SLOVENSKI STANDARD
SIST-TS CEN ISO/TS 17892-7:2004

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Geotehniļ no preiskovanje in preskuġanje - Laboratorijsko preskuġanje zemljin - 7. del: Enoosni tlaļ ni preskus drobnozrnatih zemljin (ISO/TS 17892-7:2004)

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

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

Reconnaissance et essais géotechniques - Essais de laboratoire sur les sols - Partie 7: Essai de compression uniaxiale sur des sols fins (ISO/TS 17892-7:2004)

Ta slovenski standard je istoveten z: **CEN ISO/TS 17892-7:2004**

ICS:

13.080.20	Fizikalne lastnosti tal	Physical properties of soils
93.020	Zemeljska dela. Izkopavanja. Gradnja temeljev. Dela pod zemljo	Earthworks. Excavations. Foundation construction. Underground works

SIST-TS CEN ISO/TS 17892-7:2004 **en**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN ISO/TS 17892-7

October 2004

ICS 13.080.20; 93.020

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

4 Equipment

4.1 Loading machine

4.1.1 General

A loading machine for performance of unconfined compression tests (see Figure 1) normally consists of the following main parts:

a) Top and bottom platen between which the soil specimen is placed;

b) load frame with a drive unit to compress the soil specimen (loading press);

c) load measuring device to measure the force applied to the soil specimen;

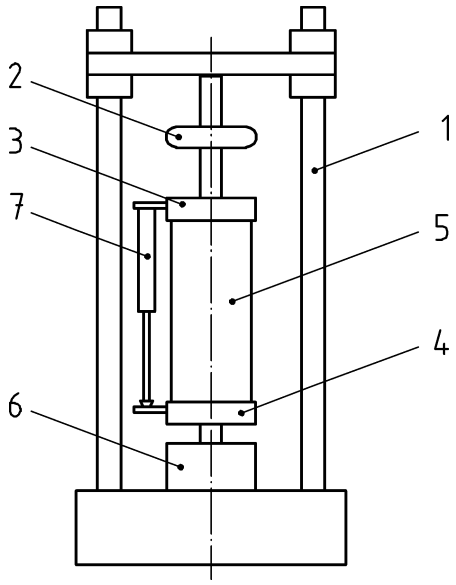
d) compression measuring device to measure the axial compression of the specimen.

4.1.2 Loading press

4.1.2.1 The loading press shall have sufficient capacity to load the soil specimen to failure (see 4.1.4.3).

4.1.2.2 The top and the bottom platen shall be designed such that their deformations are negligible compared to the deformations of the soil specimen, and their diameter shall be so large that no part of the soil specimen projects beyond them.

4.1.2.3 Both platens may be prevented from tilting as shown in Figure 1, or one platen, usually the top platen, may be allowed to tilt, but neither of the platens shall be allowed to move horizontally.



Key

1 load frame
2 load measuring device
3 top platen
4 bottom platen
5 soil specimen
6 drive unit
7 axial compression measuring device

Figure 1 — Schematic drawing of a loading machine for performing unconfined compression tests

4.1.2.4 The drive unit shall move one of the platens with a constant speed, called the platen rate, which shall be within the ranges specified in 5.4. When the drive unit is set to advance the platen at a certain rate, the actual platen rate shall not deviate more than ± 20 % from the set value. The movement of the platen shall be smooth without fluctuations or vibrations.

4.1.3 Load measuring device

4.1.3.1 The force applied on the specimen shall be measured with an accuracy of ± 5 % or within ± 1N, whichever is the greater.

4.1.3.2 The compression of the load measuring device when the specimen fails, shall not exceed 10 mm.

4.1.3.3 If the load measuring device can be subjected to bending moments and/or horizontal forces (as it may be in the set up shown in Figure 1), the device shall be sufficiently insensitive to such factors that they can be neglected or accounted for.

4.1.4 Compression measuring device

4.1.4.1 The readability of the compression measuring device shall be better than 0,20 % of the initial specimen height.

4.1.4.2 The device, with its reading equipment, shall be readable to ± 0,030 % of the initial specimen height, and have a travel range of at least 20 % of the initial specimen height.

4.1.4.3 If only the travel of one platen (not the change in distance between the two platens as in Figure 1) is measured, the displacement of the other platen, if significant, shall be accounted for when calculating the compression of the specimen.