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English version

**Geotechnical investigation and testing - Laboratory testing of
soil - Part 9: Consolidated triaxial compression tests on water
saturated soil (ISO/TS 17892-9:2004)**

Reconnaissance et essais géotechniques - Essais de sol
au laboratoire - Partie 9 : Essai triaxial consolidé sur sols
saturés (ISO/TS 17892-9:2004)

Geotechnische Erkundung und Untersuchung -
Laborversuche an Bodenproben - Teil 9: Konsolidierte
triaxiale Kompressionsversuche an wassergesättigten
Böden (ISO/TS 17892-9:2004)

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

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Foreword

This document (CEN ISO/TS 17892-9:2004) 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 stress-strain relationships and effective stress paths for a cylindrical, water-saturated¹⁾ specimen of undisturbed, remoulded or reconstituted soil when subjected to an isotropic or an anisotropic stress under undrained or drained conditions and thereafter sheared under undrained or drained conditions within the scope of the geotechnical investigations according to prEN 1997-1 and -2. The test methods provide data that are appropriate to present tables and plots of stress versus strain, and effective stress paths.

Special procedures such as:

- a) Tests with lubricated ends;
- b) tests with local measurement of strain or local measurement of pore pressure;
- c) tests without rubber membranes;
- d) extension tests;
- e) shearing where cell pressure varies;
- f) shearing at constant volume (no pore pressure change)

are not covered.

The conventional triaxial apparatus is not well suited for measurement of the initial moduli at very small strains. However, strains halfway up to failure are considered to be large enough to be measured in conventional triaxial cells.

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 1997-2, *Eurocode 7: Geotechnical design - Part 2: Design assisted by laboratory testing*

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

3 Terms and definitions

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

3.1

CIU-test

isotropically consolidated undrained test

3.2

CAU-test

anisotropically consolidated undrained test

3.3

CID-test

isotropically consolidated drained test

1) Water saturated refers to the in-situ condition. The material tested need not necessarily be saturated at all stages during the laboratory testing.