

ICS 13.080.99; 93.020

English Version

Earthworks - Chemical tests - Part 2: Determination of  
organic matter content by potassium permanganate  
method

Terrassements - Essais chimiques - Partie 2 :  
Détermination de la teneur en matière organique par  
méthode au permanganate de potassium

Erdarbeiten - Chemische Laborversuche - Teil 2:  
Bestimmung der organischen Anteile durch das  
Kaliumpermanganat-Verfahren

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## European foreword

This document (CEN/TS 17685-2:2024) has been prepared by Technical Committee CEN/TC 396 “Earthworks”, the secretariat of which is held by AFNOR.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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## Introduction

This document describes a method for the determination of the oxidizable organic matter content of a soil, which is mainly composed of fresh organic matter and fulvic and humic acids, by means of a chemical back titration with potassium permanganate.

This method is an alternative to loss on ignition (*LOI*) method for the determination of the organic matter content, but not same results as with the *LOI* method.

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## 1 Scope

This document describes a method for the determination of the oxidizable organic matter content of a soil, which is mainly composed of fresh organic matter and fulvic and humic acids, by back titration with potassium permanganate.

The result obtained with this technical specification is not comparable with those obtained by EN 17685-1:2023 (loss on ignition).

## 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.

EN 1997-2, *Eurocode 7 — Geotechnical design — Part 2: Ground investigation and testing*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310-2, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

## 3 Terms and definitions

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

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

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

### 3.1

#### constant mass

successive weightings after drying at least 1h apart not differing by more than 0,1 %

## 4 Abbreviations and symbols

For the purposes of this document, the following abbreviations and symbols apply.

$\% C_{OM}$	Organic matter content	dimensionless (%)
$f_{KMnO_4}$	normality factor of 0,1 N permanganate solution	dimensionless
$f_{H_2C_2O_4}$	normality factor of 0,1 N oxalic acid solution	dimensionless
$m_{bi}$	mass of oxalate portion i in the determination of the normality factor of permanganate solution	g
$V_{bi}$	volume of permanganate solution spent in its titration with the oxalate portion i	ml
$V_C$	volume of permanganate solution spent in the titration of the oxalic solution	ml