



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

GB/T 50080-2016

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**Standard for test method of performance on ordinary fresh
concrete**

(English Translation)

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Table of Contents

1	General
2	Terms and symbols
2.1	Terminology
2.2	Symbols
3	Basic Regulations
3.1	General provisions
3.2	Sampling and sample preparation
4	Slump test and slump loss over time test
4.1	Slump test
4.2	Slump loss over time test
5	Expansion test and expansion time loss test
5.1	Expansion test
5.2	Expansion time loss test
6	Weber consistency test
7	Inverted slump cylinder emptying test
8	Gap passability test
9	Funnel test
10	Extended time trial

1 General

1.0.1

This standard is formulated to standardize and unify the performance test methods of ordinary concrete mixtures, improve the test technology level, ensure the performance of concrete mixtures, and meet the quality requirements of precast concrete components and cast-in-place concrete projects.

1.0.2

This standard is applicable to the performance test of ordinary concrete mixture.

1.0.3

The performance test of ordinary concrete mixture shall not only comply with the provisions of this standard, but also meet the provisions of the current relevant national standards.

2.1.1 Ordinary concrete

Concrete with a dry apparent density of 2000kg/m³ to 2800kg/m³.

2.1.2 Slump slump

The height at which a concrete mixture slumps under its own weight.

2.1.3 Extended slump-flow

The diameter by which a concrete mixture expands after slumping.

2.1.4 Gap passing ability

The performance of the concrete mixture passing through the gap evenly.

2.1.5 J-Ring J-Ring

A circular instrument for determining the passability of concrete mixtures.

2.1.6 Self-compacting concrete self-compacting concrete

Concrete with high fluidity, uniformity and stability, without external vibration during pouring, can flow under its own weight and fill the formwork space.

2.1.7 Extended time slump-flow time

The time required for a concrete mixture to expand to a diameter of 500mm after slumping.

2.1.8 Bleeding

The phenomenon of precipitation of moisture in the concrete mixture.

2.1.9 Pressure bleeding

Bleeding phenomenon of concrete mixture under pressure.

2.1.10 Consistency

The index characterizing the fluidity of concrete mixture can be expressed by slump, Weibo consistency or expansion degree.

2.1.11 Anti-segregation resistance

The various components in the concrete mixture maintain the performance of uniform dispersion.

2.1.12 Adiabatic temperature rise

Concrete in an adiabatic state, the temperature rise caused by the hydration of the cementitious material.

2.2.1 Slump

H0--the initial slump value of the concrete mixture when it leaves the machine;

H60--The slump value of the concrete mixture after standing for 60 minutes.

2.2.2 Expansion

L0--the initial expansion value of the concrete mixture when it leaves the machine;

L60--The expansion value of the concrete mixture after standing for 60 minutes.

2.2.3 Empty time

tsf, m--the average value of the emptying time of the concrete mixture in the inverted slump cylinder measured by two tests;

tsf1, tsf2--the emptying time of the concrete mixture in the inverted slump cylinder measured in two tests respectively.

2.2.4 Bleeding volume

Ba--the bleeding amount of concrete mixture per unit area;

V10--the bleeding volume when pressurized to 10s;

V140--the bleeding volume when pressurized to 140s.

2.2.5 Bleeding rate

B--bleeding rate;

BV - pressure bleeding rate.

2.2.6 Gas content

A - the air content of the concrete mixture;

A0 - the air content of the uncorrected concrete mixture;

Ag--the air content of the aggregate.

2.2.7 Density

ρ —the apparent density of the concrete mixture;

ρ_w —the density of water;

ρ_m —the apparent density of the concrete mortar mixture;

ρ_{max} —the maximum value of the apparent density of the concrete mortar mixture sampled successively;

$\Delta\rho_m$ —the difference in apparent density of the concrete mortar mixture that has been sampled successively.

2.2.8 Others

DR_{ρ} —concrete mortar density deviation rate;

SR - segregation rate of concrete mixture;

fPR—penetration resistance per unit area;

α - correction coefficient of adiabatic temperature rise of test equipment;

θ_n —the adiabatic temperature rise value of n-day-old concrete;

θ'_n —the temperature rise value recorded by the instrument at the age of n days;

θ_0 - the initial temperature of the concrete mixture.

3.1 General provisions

3.1.1

The maximum nominal particle size of the aggregate shall comply with the provisions of JGJ 52, the current industry standard "Sand and Stone Quality and Inspection Method Standard for Ordinary Concrete".

3.1.2

The relative humidity of the test environment should not be less than 50%, and the temperature should be kept at $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$; the temperature of the materials, test equipment, containers and auxiliary equipment used should be consistent with the temperature of the laboratory.

3.1.3

During the on-site test, the concrete mixture sample should be prevented from being affected by wind, rain, snow and direct sunlight.