9.4.1.2 of this edition);

- "The other technical requirements in the contract" is added in the testing report.(section 8.4 in the original edition of GB175-1999, GB1344-1999,GB 12958-1999, section 9.5 of this edition)
- "Soundness arbitration tests should be completed within 10 days after sampled" is added in the delivery and acceptance (section 9.6.2 of this edition);
- "The weight should not be less than 98% of that signed on the package " is changed to "The weight should not be less than 99% of that signed on the package " in packing sign(section 9.1 in the original edition of GB 175-1999,GB1344-1999,GB12958-1999,section 10.1 of this edition);
- "The packing sign should be black on both sides of the packing bags for Portland Pozzuolana Cement, Portland Fly ash cement, Composite Portland Cement" is changed to "The packing sign can be black or blue on both sides of the packing bags for Portland Pozzuolana Cement, Portland Fly ash Cement, Composite Portland Cement".
  - (section 9.2 in the original edition of GB1344-1999, GB12958-1999, and section 10.2 of this edition).

This standard is put forward by China Building Materials Industry Association.

The National Technical Committee of cement Standardization (SAC / TC 184) is in charge of this standard

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The previous editions replaced by this standard

-GB 175-1956, GB 175-1962, GB 175-1977, GB 175-1985, GB 175-1992, GB 175-1999;

- GB 1344-1956, GB 1344-1962, GB 1344-1977, GB 1344-1985, GB 1344-1992, GB 1344-1999;
- GB 12958-1981, GB 12958-1991, GB 12958-1999.

### **Common Portland Cement**

#### 1 Scope

This national standard specifies the definition and terms, **composition** and materials, strength grades, technical specifications, testing methods, inspection criteria, packing and mark, transportation and stocking.

This standard is only applied to the Common Portland Cement

#### 2 Normative References

The articles contained in the following documents have become this standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 176 Method for chemical analysis of cement (GB/T 176-1996, eqv ISO 680: 1990)

GB/T 203 Granulated blast-furnace slag used for cement production

GB/T 750 Autoclave method for soundness of Portland cement

GB/T 1345 Cement fineness testing method screen and analysis method

GB/T 1346 Test method for water requirement of normal consistency, setting time and soundness of Portland cements (GB/T 1346-2001,eqv ISO 9597: 1989)

GB/T 1596 Fly ash used for cement and concrete

GB/T 2419 Test method for fluidity of cement mortar

GB/T 2847 Pozzolanic materials used for cement production

GB/T 5483 Gypsum and anhydrite

GB/T 8074 Testing method for cement Specific surface area Blain method

GB 9774 Sacks for packing cement

GB 12573 Sampling method for cement

GB/T 12960 The fixed amount testing for cement composition

GB/T 17671 Method of testing cements-determination of strength (ISO) (GB/T17671-1999,idt ISO 679:1989)

GB/T 18046 Granulated blast furnace slag powder used in cement and concrete.

JC/T 420 Chlorine ion chemical analysis method in cement raw material

JC/T 667 Cement grinding aid

JC/T 742 Rotary kiln dust mixed in the cement

#### **3** Terms and definition

For the purpose of this Standard, following terms and definition apply.

Common Portland Cement

A kind of hydraulic cementitious material made of by Portland cement clinker and proper amount of gypsum and the required mixing materials.



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