NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 50082-2024

Replacing GB/T 50082-2009

Standard for test methods of long-term performance and durability of concrete

混凝土长期性能和耐久性能试验方法标准

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Standardization Administration of the PRC

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Foreword

This document was issued on 23 August 2024 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 January 2025.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

The document runs to 162 pages in translation. The identification, the dates, the table of contents and the clauses reproduced on this page are taken from the standard itself.

GB/T 50082-2024 Standard for test methods of long-term performance and durability of concrete

It replaces GB/T 50082-2009, which is superseded.

1 Scope

GB/T 50082 is the Chinese standard for testing the long-term performance and durability of concrete, and it is the document behind every durability requirement in a Chinese structural specification. Compressive strength is easy to measure and says almost nothing about whether a structure will last fifty years; what decides that is how the concrete resists freezing and thawing, chloride ingress, carbonation, sulfate attack, abrasion, shrinkage and creep, and each of those needs a test method that is reproducible enough to be written into a contract. This standard supplies them: the freeze-thaw resistance by the slow and the rapid method and the single-side method, the impermeability to water and the chloride ion penetration by the electric flux and the rapid migration methods, the carbonation test, the sulfate attack resistance, the shrinkage and the creep, the abrasion resistance, the alkali-aggregate reaction and the early-age cracking, giving for each the specimen preparation and curing, the apparatus, the procedure, the calculation and the evaluation. The 2024 edition replaces GB/T 50082-2009. For a laboratory, a designer or a contractor in China, this is the reference method.

1.0.1 This standard is formulated with a view to standardizing and unifying the test methods for long-term performance and durability of concrete, and to improving the technical level of concrete tests and inspections.

1.0.2 This standard is applicable to tests of long-term performance and durability of concrete in construction projects.

1.0.3 In addition to this standard, the tests of long-term performance and durability of concrete shall also meet those stipulated in the current relevant standards of China.

2 Terms and symbols

2.1 Terms

2.1.1

resistance grade to freezing-thawing of concrete

resistance class to freezing-thawing of concrete classified based on the number of maximum freeze-thaw cycles measured with the slow freezing method

2.1.2

resistance class to freezing-thawing of concrete

resistance class to freezing-thawing of concrete classified based on the number of maximum freeze-thaw cycles measured with the rapid freezing method

2.1.3

test method for coulomb electric flux

test method for measuring the coulomb electric flux through concrete specimens to reflect the resistance of concrete to chloride penetration

2.1.4

test method for rapid chloride ions migration coefficient (RCM)

test method for reflecting the resistance of concrete to chloride penetration by measuring the depth of chloride penetration in concrete and calculating the chloride ions migration coefficient. It is referred to as the RCM for short

2.1.5

resistance class to sulphate of concrete

resistance class of concrete to sulfate attack divided by the maximum number of wet-dry cycles measured with test method for resistance to sulfate attack

2.2 Symbols

c--Total cracking area per unit area of concrete specimen;

Ct--Creep of concrete during the loading period t;

d--Carbonation depth of concrete;

DRCM--Unsteady chloride ions migration coefficient of concrete;

Ed--Dynamic elastic modulus of concrete;

kp--Gas permeability of concrete;

Kf--Corrosion resistance coefficient of compressive strength of concrete;

Lw--Weight-loss ratio of corroded steel bars;

P--resistance class to permeability of concrete;

Q--Coulomb electric flux of concrete;

epsilonct--Creep strain of concrete during the loading period t;

epsilonst--Shrinkage ratio of concrete during the test period t;

epsilonsst--Autogenous shrinkage ratio of concrete during the test period t;

dia. t--Creep coefficient of concrete during the loading period t.

2 Shape and dimensions of the specimen;

3 Test No.;

3 Basic requirements

3.1 Sampling

3.1.1 The sampling of concrete shall meet the relevant requirements of the current national standard of China GB/T 50080 Standard for test method of performance on ordinary fresh concrete.

3.1.2 The mixture used for each group of specimens shall be sampled from the concrete of the same tray or the same truck.

3.1.3 The test instruments and equipment shall have a certificate of metrological verification or calibration within the validity period.

3.2 Fabrication and curing of specimen

3.2.1 The fabrication and curing of specimen shall meet the requirements of the current national standard of China GB/T 50081 Standard for test methods of concrete physical and mechanical properties.

3.2.2 The specimen shall be made using the test mould that meets the requirements of the current professional standard of China JG/T 237 Mould for concrete specimens; the test mould shall be accurately installed in case of preparing the specimen, and it shall be ensured that the dimensional tolerance of the specimen meets the requirements of 3.3 in this standard.

3.2.3 In case of preparing the specimen for tests of long-term performance and durability of concrete, the specimen for test of compressive strength of concrete cubes corresponding to the corresponding durability test age shall be fabricated at the same time.

3.2.4 In case of preparing the specimen for tests of long-term performance and durability of concrete, the shaking table and mixer used shall meet the requirements of the current professional standards of China JG/T 245 Vibrating table for concrete test and JG/T 244