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Test methods for repair materials for water-leakage cracks in underground concrete structures

Part 3: Test method for water (wash out) resistance

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National foreword

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Test methods for repair materials for water-leakage cracks in underground concrete structures —

Part 3: Test method for water (wash out) resistance

Méthodes d'essai pour matériaux de réparation pour fissures dues à l'eau dans les structures en béton souterraines —

Partie 3: Méthode d'essai de la résistance à l'eau (de lixiviation)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, Subcommittee SC 7, *Maintenance and repair of concrete structures*.

This second edition cancels and replaces the first edition (ISO/TS 16774-3:2016) which has been technically revised.

The main changes are as follows:

— ambient conditions in 6.2 and A.3.2 have been modified;

— some clarifications have been made in Clause 7 and 9.2;

— some editorial corrections have been made.

A list of all parts in the ISO 16774 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document is linked to ISO/TR 16475. ISO/TR 16475 outlines six basic properties and the required performance levels of water leakage repair materials, and the ISO/TS 16774 series proposes sample testing methods that are capable of evaluating the respective properties of the repair materials.

The test methods in this document are intended to serve as references for nations that have not yet developed a test method on the six required performance properties of water leakage repair materials. If other forms of test methods that are simpler, more accurate or more organized are available, such methods are recommended for use instead. Many of the dependent variables outlined in the reference test methods of this document are subject to change in accordance with the environmental conditions (temperature and humidity, chemical solution and concentration, width of movement activity, water pressure or water flow velocity, etc.) outlined in the standards used in respective countries.

For ISO/TS 16774-1, ISO/TS 16774-5 and ISO/TS 16774-6, for the purpose of objectively comparing the performance of injected repair materials, artificial cracks of same width, height, and volume were used to control the usage of repair materials for each testing cycle and enable repetition of the same test methods under the same conditions.

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TECHNICAL SPECIFICATION **ISO/TS 16774-3:2023**

Test methods for repair materials for water-leakage cracks in underground concrete structures —

Part 3: Test method for water (wash out) resistance

1 Scope

This document specifies a laboratory test method on the quantitative determination of repair materials performance and resistance against erosion and wash out due to underground water flow.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TR 16475, *General practices for the repair of water-leakage cracks in concrete structures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 16475 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
water leakage repair material
grouting materials used to prevent water leakages in concrete cracks

Note 1 to entry: In this document, target ingredients are limited to injection materials outlined in ISO/TR 16475.

[SOURCE: ISO/TS 16774-2:2023, 3.1]

4 Principle

Resistance to water flow is one of the fundamental properties that water leakage repair materials should possess. Repair materials are, in most cases, under constant pressure due to water flow, meaning there are risks of erosion, and/or washout and eventual reopening of leakage paths. This test method evaluates the performance of repair materials for water-leakage cracks by observing how closely the materials can maintain their original state after being exposed to long term water flow. This is done by comparing the mass difference of water leakage repair materials before and after flow testing in order to determine the repair material's wash out resistance. An example test method is provided in Annex A.

The test repair material is placed in a Petri dish container, which is then placed under exposure to water flow for predetermined duration in a water flow chamber apparatus (flow velocity, duration of flow testing and other relevant conditions are subject to change in accordance with regulated values and figures outlined in different national standards). The mass of the test specimen prior to and after the

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