

**GEOTEHNILINE UURIMINE JA KATSETAMINE
GEOHÜDRAULILINE KATSETAMINE OSA 1:
ÜLDREEGLID (ISO 22282-1:2012)**

**Geotechnical investigation and testing - Geohydraulic
testing - Part 1: General rules (ISO 22282-1:2012)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

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English Version

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Reconnaissance et essais géotechniques - Essais
géohydrauliques - Partie 1: Règles générales (ISO 22282-
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Geotechnische Erkundung und Untersuchung -
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Foreword

This document (EN ISO 22282-1:2012) 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 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of an identical text or by endorsement, at the latest by December 2012, and conflicting national standards shall be withdrawn at the latest by December 2012.

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Introduction

The EU water directive requires the member states to increase activities that protect groundwater and fresh surface water both quantitatively and qualitatively^[11]. At the same time, society requires more water and thus more construction projects below groundwater level in even deeper waters. In addition, the sea level may rise as a result of climate change. This contradiction requires engineers working on construction projects below groundwater level to make more reliable predictions on the effects of such structures on the groundwater conditions. This can partly be achieved by better assessment of the permeability of the ground by *in situ* tests as required in EN 1997-1:2004, 3.3.9.1. EN 1997-2:2007 contains the following stipulations, requirements and recommendations:

“2.1.4 Groundwater –

(1) Groundwater investigations shall provide all relevant information on groundwater needed for geotechnical design and construction.

(2) Groundwater investigations should provide, when appropriate, information on:

- the depth, thickness, extent and permeability of water-bearing strata in the ground, and joint systems in rock;
- the elevation of the groundwater surface or piezometric surface of aquifers and their variation over time and actual groundwater levels including possible extreme levels and their periods of recurrence;
- the pore water pressure distribution;
- the chemical composition and temperature of groundwater.

(3) The information obtained should be sufficient to assess the following aspects, where relevant:

- the scope for and nature of groundwater lowering work;
- possible harmful effects of the groundwater on excavations or on slopes (e.g. risk of hydraulic failure, excessive seepage pressure or erosion);
- any measures necessary to protect the structure (e.g. water proofing, drainage and measures against aggressive water);
- effects of groundwater lowering, desiccation, impounding, etc. on the surroundings;
- the capacity of the ground to absorb water injected during construction work;
- whether it is possible to use local groundwater, given its chemical constitution, for construction purposes.”

Geotechnical investigation and testing — Geohydraulic testing —

Part 1: General rules

1 Scope

This part of ISO 22282 establishes the general rules and principles for geohydraulic testing in soil and rock as part of the geotechnical investigation services in accordance with EN 1997-1 and EN 1997-2. It defines concepts and specifies requirements relating to permeability measurement in soil and rock.

The different purposes of geohydraulic testing are to obtain information on the permeability of soil or rock in natural or treated states, transmissivity and storage coefficient, and hydrodynamic parameters of aquifers.

Geohydraulic testing is used for many purposes, such as:

- a) absorption capacity and effectiveness of grouting in rock mass;
- b) assessment of seepage and drainage;
- c) assessment of groundwater lowering work;
- d) effects of cut-offs for dams;
- e) effects of tunnels and shaft sinking;
- f) checking fill or cover tightness;
- g) assessment of the flow of fluids and suspensions in the ground;
- h) planning for remedial measures.

NOTE 1 Geohydraulic testing for water supply is covered by ISO 14686.

NOTE 2 For most types of ground, field permeability tests yield more reliable data than those carried out in the laboratory, because a larger volume of material is tested, and because the ground is tested *in situ*, thereby including effects resulting from the structure of the ground mass but avoiding the disturbance associated with sampling.

This part of ISO 22282 deals with the execution of tests with groundwater and does not explicitly consider other fluids and suspensions. The flow of other fluids and suspensions can be considered by applying the different viscosities and relations between transmissivity, permeability coefficient and intrinsic permeability.

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.

ISO 14688-1, *Geotechnical investigation and testing — Identification and classification of soil — Part 1: Identification and description*

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

ISO 22282-2, *Geotechnical investigation and testing — Geohydraulic testing — Part 2: Water permeability tests in a borehole using open systems*