

**Test methods for repair materials for water-leakage cracks in underground concrete structures —
Part 3: Test method for water (wash out) resistance**

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/DTS 16774-3

<https://standards.iteh.ai/catalog/standards/sist/ca612171-2b1f-4340-b1f3-798577333947/iso-dts-16774-3>

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES. DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.



© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office

CP 401 • Ch. de Blandonnet 8

CH-1214 Vernier, Geneva

Phone: +41 22 749 01 11

Fax: +41 22 749 09 47

Email: copyright@iso.org

Website: www.iso.org

Published in Switzerland

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/DTS 16774-3

<https://standards.iteh.ai/catalog/standards/sist/ca612171-2b1f-4340-b1f3-798577333947/iso-dts-16774-3>

Contents Page

Foreword v

1 Scope 1

2 references 1 Normative

3 Terms and Definitions 1

4 Principle 1

5 Apparatus 2

5 Apparatus 2

5.1 Water flow chamber 2

5.2 Others 2

6 Preparation 2

6.1 Test specimen 2

6.2 Conditioning 2

6.2 Conditioning 2

7 Procedure 3

8 Presentation of results 3

9 Test report 4

9.1 Information on the repair material of the test target 4

9.1.1 General..... 4

9.1.2 Other information..... 4

9.2 Information on the test..... 4

Bibliography 5

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/DTS 16774-3

<https://standards.iteh.ai/catalog/standards/sist/ca612171-2b1f-4340-b1f3-798577333947/iso-dts-16774-3>

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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

~~The committee responsible for this~~ This document ~~is~~ 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 the following all parts, under in the general title *Test methods for repair materials for water leakage cracks in concrete structures*: ISO 16774 series can be found on the ISO website.

- *Part 1: Test method for thermal stability*
- *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~~

~~— Part 5: Test method for watertightness~~

~~— Part 6: Test method for response to the substrate movement~~

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/DTS 16774-3

<https://standards.iteh.ai/catalog/standards/sist/ca612171-2b1f-4340-b1f3-798577333947/iso-dts-16774-3>

Introduction

This ~~Technical Specification 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 test method testing methods~~ that are ~~is~~-capable of evaluating the respective properties of the repair materials.

The test methods in this ~~Technical Specification 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 ~~Technical Specification 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/DTS 16774-3

<https://standards.iteh.ai/catalog/standards/sist/ca612171-2b1f-4340-b1f3-798577333947/iso-dts-16774-3>

Test methods for repair materials for water-leakage crack in underground concrete structures — Part 3: Test method for water (wash out) resistance

1 Scope

This ~~part of ISO/TS 16774~~ 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 whole the text in such a way that some or in part, are normatively referenced in all of their content constitutes requirements of 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 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 for water-leakage cracks

grouting materials used to prevent water-leakages in concrete cracks

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

[SOURCE: ISO/TS 16774-2:—;20—1, 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

¹ Under preparation.

ISO/DTS 16774-3:2023(E)

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.

~~Test~~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 exposure to water flow is measured using an electronic scale and the data is recorded. For the purpose of this test, specimens should try to retain its original mass as closely as possible as an indicator of strong physical resistance against water flow.

5 Apparatus

5.1 Water flow chamber, shall be able to maintain and control a constant velocity of water flow.

Water flow velocity can be set in accordance ~~to~~with the relevant environmental condition of the appropriate national standard.

5.2 Others.

5.2.1 Glass Petri dish for repair material placement and water flow chamber testing.

5.2.2 Electronic scale ~~(able to measure, capable of measuring up to two decimal places in grams)~~.

5.2.3 Stirring rod and trowel used for material placement in the Petri dish.

5.2.4 Injector, ~~(injection method~~ ~~has to~~shall be as close as possible to manufacturer instructions if provided).

5.2.5 Non-woven fabric cloth, ~~(filters eroded particulates that are washed out during flow testing)~~.

6 Preparation

6.1 Test specimens

a) Completely fill the glass Petri dish with repair material.

Repair material surface should be treated with a trowel or other surface treating tools to make ~~certain~~sure the surface of the material is flat (tolerance for uneven surface allowed). Should there be a specific instruction provided by the manufacturer on injection material, such method should be used instead.

b) Cure the test specimens in the test room for predetermined number of hours or days until it dries to constant mass with +/- tolerance. Tolerance range conditions ~~is~~should conform to ~~comply with~~ the relevant national standard testing methods.

c) Prepare a set number of specimens for test repetition.