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**Code for concrete admixture application
(English Translation)**

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1 General

1.0.1

This specification is formulated to standardize the application of concrete admixtures, improve concrete performance, meet design and construction requirements, ensure the quality of concrete projects, and achieve advanced technology, safety and reliability, economical rationality, energy conservation and environmental protection.

1.0.2

This specification is applicable to ordinary water reducer, high-efficiency water reducer, polycarboxylate high-performance water reducer, air-entraining agent, air-entraining water reducer, early strength agent, retarder, pumping agent, antifreeze Application of additives, accelerators, expansion agents, waterproofing agents and rust inhibitors in concrete engineering.

1.0.3

The application of concrete admixtures in concrete engineering shall not only comply with this code, but also comply with the current relevant national standards.

2.1 Terminology

2.1.1

Shrinkage-reducing type polycarboxylate superplasticizer shrinkage-reducing type polycarboxylate superplasticizer 28d Polycarboxylate high-performance water reducer with a shrinkage ratio not greater than 90%.

2.1.2

Compatibility between water reducing admixtures and other concrete raw materials when concrete admixtures containing water-reducing components are matched with cementitious materials, aggregates, and other admixtures, the fluidity of the mixture and its degree of change over time.

2.2 Symbols

E - modulus of elasticity (MPa) of the restrained reinforcement;

h₀--the initial reading of the height of the test piece (mm);

h_t--the height reading (mm) of the specimen when the age is t;

h - the reference height of the test piece (mm);

L--Initial length measurement value (mm);

L₀ - the reference length of the test piece (mm);

L_t--measured value of the length of the specimen at the age measured (mm);

sigma--expansion or contraction stress (MPa);

epsilon--restricted expansion rate of the measured age (%);

epsilon_t--vertical expansion rate (%);

μ--reinforcement ratio (%).

3.1 Selection of admixtures

3.1.1

The type of admixture should be selected according to the design and construction requirements and the main function of the admixture.

3.1.2

When different suppliers and different types of admixtures are used at the same time, they should be verified by tests, and the performance of the concrete should meet the design and construction requirements before use.

3.1.3

Concrete admixtures containing hexavalent chromium salts, nitrites and thiocyanates are strictly prohibited from being used in drinking water projects for concrete that is in direct contact with drinking water

3.1.4

Early-strength ordinary water reducers, early-strength agents, antifreeze agents and waterproofing agents containing strong electrolyte inorganic salts are strictly prohibited for the following concrete structures.

- 1 Concrete structure in contact with galvanized steel or aluminum and iron;
- 2 Concrete structures with exposed steel bars and embedded iron parts without protective measures;
- 3 Concrete structures using DC power;

4 Concrete structures within 100m from high-voltage DC power supply

3.1.5 Early-strength ordinary water-reducing agents, early-strength agents, waterproofing agents and chloride-salt antifreezes containing chloride salts are strictly prohibited for use in prestressed concrete, reinforced concrete and steel fiber concrete structures

3.1.6 Early-strength ordinary water-reducing agents and early-strength agents containing ammonium nitrate and ammonium carbonate, and antifreeze agents containing ammonium nitrate, ammonium carbonate and urea are strictly prohibited to be used in construction projects with personnel activities such as offices and residences

3.1.7 Early-strength ordinary water-reducing agents, early-strength agents, antifreeze agents and nitrite-containing rust inhibitors containing nitrite and carbonate are strictly prohibited for use in prestressed concrete structures

3.1.8 The cement used for concrete with admixtures shall comply with the current national standards "General Portland Cement" GB 175 and "Medium Heat Portland Cement, Low Heat Portland Cement, Low Heat Slag Portland Cement" GB.200; The sand and stone used in admixture concrete shall comply with the current industry standard "Sand and Stone Quality and Inspection Method Standard for Ordinary Concrete" JGJ 52; Standards "Fly Ash Used in Cement and Concrete" GB/T 1596 and "Granulated Blast Furnace Slag Powder Used in Cement and Concrete" GB/T 18046, and the compatibility of admixtures and concrete raw materials should be checked Sex, should meet the requirements before use. The water used for concrete with admixtures includes mixing water and curing water, which shall comply with the provisions of the current industry standard "Concrete Water Standard" JGJ 63. Silica fume should comply with the provisions of the current national

standard "Mineral Admixtures for High-Strength and High-Performance Concrete" GB/T 18736.

3.1.9 Concrete mixed with admixtures for trial use shall use the raw materials actually used in the project. The testing items shall be determined according to the design and construction requirements. The testing conditions shall be the same as the construction conditions. trial match.

3.2 Dosage of admixture

3.2.1 The amount of admixture should be expressed as a percentage of the mass of the admixture to the total mass of the cementitious material in the concrete.

3.2.2 The dosage of admixture should be determined according to the recommended dosage of the supplier, and the raw materials and mixing ratio actually used in the project should be used and determined through tests. When the other raw materials of concrete or the use environment change, the concrete mix ratio and the amount of admixture can be adjusted.

3.3 Quality control of admixtures

3.3.1 When the admixture enters the site, the supplier shall provide the following quality certification documents to the buyer.

- 1 Type inspection report;
- 2 factory inspection report and certificate of conformity;
- 3 Product manual.

3.3.2 When the admixture enters the site, the same supplier and the same type of admixture shall be inspected and accepted according to the inspection items and inspection batches specified in this specification for each type of admixture, and the inspection samples shall be randomly selected. The inspection method of admixtures entering the factory shall comply with the provisions of the current national standard "Concrete Admixtures" GB 8076; the expansion agent shall comply with the provisions of the current national standard "Concrete Expansion Agents" GB 23439; The additives should meet the current industry standards "Concrete Antifreeze" JC 475, "Accelerator for Shotcrete" JC 477, "Concrete Waterproofing Agent" JC 474 and "Technical Regulations for the Application of Steel Rust Inhibitor" JGJ/T 192. The bulk purchase of admixtures should be consistent with the reserved samples, and should be used after passing the inspection.

3.3.3 The admixtures that have passed the entry inspection should be stored separately according to different suppliers, different varieties and different grades, and the labels should be clear.

3.3.4 When the supplier, batch, place of origin and grade of the same type of admixture change, the buyer should re-inspect the admixture, and it should be qualified and meet the