

ICS 93.020

English version

**Geotechnical investigation and testing - Laboratory testing of  
soil - Part 6: Fall cone test (ISO/TS 17892-6:2004)**

Reconnaissance et essais géotechniques - Essais de sol  
au laboratoire - Partie 6: Essai au cône (ISO/TS 17892-  
6:2004)

Goetechnische Erkundung und Untersuchung -  
Laborversuche an Bodenproben - Teil 6: Fallkegelversuch  
(ISO/TS 17892-6:2004)

This Technical Specification (CEN/TS) was approved by CEN on 20 October 2003 for provisional application.

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## Foreword

This document (CEN ISO/TS 17892-6:2004) 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 European Standard: 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.
- 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 specifies the laboratory determination of undrained shear strength of both undisturbed and remoulded specimen of saturated fine grained cohesive soils by use of a fall-cone.

This document specifies the fall-cone test, in which a cone is allowed to fall with its tip towards a soil specimen, whereupon the penetration of the cone into the soil is measured. Tests performed according to this test yield penetration values which can be used to estimate the undrained shear strength.

The test is applicable to both undisturbed and remoulded soil test specimen.

For undisturbed soil test specimen, the results of the test are dependent on the quality of the specimen. Because of possible effects of anisotropy, it can also differ depending on what undrained shear strength the relation refers to.

The evaluated value of the undrained shear strength of the 'undisturbed' soil refers to its state during the test in the laboratory. This value is not necessarily indicative of the undrained shear strength of the soil in its natural state in the field. Therefore, the test should be regarded as an index test.

NOTE 1 For non-homogeneous soil samples, this method yields values of the undrained shear strength which are less representative for the bulk shear strength of the sample than other tests involving a larger volume of soil.

NOTE 2 For disturbed soil samples and fissured soil samples this method normally yields higher strength values than tests involving a larger volume of soil.

## 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 terms and definitions apply.

### 3.1

#### undrained shear strength

$c_u$

the shear strength of a saturated fine grained soil determined in such a way that the soil remains undrained during the shearing process

### 3.2

#### fall-cone undrained shear strength

$c_{ufc}$

the undrained shear strength determined using a fall-cone apparatus

### 3.3

#### undisturbed sample

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