

ICS 93.020

English version

**Geotechnical investigation and testing - Field testing - Part 11:
Flat dilatometer test (ISO 22476-11:2005)**

Reconnaissance et essais géotechniques - Essais en place
- Partie 11: Essai au dilatomètre plat (ISO 22476-11:2005)

Geotechnische Erkundung und Untersuchung -
Felduntersuchungen - Teil 11: Flachdilatometerversuch
(ISO 22476-11:2005)

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Foreword

This document (CEN ISO/TS 22476-11:2005) 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 CEN 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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EN ISO 22476 *Geotechnical investigation and testing - Field testing* has the following parts:

- Part 1: Electrical cone and piezocone penetration tests
- Part 2: Dynamic probing
- Part 3: Standard penetration test
- Part 4: Ménard pressuremeter test
- Part 5: Flexible dilatometer test
- Part 6: Self-boring pressuremeter test (TS)¹⁾
- Part 7: Borehole jack test
- Part 8: Full displacement pressuremeter test (TS)¹⁾
- Part 9: Field vane test
- Part 10: Weight sounding test (TS)¹⁾
- Part 11: Flat dilatometer test (TS)¹⁾
- Part 12: Mechanical cone penetration test
- Part 13: Plate loading test.

¹⁾ TS Technical Specification.

Introduction

The flat dilatometer test covers the determination of the in situ strength and deformation properties of fine grained soils using a blade shaped probe having a thin circular steel membrane mounted flush on one face.

Results of flat dilatometer tests are mostly to obtain information on soil stratigraphy, in situ state of stress, deformation properties and shear strength.

The basis of the test consists of inserting vertically into the soil a blade-shaped steel probe with a thin expandable circular steel membrane mounted flush on one face and determining, at selected depths or in a semi-continuous manner, the contact pressure exerted by the soil against the membrane when the membrane is flush with the blade and subsequently the pressure exerted when the central displacement of the membrane reaches 1,10 mm.

The flat dilatometer test is most appropriate in clays, silts and sands where particles are small compared to the size of the membrane.

1 Scope

This Technical Specification comprises requirements for ground investigations by means of the flat dilatometer test (DMT) as part of the geotechnical investigation services according to prEN 1997-1 and prEN 1997-2.

2 Normative references

Not applicable.

3 Terms and definitions

For the purposes of this Technical Specification, the following terms and definitions apply

3.1

dilatometer blade (dilatometer probe)

blade –shaped steel probe that is inserted into the soil to run a flat dilatometer test

3.2

membrane

circular steel membrane that is mounted flush on one face of the blade and is expanded when applying a gas pressure at its back

3.3

switch mechanism

apparatus housed inside the blade, behind the membrane, capable of activating and disconnecting an electric contact which in turn sets on and off an audio and/or visual signal when the membrane expands and reaches two preset deflections equal to 0,05 mm and 1,10 mm respectively

3.4

pneumatic-electric cable

cable that connects the control unit to the blade, delivers gas pressure at the back of the membrane, and provides electric continuity between the control unit and the switch mechanism

3.5

control and calibration unit

set of suitable devices capable of supplying gas pressure to the back of the membrane and measuring the pressure when the switch mechanism activates and disconnects the electric contact behind the membrane

3.6

earth wire

wire connecting the control unit to the earth

3.7

pressure source

pressurized gas tank filled with any dry nonflammable and noncorrosive gas

3.8

membrane calibration

procedure to determine the membrane calibration pressure equal to the suction and the pressure that is applied in air to the back of the membrane to retract its centre to 0,05 mm expansion or to expand it to 1,10 mm respectively