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

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**Hydropower and hydraulic engineering chemical grouting
material test procedure**

水电水利工程化学灌浆材料试验规程

(English Translation)

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1 General	

- 1.0.1 In order to standardize the performance test of chemical grouting materials for hydropower and water conservancy projects, this regulation is formulated.
- 1.0.2 This regulation is applicable to chemical grouting liquids such as epoxy resin, polyurethane, acrylate and water glass in hydropower and water conservancy projects

Foreword

This regulation is based on the National Energy Administration's plan to issue the first batch of industry standards (revision) in the energy sector in 2013.

"Notice" (Guoneng Technology [2013] No. 235) requires preparation.

During the compilation process, the editors conducted extensive investigations, collected data, and conducted in-depth researches on hydropower and water conservancy engineering chemistry.

The grouting material test technology has been comprehensively analyzed and studied, and the relevant chemical grouting material test results have been absorbed, and the domestic and foreign A large number of experimental studies have been carried out on the relevant content of the relevant standards, and the practical experience has been carefully summarized, combined with the scientific research achievements in recent years.

Based on the development of advanced technologies in the industry and the industry, the draft is finalized after review and review on the basis of extensive solicitation of opinions from relevant units and experts.

The main technical content of this regulation includes the grout performance test methods and consolidation properties of chemical grouting materials for hydropower and water conservancy projects can test methods.

This regulation was proposed by the China Electricity Council.

This regulation is under the jurisdiction of the Hydropower Construction Standardization Technical Committee of the Electric Power Industry.

The main drafting units of this regulation. Gezhouba Group Test and Inspection Co., Ltd., Yangtze River Water Resources Commission, Yangtze River Academy of Sciences, Hangzhou Zhou Guodian Dam Safety Engineering Co., Ltd.

Participated in the drafting of this regulation. China Water Resources and Hydropower Eighth Engineering Bureau Co., Ltd., Hunan Hongyu Engineering Group Co., Ltd., Guangdong Tieke Grouting Technology Co., Ltd.

1 General

1.0.1

In order to standardize the performance test of chemical grouting materials for hydropower and water conservancy projects, this regulation is formulated.

1.0.2

This regulation is applicable to chemical grouting liquids such as epoxy resin, polyurethane, acrylate and water glass in hydropower and water conservancy projects and the performance test of the consolidated body.

1.0.3

Relevant personnel engaged in chemical grouting material testing shall undergo professional training and assessment, and the assessment shall be qualified.

1.0.4

The performance test of chemical grouting materials for hydropower and water conservancy projects shall not only meet the requirements of this regulation, but also meet the current state Implement relevant standards.

2.0.1 Operable time

Use a viscometer to measure the viscosity, take the mixing of the components of the chemical grouting material as the starting point for timing, and when the viscosity reaches a certain specified viscosity when the degree value is the end point, the time interval from the start point to the end point.

2.0.2 Gel time

The time elapsed from the beginning of the mixing of the components of the chemical grouting material to the inability to flow.

2.0.3 Contact angle on the slide glass

When chemical grouting material slurry forms droplets on the solid surface and reaches equilibrium, air is used at the intersection of gas, liquid and solid-the tangent line of the liquid two-phase interface is the angle between the tangent and the solid and liquid two-phase interface.

2.0.4 Water absorption capability

After the water-soluble polyurethane grouting material is mixed with 10 times water, the time it takes for the water to completely form a gel is used for Characterize the reaction speed of the material.

2.0.5 Water absorption amount

After the unit mass of water-soluble polyurethane grouting material is mixed with water, the maximum water consumption that can maintain the gel state is used for Characterize the ability of a material to wrap water.

2.0.6 Expansion ratio

After the polyurethane grouting material reacts with water, the volume growth rate of the foam-like consolidation formed relative to the original slurry.

2.0.7 Water swelling ratio

The volume expansion ratio of the chemical grouting material consolidated body soaked in water within a specified time after physical adsorption of water.

2.0.8 Hydraulic slope against extrusion damage in the capillary

The maximum water pressure per unit length of the cured chemical grouting material without being damaged by extrusion.

3 Basic regulations

3.0.1

The temperature of the standard test environment should be $23^{\circ}\text{C}\pm 2^{\circ}\text{C}$, and the relative humidity should be $(50\pm 10)\%$.

3.0.2

The test materials should be placed for no less than 24h under standard test environmental conditions.

3.0.3

The test water should be distilled water.

3.0.4

When preparing the chemical grouting material slurry to be tested, the ratio should be the ratio specified in the product manual;

When there are regulations or when the project has special requirements, the ratio specified by the design or the ratio of special requirements shall also be adopted.

3.0.5

The measuring instruments used in the test shall be calibrated or verified as required.