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

**Part 4:
Test method for adhesion on wet
concrete surface**

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

Partie 4: Méthode d'essai de l'adhésion sur un substrat humide

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 71, *Concrete, reinforced concrete and pre-stressed concrete*, Subcommittee SC 7, *Maintenance and repair of concrete structures*.

ISO/TS 16774 consists of the following parts, under the general title *Test methods for repair materials for water-leakage cracks in underground concrete structures*:

- *Part 2: Test method for chemical resistance*
- *Part 3: Test method for water (wash out) resistance*
- *Part 4: Test method for adhesion on wet concrete surface*

The following parts are under preparation:

- *Part 1: Test method for thermal stability*
- *Part 5: Test method for watertightness*
- *Part 6: Test method for response to the substrate movement*

Introduction

This Technical Specification is linked to ISO/TR 16475. ISO/TR 16475 outlines 6 basic properties and the required performance levels of water-leakage repair materials, and ISO/TS 16774 proposes a tentative, sample test methods that are capable of evaluating the respective properties of the repair materials.

The test methods in this Technical Specification are intended to serve as references for nations that have not yet developed a test method on the 6 proposed 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 Technical Specification are subject to change in accordance to 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.

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

Part 4:

Test method for adhesion on wet concrete surface

1 Scope

This part of ISO/TS 16774 specifies a laboratory test method for indirectly measuring the adhesion performance of repair material to wet concrete crack surfaces by qualitatively, as a pass/fail at predetermined time, against predetermined amount of weight exerted on the repair material adhesion.

NOTE This part of ISO/TS 16774 classifies and categorizes materials that are tested into families of similar properties for the purpose of making relative comparisons with the data results.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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, *Guidelines 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.

3.1

repair material for water-leakage cracks

grouting materials used for prevent water-leakage at crack in concrete

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

Note 2 to entry: [SOURCE: ISO/TS 16774-2:—, 3.1]

4 Principle

A repair material's ability to adhere to a wet leakage crack surface is one of the fundamental properties that water-leakage repair materials should possess. Focus areas of repair material application are most often on concrete surfaces that are constantly wet and humid. During and after application, repair materials should be able to remain firm adhesion to concrete surface and should not fall off. This test method proposes that observing whether repair materials can retain adhesion on wet concrete surface against a constantly exerted weight can determine a repair material's adhesion performance on wet concrete surface. An example test method is provided in [Annex A](#).

Repair materials are injected in an artificially produced wet crack space formed by two separate concrete (or mortar) specimens, a top part that serves as an anchor, and another that serves as the any constant weight that pulls on the material adhesion surface. The concrete specimen is then lifted and held in mid-air by the clamp (anchor) of adhesion tester to see if the material can maintain adhesion past the failure margin time against the weight of the bottom concrete specimen.