
**Geotechnical investigation and testing —
Laboratory testing of soil —**

**Part 1:
Determination of water content**

*Reconnaissance et essais géotechniques — Essais de sol au
laboratoire —*

Partie 1: Détermination de la teneur en eau



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Foreword

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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/TS 17892-1 was prepared by the European Committee for Standardization (CEN) in collaboration with Technical Committee ISO/TC 182, *Geotechnics*, Subcommittee SC 1, *Geotechnical investigation and testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Throughout the text of this document, read "...this European pre-Standard..." to mean "...this Technical Specification...".

ISO 17892 consists of the following parts, under the general title *Geotechnical investigation and testing — Laboratory testing of soil*:

- *Part 1: Determination of water content*
- *Part 2: Determination of density of fine-grained soil*
- *Part 3: Determination of particle density — Pycnometer method*
- *Part 4: Determination of particle size distribution*
- *Part 5: Incremental loading oedometer test*
- *Part 6: Fall cone test*

- *Part 7: Unconfined compression test on fine-grained soil*
- *Part 8: Unconsolidated undrained triaxial test*
- *Part 9: Consolidated triaxial compression tests on water-saturated soil*
- *Part 10: Direct shear tests*
- *Part 11: Determination of permeability by constant and falling head*
- *Part 12: Determination of the Atterberg limits*

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Foreword

This document (CEN ISO/TS 17892-1:2004) 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".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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- *Part 11: Determination of permeability by constant and falling head*
- *Part 12: Determination of Atterberg limits*

Introduction

This document covers areas in the international field of geotechnical engineering never previously standardised. It is intended that this document presents broad good practice throughout the world and significant differences with national documents is not anticipated. It is based on international practice (see [1]).

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1 Scope

This document specifies the laboratory determination of the water (moisture) content of a soil test specimen by oven-drying within the scope of the geotechnical investigations according to prEN 1997-1 and prEN 1997-2. The water content is required as a guide to classification of natural soils and as a control criterion in re-compacted soils and is measured on samples used for most field and laboratory tests. The oven-drying method is the definitive procedure used in usual laboratory practice.

The practical procedure for determining the water content of a soil is to determine the mass of water removed by drying the moist soil (test specimen) to a constant mass in a drying oven controlled at a given temperature, and to use this value as the mass of water in the test specimen related to the mass of solid particles. The mass of soil remaining after oven-drying is used as the mass of the solid particles.

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.

prEN 1997-1, *Eurocode 7 - Geotechnical design — Part 1: General rules*.

prEN 1997-2, *Eurocode 7 - Geotechnical design — Part 2: Ground investigation and testing*.

3 Terms and definitions

For the purposes of this document, the following term and definition apply.

3.1

water (moisture) content

w

the ratio of the mass of 'pore' or 'free' water in a given mass of soil material to the mass of the 'dry' solid soil particles

NOTE In this context a soil is 'dry' when no further water can be removed at a temperature within the interval of $105\text{ °C} \pm 5\text{ °C}$.

4 Equipment

4.1 Drying oven

The drying oven shall be preferably of the forced-draft type, and capable of maintaining a uniform temperature of $105\text{ °C} \pm 5\text{ °C}$ throughout the drying chamber. For ovens of the forced-draft type, the air circulation may not be so strong that any transport of particles can take place.

4.2 Balance

The balance shall have an accuracy of

- $\pm 0,03\text{ g}$ for test specimens having a mass of 200 g or less,
- $\pm 0,3\text{ g}$ for test specimens having a mass of between 200 g and 1 000 g, or
- $\pm 3\text{ g}$ for specimens having a mass greater than 1 000 g.