
Geotehnično preiskovanje in preskušanje – Preskušanje geotehničnih konstrukcij – 1. del: Preskušanje nosilnih pilotov s statično osno stiskalno obremenitvijo (ISO/DIS 22477-1:2005)

Geotechnical investigation and testing – Testing of geotechnical structures – Part 1: Pile load test by static axially loaded compression (ISO/DIS 22477-1:2005)

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Geotechnical investigation and testing - Testing of geotechnical structures - Part 1: Pile load test by static axially loaded compression (ISO/DIS 22477-1:2005)

Reconnaissance et essais géotechniques - Essais de structures géotechniques - Partie 1: Essai de charge statique axiale en compression (ISO/DIS 22477-1:2005)

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Foreword

This document (prEN ISO 22477-1:2005) has been prepared by Technical Committee CEN/TC 341 "Geotechnical Investigation and Testing", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 182 "Geotechnics".

This document is currently submitted to the parallel Enquiry.

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Geotechnical investigation and testing — Testing of geotechnical structures —

Part 1: Pile load test by static axially loaded compression

*Reconnaissance et essais géotechniques — Essais de structures géotechniques —
Partie 1: Essai de charge statique axiale en compression*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

ISO 22477-1 was prepared by Technical Committee ISO/TC 182, *Geotechnics*, Subcommittee SC 1, and by Technical Committee CEN/TC 341, *Geotechnical investigation and testing* in collaboration.

ISO 22477 consists of the following parts, under the general title *Geotechnical investigation and testing — Testing of geotechnical structures*:

- Part 1: *Pile load test by static axially loaded compression*
- Part 2: *Pile load test by static axially loaded tension* (in preparation)
- Part 3: *Pile load test by static transversally loaded tension* (in preparation)
- Part 4: *Pile load test by dynamic axially loaded compression test* (in preparation)
- Part 5: *Testing of anchorages*
- Part 6: *Testing of nailing* (in preparation)
- Part 7: *Testing of reinforced fill* (in preparation)

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Geotechnical investigation and testing — Testing of geotechnical structures — Part 1: Pile load test by static axially loaded compression

1 Scope

This Standard establishes the specifications for the execution of static pile load tests in which a single pile is subjected to an axial static load in compression in order to define its load-displacement behaviour.

The provisions of EN 22477-1 apply to vertical piles as well as raking piles.

All types of piles are covered by this standard.

The tests considered in this Standard are limited to maintained load tests.

EN 22477-1 shall be used in conjunction with EN 1997-1. Numerical values of partial factors for limit states and of correlation factors to derive characteristic values from static pile load tests to be taken into account in design are provided in EN 1997-1. Guidance on analysis of the load testing results is given in the informative Annex D.

This Standard provides specifications for:

- a) Investigation tests, whereby the pile is loaded up to failure or close to failure ;
- b) Control tests, whereby the pile is loaded up to a specified load in excess of the SLS design action.

2 Normative references

The following referenced documents are indispensable for the application 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 1990:2002, *Eurocode 0 : Basis of structural design*

EN 1997-1, *Eurocode 7 : Geotechnical Design - Part 1 : General rules*

EN 1536:1999, *Execution of special geotechnical work - Bored piles*

EN 10002-2, *Metallic materials – Tensile testing – Part 2 : Verification of the force measuring system of the tensile testing machines*

EN 12699:2000, *Execution of special geotechnical work - Displacement piles*

prEN 14199:2001, *Execution of special geotechnical work – Micropiles*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in EN 1990 and the following apply.

Terms, definitions and symbols specific for EN 22477-1-1 are given hereunder.

3.1

Q : pile load

the load applied to the head of the pile during the test

3.2

ΔQ : load increment

an increment of load added or removed during the course of the test

3.3

Q_{\max}

the predefined maximum load to be applied for the test

3.4

$R_{c;u}$

ultimate total pile (bearing) resistance in compression : the load per pile required to produce a condition of failure in the ground or in the pile

NOTE Following 7.6.1.1 of EN 1997-1, the compressive resistance failure corresponds to the state in which the pile foundation displaces significantly with negligible increase of resistance. In case that it is difficult to define an ultimate limit state from a load settlement plot showing a continuous curvature, a settlement of the pile top equal to 10 % of the pile base diameter should be adopted as the "failure" criterion.

3.5

$R_{b;u}$

ultimate pile base resistance <https://standards.iteh.ai/catalog/standards/sist/4ceb45b6-87a8-43fd-95ca-2c93c76b1470/osist-pren-iso-22477-1-2006>

3.6

$R_{s;u}$

ultimate pile shaft resistance

3.7

$q_{s;u}$

ultimate unit shaft resistance

3.8

$Q_{b;u}$

ultimate unit base resistance

3.9

R_y

yield resistance:

- a) a critical experimental load beyond which the rate of axial displacement takes place with a notably increased increment
- b) the load at which the rate of settlement increases without any significant increase in load

3.10

α_y : yield factor

the ratio of the increase in pile head displacement and the log of time during a specified time interval (usually the last 30 min of a load step)