

ICS 91.100.10

CCS Q 11



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

GB/T 31289-2025

Replacing GB/T 31289-2014

Portland cement used for ocean project

海工硅酸盐水泥

Issued on: June 30, 2025

Implemented on: January 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Foreword	3
1 Scope	6
2 Normative References	6
3 Terms and Definitions	7
4 Classification and Codes	7
5 Composition and Materials	7
6 Strength Grades	8
7 Technical Requirements	8
8 Test Methods	10
9 Inspection Rules	10
10 Packaging, Marking, Transportation and Storage	13
Appendix A (informative) Precautions for Using Portland Cement Used for Ocean Project	14

Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This document serves as a replacement for GB/T 31289-2014 Portland Cement Used for Ocean Project. In comparison with GB/T 31289-2014, apart from structural adjustments and editorial modifications, the main technical changes are as follows.

- a) Classification and codes are added (see Chapter 4);
- b) The requirements for fly ash content in components are modified (see 5.1; 4.1 of Version 2014);
- c) The technical requirements for slag powder and fly ash are added (see 5.2.2 and 5.2.3; 4.2.2 and 4.2.3 of Version 2014);
- d) The desulfurized gypsum is added (see 5.2.4.2; 4.2.4 of Version 2014);
- e) The requirements for metakaolin and its content are added (see 5.1 and 5.2.5);
- f) The detection method and technical indicators for chloride ion diffusion coefficient are modified (see 7.3.5 and 8.6; 6.2.5 and 7.6 of Version 2014);

- g) The detection method and technical indicators for sulfate resistance are deleted (see 6.2.6 of Version 2014);
- h) The requirements related to component and strength testing are modified (see 8.1 and 8.4; 7.1 and 7.5 of Version 2014);
- i) The provisions on type inspection are modified (see 9.2.2; 8.2.2 of Version 2014));
- j) The provisions on cement exiting-factory are added (see 9.4);
- k) Inspection-related provisions in the event of quality disputes are modified (see 9.6.2 and 9.6.3; 8.5.2 and 8.5.3 of Version 2014);
- l) The provisions on packaging are modified (see 10.1; 9.1 of Version 2014).

Please be noted that certain content of this document may involve patents. The issuing institution of this document does not undertake the responsibility of identifying these patents.

This document was proposed by China Building Materials Federation.

This document shall be under the jurisdiction of National Technical Committee 184 on Cement of Standardization Administration of China (SAC/TC 184).

Portland Cement Used for Ocean Project

1 Scope

This document specifies the classification and codes, composition and materials, strength grades, technical requirements, test methods, inspection rules, as well as packaging, marking, transportation, and storage of Portland cement used for ocean project.

This document applies to Portland cement used for ocean project.

2 Normative References

GB/T 176
GB/T 203
GB/T 1345
GB/T 1346
GB/T 1596
GB/T 2419
GB/T 5483
GB/T 9774

GB/T 12573

GB/T 12960

GB/T 17671

GB/T 18046

GB/T 18736

GB/T 21372

GB/T 26748

GB/T 37785

GB/T 38140

GB/T 39701

GB/T 42272

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Portland cement used for ocean project

A hydraulic cementing material with relatively strong resistance to seawater erosion, made by grinding silicate cement clinker and appropriate amounts of gypsum, slag powder/blast furnace slag, fly ash, silica fume, etc.

NOTE. it is abbreviated as cement for ocean project, code OP.

4 Classification and Codes

Based on different resistances to chloride ion penetration and seawater erosion, cement for ocean project is divided into two categories. ordinary type and high erosion-resistant type. The ordinary type is code OP?O, and the high erosion-resistant type is code OP?H.

5.1 Composition

The composition of cement for ocean project shall conform to the provisions in Table 1.

5.2.1 Clinker

Comply with the relevant requirements of Grade 52.5 general Portland cement clinker in GB/T 21372.

5.2.2 Slag powder / slag

Slag powder shall comply with the provisions of GB/T 18046, and slag shall comply with the provisions of GB/T 203.

5.2.3 Fly ash

Comply with the requirements of Grade II or above in GB/T 1596, and the loss on ignition (mass fraction) shall not exceed 5.0%. The ammonium ion content in fly ash shall comply with the provisions of GB/T 39701.

5.2.4.1 Natural gypsum

Gypsum or mixed gypsum that complies with Grade II (inclusive) or above of Class G or M in GB/T 5483, and the content (mass fraction) of anhydrite in mixed gypsum should not exceed 50%.

5.2.4.2 Desulfurized gypsum

Comply with the provisions of GB/T 37785.

5.2.5 Silica fume and metakaolin

Comply with the provisions of GB/T 18736.

5.2.6 Cement grinding aids

During cement grinding, grinding aids conforming to the provisions of GB/T 26748 can be used, and their addition amount shall not exceed 0.5% of the cement mass.

6 Strength Grades

Cement for ocean project is classified into three strength grades. 32.5L, 32.5 and 42.5.

7.1 Chemical Composition

The chemical composition of cement for ocean project shall conform to the provisions of Table 2.