

Soil quality - Determination of particle density (ISO
11508:2017)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 11508:2017 sisaldab Euroopa standardi EN ISO 11508:2017 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 11508:2017 consists of the English text of the European standard EN ISO 11508:2017.
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English Version

Soil quality - Determination of particle density (ISO
11508:2017)

Qualité du sol - Détermination de la masse volumique
des particules (ISO 11508:2017)

Bodenbeschaffenheit - Bestimmung der Kornrohddichte
(ISO 11508:2017)

This European Standard was approved by CEN on 23 August 2017.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN ISO 11508:2017) has been prepared by Technical Committee ISO/TC 190 “Soil quality” in collaboration with Technical Committee CEN/TC 444 “Test methods for environmental characterization of solid matrices” the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

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.

This document supersedes EN ISO 11508:2014.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 11508:2017 has been approved by CEN as EN ISO 11508:2017 without any modification.

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical methods and soil characteristics*.

This second edition cancels and replaces the first edition (ISO 11508:1998), which has been technically revised.

The main changes compared to the previous edition are as follows:

- a) the terms and definitions have been updated;
- b) a new subclause 4.3 "Unified reference temperature" was added;
- c) a new subclause 4.4 "Calculation of mean particle density" was added;
- d) Table 1, "Density of water...", was deleted under 4.1.4;
- e) a new Annex A "Density of water at different temperatures" was added;
- f) bibliographic references were added;
- g) editorial changes were made.

Introduction

This document specifies the particle density (ρ_s) which is used together with the dry bulk density ($^b\rho_s$, see ISO 11272) for the calculation of the pore volume of a soil layer.

Soil quality — Determination of particle density

1 Scope

This document specifies two methods for the determination of particle density of soils calculated from the mass and the volume of soil particles.

The first method (4.1) is applicable to fine soil (<2 mm diameter) and the second method (4.2) is applicable to both porous and nonporous gravel and stones (>2 mm diameter).

The particle density can be used for the calculation of the proportion of solids and of the porosity of soil layers in combination with the procedure given in ISO 11272.

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 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 11461, *Soil quality — Determination of soil water content as a volume fraction using coring sleeves — Gravimetric method*

3 Terms and definitions

For the purposes of this document, the following terms and definition 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

particle density

ratio of the total mass of oven-dry solid particles, e.g. minerals or organic matter, to the volume of these particles

Note 1 to entry: The volume comprises internal pores of soil particles but pore spaces between particles are excluded.

Note 2 to entry: The preferred SI unit of measurement is kilograms per cubic metre ($\text{kg} \cdot \text{m}^{-3}$) but grams per cubic centimetre ($\text{g} \cdot \text{cm}^{-3}$) is also very common. Note that $x \text{ g} \cdot \text{cm}^{-3} = 1\,000 \cdot x \text{ kg} \cdot \text{m}^{-3}$.

4 Procedure

4.1 Fine soil (<2 mm diameter)

4.1.1 Principle

The mass of a portion of soil is determined by weighing. The volume of the soil is calculated from the mass and the density of water displaced by the sample in a pycnometer.