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English version

**Geotechnical investigation and testing - Laboratory testing of  
soil - Part 7: Unconfined compression test on fine-grained soil  
(ISO/TS 17892-7:2004)**

Reconnaissance et essais géotechniques - Essais de sol  
au laboratoire - Partie 7 : Essai de compression simple sur  
sols cohérents (ISO/TS 17892-7:2004)

Geotechnische Erkundung und Untersuchung -  
Laborversuche an Bodenproben - Teil 7: Einaxialer  
Druckversuch an feinkörnigen Böden (ISO/TS 17892-  
7:2004)

This Technical Specification (CEN/TS) was approved by CEN on 2 February 2004 for provisional application.

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## Foreword

This document (CEN ISO/TS 17892-7:2004) 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.

CEN ISO/TS 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 soils.
- Part 8: Unconsolidated undrained triaxial test.
- Part 9: Consolidated triaxial compression tests.
- Part 10: Direct shear tests.
- Part 11: Permeability tests.
- 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]).

## 1 Scope

This document covers the determination of an approximate value of the unconfined compressive strength for a square or cylindrical water-saturated homogeneous specimen of undisturbed or remoulded cohesive soil of sufficiently low permeability to keep itself undrained during the time it takes to perform the test within the scope of geotechnical investigations according to prEN 1997-1 and -2.

The unconfined compressive strength of cohesive soils is a measure of the apparent cohesion. A cohesive soil behaves as if it is truly cohesive, e.g. clay and clayey soils, but most soils in this group behave cohesively due to negative pore pressure and friction and not due to actual cohesion.

This test method is useful to derive the undrained shear strength of soil. It should however be noted that no provisions are taken to prevent drainage. The derived value for undrained shear strength is therefore only valid for soils of low permeability, which behave sufficiently undrained during testing.

The method is not appropriate for fissured or varved clays or silts or peats.

## 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: Design assisted by laboratory testing*

CEN ISO/TS 17892-1, *Geotechnical investigation and testing — Laboratory testing of soil — Part 1: Determination of water content (ISO/TS 17892-1:2004)*.

CEN ISO/TS 17892-2, *Geotechnical investigation and testing — Laboratory testing of soil — Part 2: Determination of bulk density (ISO/TS 17892-2:2004)*.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **unconfined compressive strength**

$q_u$

maximum vertical stress an unconfined specimen can sustain or the vertical stress at 15 % vertical strain, whichever occurs first during the performance of the test

### 3.2

#### **undrained shear strength**

$c_u$

undrained shear strength is equal to one half of the unconfined compressive strength

### 3.3

#### **undisturbed sample**

normally sample of quality class 1 according to prEN 1997-2