SLOVENSKI STANDARD
SIST EN ISO 22477-5:2018

01-december-2018

Geotehnično preiskovanje in preskušanje - Preskušanje geotehničnih konstrukcij - 5. del: Preskušanje injektiranih sider (ISO 22477-5:2018)

Geotechnical investigation and testing - Testing of geotechnical structures - Part 5: Testing of grouted anchors (ISO 22477-5:2018)

Geotechnische Erkundung und Untersuchung - Prüfung von geotechnischen Bauwerken und Bauwerksteilen - Teil 5: Prüfung von Verpressankern (ISO 22477-5:2018)

Reconnaissance et essais géotechniques - Essais des structures géotechniques - Partie 5: Essais de tirants d'ancrage (ISO 22477-5:2018)

Ta slovenski standard je istoveten z: **EN ISO 22477-5:2018**

ICS:

93.020	Zemeljska dela. Izkopavanja. Gradnja temeljev. Dela pod zemljo	Earthworks. Excavations. Foundation construction. Underground works

SIST EN ISO 22477-5:2018 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 22477-5

September 2018

ICS 93.020

English Version

Geotechnical investigation and testing - Testing of geotechnical structures - Part 5: Testing of grouted anchors (ISO 22477-5:2018)

Reconnaissance et essais géotechniques - Essais des structures géotechniques - Partie 5: Essais de tirants d'ancrage (ISO 22477-5:2018)

Geotechnische Erkundung und Untersuchung - Prüfung von geotechnischen Bauwerken und Bauwerksteilen - Teil 5: Prüfung von Verpressankern (ISO 22477-5:2018)

This European Standard was approved by CEN on 19 August 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword

This document (EN ISO 22477-5:2018) has been prepared by Technical Committee ISO/TC 182 "Geotechnics" in collaboration with Technical Committee CEN/TC 341 “Geotechnical Investigation and Testing” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 22477-5:2018 has been approved by CEN as EN ISO 22477-5:2018 without any modification.

INTERNATIONAL STANDARD

ISO 22477-5

First edition
2018-08

Geotechnical investigation and testing — Testing of geotechnical structures —

Part 5: Testing of grouted anchors

Reconnaissance et essais géotechniques — Essais des structures géotechniques —
Partie 5: Essais de tirants d'ancrage

Reference number
ISO 22477-5:2018(E)

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

Contents

Page

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 on 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.

This document was prepared by Technical Committee ISO/TC 182, *Geotechnics*.

A list of all the parts in the ISO 22477 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.

Introduction

This document, together with EN 1997-1 and EN 1537, form the trinity in which:

— EN 1997-1 defines the design requirements for grouted anchors, including the limits of proof load and limiting criteria by testing of grouted anchors, which may be specified in the national annex (for EN 1997-1) or a similar national application document for ISO countries;

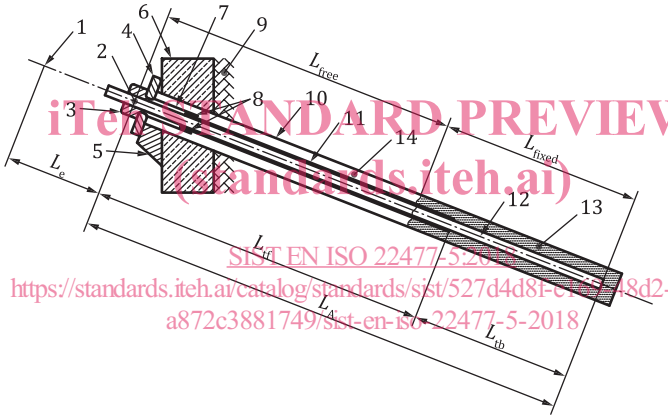
— EN 1537 defines the execution of grouted anchors;

— this document defines the testing of grouted anchors.

The document has been structured so that common items are given in Clauses 1 to 7. The different test specific loading procedures, measurements, checks and presentation of test results for the three test methods (Test Method 1, 2 and 3) have been placed in three separate clauses. The determination of the fundamental characteristics: creep rate, load loss, critical creep load and the apparent tendon free length are not test specific and for this reason these have been placed in Annexes A to D.

Yield stress and tensile strength for typical anchor steels appear in Annex E.

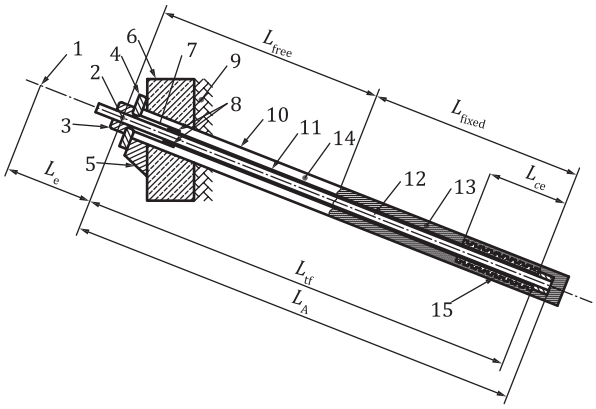
Figures 1 and 2 illustrate the two main types of grouted anchors considered in EN 1537.



Key

1 anchorage point at jack during stressing
2 anchorage point at anchor head in service
3 tensioning element at anchor head (nut or barrel and wedge)
4 bearing plate
5 load transfer block
6 structural element
7 trumpet or anchor head tube
8 O-ring
9 soil/rock
10 borehole
11 debonding sleeve
12 tendon
13 fixed length grout body
14 free length filling where appropriate

Figure 1 — Sketch of a bond type ground anchor — details of anchor head and head protection omitted



Key

1 anchorage point at jack during stressing
2 anchorage point at anchor head in service
3 tensioning element at anchor head (nut or barrel and wedge)
4 bearing plate
5 load transfer block
6 structural element
7 trumpet or anchor head tube
8 O-ring
9 soil/rock
10 borehole
11 debonding sleeve
12 tendon
13 fixed length grout body
14 free length filling where appropriate
15 compression element

Figure 2 — Sketch of a compression type ground anchor — details of anchor head and head protection omitted

Geotechnical investigation and testing — Testing of geotechnical structures —

Part 5: Testing of grouted anchors

1 Scope

This document establishes specifications for the execution of tension tests to be carried out on an anchor grouted in the ground, as defined in EN 1997-1 and EN 1537. Three methods of testing are recognized by this document. Test Method 1 involves cyclic tension loading with measurement of displacement at the load stages; Test Method 2 involves cyclic tension loading with measurement of load loss at the load stages; and Test Method 3 involves step-loading with measurement of displacement under successive maintained tension loads.

This document provides specifications for the experimental devices, the measurement apparatus, the test procedures, the definition and presentation of the test results and the content of records.

NOTE This document does not provide specification for the size of the proof load and the limiting criteria. These aspects reside in EN 1997-1 or its national annex for CEN countries and in similar national application documents for this test standard for ISO countries.

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.

EN 1537:2013, *Execution of special geotechnical works — Ground anchors*

EN 1997-1:2004+A1:2013, *Eurocode 7: Geotechnical design — Part 1: General rules*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1997-1 and EN 1537 and the following apply.

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

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

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

3.1.1
acceptance test
load test to confirm that an individual anchor conforms with its acceptance criteria

Note 1 to entry: Refer to EN 1997-1.