



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 22282-3:2008**  
**01-februar-2008**

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**Geotehnično preiskovanje in preskušanje - Hidrogeološke preiskave - 3.del: Vodni tlak v kamninah (ISO/DIS 22282-3:2007)**

Geotechnical investigation and testing - Geohydraulic testing - Part 3: Water pressure test in rock (ISO/DIS 22282-3:2007)

**iTeh STANDARD PREVIEW**

Reconnaissance et essais géotechniques - Essais géohydrauliques - Partie 3: Essai de pression d'eau dans les roches (ISO/DIS 22282-3:2007)

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**Ta slovenski standard je istoveten z: prEN ISO 22282-3**

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**ICS:**

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

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN ISO 22282-3**

November 2007

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ICS 13.080.40

English Version

## Geotechnical investigation and testing - Geohydraulic testing - Part 3: Water pressure test in rock (ISO/DIS 22282-3:2007)

Reconnaissance et essais géotechniques - Essais  
géohydrauliques - Partie 3: Essai de pression d'eau dans  
les roches (ISO/DIS 22282-3:2007)

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## Foreword

This document (prEN ISO 22282-3:2007) has been prepared by Technical Committee CEN/TC 341 "Geotechnical Investigation and Testing", the secretariat of which is held by ELOT, 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 — Geohydraulic testing —****Part 3:  
Water pressure test in rock***Reconnaissance et essais géotechniques — Essais géohydrauliques —**Partie 3: Essai de pression d'eau dans les roches*

ICS 93.020

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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.

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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.

ISO 22282-3 was prepared by Technical Committee ISO/TC 182, *Geotechnics*, Subcommittee SC 1, *Geotechnical investigation and testing* and by Technical Committee CEN/TC 341, *Geotechnical investigation and testing* in collaboration.

ISO 22282 consists of the following parts, under the general title *Geotechnical investigation and testing — Geohydraulic testing*:

- Part 1: *General rules*
- Part 2: *Water permeability tests in a borehole using open systems*
- Part 3: *Water pressure test in rock*
- Part 4: *Pumping tests*
- Part 5: *Infiltrometer test*
- Part 6: *Water permeability tests in a borehole using closed systems*

# Geotechnical investigation and testing — Geohydraulic testing — Part 3: Water pressure test in rock

## 1 Scope

This document deals with the requirements for water pressures tests (WPT) carried out in boreholes drilled into rock as part of geotechnical investigation and testing according to EN 1997-1 and EN 1997-2.

The test is used to investigate the following:

- hydraulic properties of the rock mass, which are mainly governed by discontinuities;
- absorption capacity of the rock mass;
- tightness of the rock mass;
- effectiveness of grouting;
- geomechanical behaviour, e.g. hydrofracturing, hydrojacking.

Many effects in the geohydraulic tests are not only influenced by the ground itself, but stem from the testing procedure. Historically, the water pressure test was evaluated based on assumption that the stationary behaviour was achieved. Recent advances in geohydraulics have shown that transient phenomena are often present. The present document attempts to address the limitations of certain testing procedures without restricting the required equipment too stringently.

## 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 ISO 14689-1, *Geotechnical investigation and testing – Identification and classification of rock – Part 1: Identification and description*

prEN ISO 22282-1, *Geotechnical investigation and testing — Geohydraulic testing – Part 1: General rules*

prEN ISO 22475-1, *Geotechnical investigation and testing – Sampling by drilling and excavation methods and groundwater measurements – Part 1: Technical principles of execution*

EN 1997-1, Eurocode 7: Geotechnical design – General rules

EN 1997-2, Eurocode 7: Geotechnical design – Ground investigation and testing

## ISO/DIS 22282-3

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN ISO 22282-1 and the following apply.

#### 3.1 water flow

$Q$   
quantity of water that flows through the test equipment under certain test conditions per time unit

#### 3.1 water take

$w$   
water flow  $Q$  related to the effective test pressure  $P_T$

#### 3.2 single pressure step test

test with only one pressure step

NOTE This test is normally used to check the tightness of the rock or the tightening measures.

#### 3.3 multiple pressure step test

test with more than one pressure steps

NOTE This test is normally used to investigate the water take and the behaviour of the discontinuities, e.g. hydrojacking, hydrofracturing, erosion, clogging.

#### 3.4 steady state condition

test phase during which both pressure and flow rate are constant

### 4 Symbols

For the purposes of this document, the symbols given in Table 1 apply.

Table 1 — Symbols

Symbol	Designation	Unit
$D$	diameter of the test section	m
$d$	diameter of the pipe	m
$l$	length of the test section	m
$g$	gravity	$\text{m/s}^2$
$h$	distance of the pressure head from the ground surface	m
$K$	permeability index	m/s
$L_P$	length of the packer	m
$l$	length of the pipe	m
$P$	pressure	MPa
$P_A$	pressure above packer	MPa
$P_B$	pressure below packer	MPa
$P_M$	pressure at the top of the borehole	MPa