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GB/T 8076-2025

Replaces GB/T 8076-2008

Concrete admixtures

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Table of Contents

Foreword

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

This document replaces GB 8076-2008 Concrete Admixtures. Compared with GB 8076-2008, in addition to structural adjustments and editorial revisions, the main technical changes are as follows:

a) Revised the scope of this document, adding requirements for waterproofing admixtures and anti-freezing admixtures (see Chapter 1, 2008 edition).

b) Added provisions for the marking of admixtures (see 4.2).

c) Added the designation, technical requirements, sample quantity and test methods for waterproofing admixtures (see 4.1, 5.2.9, 6.5.3, 6.19, 6.20, 6.21).

d) Added the designation, technical requirements, sample quantity and test methods for anti-freezing admixtures (see 4.1, 5.2.10, 6.5.3, 6.22, 6.23, 6.24, 6.25).

e) Revised the requirements and test methods for chloride ion content (see 5.1.1, 6.6; 5.2, 6.7.1 in the 2008 edition).

f) Added the requirements and test methods for released ammonia content and residual formaldehyde content (see 5.1.2, 5.1.3, 6.7, 6.8).

g) Revised the requirements for air content and setting time difference of high-performance water reducers (see 5.2.1; 5.1 in the 2008 edition).

h) Deleted the requirement for bleeding rate ratio of high-efficiency water reducers (see 5.1 in the 2008 edition).

i) Revised the air content requirement for air-entraining water reducers, and replaced the term relative durability (200 cycles) with frost resistance index (see 5.2.4; 5.1 in the 2008 edition).

j) Revised the requirement for 1-hour slump variation of pumping admixtures (see 5.2.5; 5.1 in the 2008 edition); added the requirement, sample quantity and test method for pressure bleeding rate ratio (see 5.2.5, 6.5.3, 6.18).

k) Revised the requirement for setting time difference of hardening accelerators (see 5.2.6; 5.1 in the 2008 edition); deleted the requirement for bleeding rate ratio (see 5.1 in the 2008 edition); added the requirement for water reducing rate and corresponding sample quantity (see 5.2.6, 6.5.3).

l) Deleted the requirement for bleeding rate ratio of retarders (see 5.1 in the 2008 edition); added the requirement for water reducing rate and corresponding sample quantity (see 5.2.7, 6.5.3).

m) Revised the air content requirement for air-entraining agents (see 5.2.8; 5.1 in the 2008 edition); deleted the requirement for bleeding rate ratio (see 5.1 in the 2008 edition); replaced the term relative durability (200 cycles) with frost resistance index (see 5.2.8; 5.1 in the 2008 edition).

n) Added provisions for lake sand and manufactured sand for testing (see 6.2.2.2); added technical requirements for special manufactured sand used in performance tests of concrete admixtures (see Appendix B).

o) Revised the sample quantity and mixing method for determining the 1-hour air content of tested concrete (see 6.4, 6.12.2; 6.5.4.2 in the 2008 edition).

p) Revised the sample quantity and mixing method for determining the 1-hour slump of tested concrete (see 6.4, 6.14.2; 6.5.1.2 in the 2008 edition).

q) Added requirements for vibration during test specimen preparation and bleeding rate measurement (see 6.5.1, 6.11.1); revised the vibration requirement for air content measurement (see 6.12.1; 6.5.4.1 in the 2008 edition).

r) Revised the sample quantity required for determining 1-hour slump variation, air content, 1-hour air content variation and frost resistance index of tested concrete (see 6.5.3; 6.4.2 in the 2008 edition).

s) Added provisions for determining setting time by linear regression method (see 6.13.1).

t) Added data processing methods for three batches of test results in shrinkage rate ratio measurement (see 6.16).

u) Revised the requirements for batch number, sampling, test samples and sample retention (see 7.1, 7.2; 7.1, 7.2 in the 2008 edition); deleted the requirement for re-inspection (see 7.5 in the 2008 edition).

v) Revised the factory inspection items (see 7.3.1; 7.3.1 in the 2008 edition).

w) Revised the type inspection items and acceptance rules (see 7.3.2, 7.4.2; 7.3.2, 7.4.2 in the 2008 edition).

x) Revised the calculation formulas for tricalcium silicate and tricalcium aluminate contents in cement clinker (see Appendix A; Appendix A in the 2008 edition); added the calculation formula for alkali content in cement (see Appendix A).

y) Deleted the determination method for chloride ion content in concrete admixtures (see Appendix B in the 2008 edition).

Concrete admixtures

1 Scope

This document stipulates the classification, designation, marking, technical requirements, test methods, inspection rules, product manual, packaging, delivery, transportation and storage of concrete admixtures (hereinafter referred to as admixtures).

This document applies to the production and inspection of high-performance water reducers, high-efficiency water reducers, ordinary water reducers, air-entraining water reducers, pumping admixtures, hardening accelerators, retarders, air-entraining agents, concrete waterproofing admixtures (hereinafter referred to as waterproofing admixtures) and concrete anti-freezing admixtures (hereinafter referred to as anti-freezing admixtures) for cement concrete.

2 Normative References

The contents of the following documents are indispensable provisions of this document through normative reference in the text. For dated reference documents, only the edition corresponding to the date applies to this document; for undated reference documents, the latest edition (including all amendments) applies to this document.

GB/T 176 Methods for Chemical Analysis of Cement

GB/T 750 Methods for Autoclave Soundness Test of Cement

GB/T 1346 Methods for Testing Water Requirement of Normal Consistency, Setting Time and Soundness of the Cement Paste

GB/T 6679 General Rules for Sampling of Solid Chemical Products

GB/T 6680 General Rules for Sampling of Liquid Chemical Products

GB/T 8074 Methods for Determination of Specific Surface Area of Cement—Blaine Method

GB/T 8075 Terminology for Concrete Admixtures

GB/T 8077 Test Methods for Homogeneity of Concrete Admixtures

GB/T 14684 Sand for Construction

GB/T 14685 Pebbles and Crushed Stones for Construction

GB/T 18588 Test Method for Determination of Released Ammonia from Concrete Admixtures

GB/T 31040 Test Method for Determination of Residual Formaldehyde in Concrete Admixtures

GB/T 50080 Standard Test Methods for Performance of Ordinary Fresh Concrete

GB/T 50081 Standard Test Methods for Physical and Mechanical Properties of Concrete

GB/T 50082 Standard Test Methods for Long-term Performance and Durability of Ordinary Concrete

JC/T 729 Cement Paste Mixer

JG/T 244 Concrete Mixer for Testing Purposes

JGJ 55 Specification for Mix Proportion Design of Ordinary Concrete

JGJ 63 Standard for Concrete Mixing Water

3 Terms and Definitions

The terms and definitions specified in GB/T 8075 and the following apply to this document.

3.1 emitted ammonia

Ammonia released by the admixture under an alkaline environment.

3.2 residual formaldehyde

Free formaldehyde present in the admixture and formaldehyde depolymerized from paraformaldehyde.

[Source: GB/T 31040-2014, 3.2, modified]

3.3 air-entraining and water-reducing admixture

An admixture whose primary function is water reduction and secondary function is air entrainment.

3.4 reference concrete

Concrete that meets the test conditions specified in this document and contains no admixtures.

[Source: GB/T 8075-2017, 6.13]

Note: Depending on its mix proportion, it includes two types, namely Reference Concrete I and Reference Concrete II.

3.5 test concrete

Concrete that meets the test conditions specified in this document and contains admixtures.

[Source: GB/T 8075-2017, 6.14, modified]

3.6 ratio of pressure bleeding rate

The ratio of the pressure bleeding rate of test concrete mixed with pumping admixtures to that of reference concrete.

[Source: GB/T 8075-2017, 5.12.2, modified]

3.7 ratio of water absorption

The ratio of the water absorption of test concrete mixed with waterproofing admixtures to that of reference concrete.

[Source: GB/T 8075-2017, 5.39, modified]

3.8 ratio of compressive strength at subzero temperature

The ratio of the compressive strength of test concrete mixed with anti-freezing admixtures and cured at subzero temperature to that of reference concrete cured under standard conditions for 28 days.

3.9 ratio of shrinkage at subzero temperature

The ratio of the shrinkage rate of test concrete mixed with anti-freezing admixtures and cured at subzero temperature to that of reference concrete.

3.10 ratio of penetration height at subzero temperature

The ratio of the water penetration height of test concrete mixed with anti-freezing admixtures and cured at subzero temperature to that of reference concrete.

3.11 index of frost resistance

The relative dynamic elastic modulus of test concrete mixed with air-entraining agents or air-entraining and water-reducing admixtures after undergoing frost resistance tests.

Note: The frost resistance test refers to 200 freeze-thaw cycles using the rapid freezing method.

3.12 Reference Cement

Cement that meets the requirements specified in Appendix A of this document and is specially used for testing the performance of admixtures.

[Source: GB/T 8075-2017, 6.10, modified]

3.13 Specialized Manufactured Sand

Manufactured sand that meets the requirements specified in Appendix B of this document and is specially used for testing the performance of admixtures.

4 Classification, Designation and Marking

4.1 Classification and Designation

4.1.1 Admixtures are classified by state into liquid admixtures (designated as L) and solid admixtures (designated as S).

4.1.2 The types, models and product designations of admixtures classified by primary function are specified in Table 1.

Table 1 Types, Models and Product Designations of Admixtures

Serial No.	Type	Model	Product Designation
1	High-performance Water Reducer	Early-strength Type	HPWR-A
		Standard Type	HPWR-S
		Retarding Type	HPWR-R
2	High-efficiency Water Reducer	Standard Type	HWR-S
		Retarding Type	HWR-R
3	Ordinary Water Reducer	Early-strength Type	WR-A
		Standard Type	WR-S
		Retarding Type	WR-R
4	Air-entraining and Water-reducing Admixture	_	AEWR
5	Pumping Admixture	_	PA
6	Hardening Accelerator	_	Ac
7	Retarder	_	Re
8	Air-entraining Agent	_	AE
9	Waterproofing Admixture	_	WrA-C
10	Anti-freezing Admixture	Specified Temperature: -5℃	AfA-C(-5 ℃)
		Specified Temperature: -10℃	AfA-C(-10 ℃)
		Specified Temperature: -15℃	AfA-C(-15 ℃)

4.2 Marking

The marking of admixtures shall be expressed in the order of product state, product designation and the number of the applicable document.

Example 1: The marking of a liquid early-strength type high-performance water reducer conforming to this document is: L-HPWR-A GB/T 8076-2025