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**Geotechnical investigation and  
testing — Field testing —**

**Part 9:  
Field vane test (FVT and FVT-F)**

*Reconnaissance et essais géotechniques — Essais en place —  
Partie 9: Essai au scissomètre de chantier*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 182, *Geotechnics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 341, *Geotechnical Investigation and Testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 22476 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The field vane test is used to determine the vane shear strength of soils in the undrained condition, by insertion of a rectangular vane into fine-grained soil and rotating it. During the rotation, the torque and rotation can be measured, depending on the test configuration. From the measured torque and the dimensions of the vane, the peak shear strength, an indication of post-peak behaviour, and the remoulded shear strength can be derived by a limit equilibrium analysis. Soil sensitivity can be ascertained if peak and remoulded shear strengths have been determined.

The tests are carried out in boreholes, in trial pits and with pushed-in equipment. The torque and rotation are measured either above the ground surface using extension rods, or directly above the vane.

The field vane test is mainly applicable to saturated fine-grained soil. The vane shear strength determined by the test is commonly corrected before geotechnical analysis, using factors based on local experience.

# Geotechnical investigation and testing — Field testing —

## Part 9: Field vane test (FVT and FVT-F)

### 1 Scope

This document deals with the equipment requirements, execution and reporting of field vane tests for the measurement of peak and remoulded vane shear strength together with the sensitivity of fine-grained soils. In addition, post-peak shear strength behaviour can be evaluated. Two types of field vane test are described: the ordinary field vane test (FVT) and the fast field vane test (FVT-F).

The uncertainties of the vane test result are described in [Annex D](#).

NOTE 1 This document fulfils the requirements for field vane tests as part of the geotechnical investigation and testing according to EN 1997-1 and EN 1997-2.

NOTE 2 This document covers onshore and nearshore field vane testing.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 10012, *Measurement management systems — Requirements for measurement processes and measuring equipment*

### 3 Terms, definitions and symbols

#### 3.1 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

##### 3.1.1

##### **cased extension rod**

extension rod that is sleeved inside of *protective casings* ([3.1.11](#)) during *vane* ([3.1.23](#)) testing

##### 3.1.2

##### **cased borehole**

borehole that is cased to prevent collapse and minimize friction between the extension rods and soil

##### 3.1.3

##### **centralizer**

equipment to keep the extension rods straight and prevent buckling