

**SLOVENSKI STANDARD
SIST EN ISO 14688-2:2004****01-december-2004**

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Geotechnical investigation and testing - Identification and classification of soil - Part 2:
Principles for a classification (ISO 14688-2:2004)

Geotechnische Erkundung und Untersuchung - Benennung, Beschreibung und
Klassifizierung von Boden - Teil 2: Grundlagen für Bodenklassifizierung (ISO 14688-
2:2004)

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Reconnaissance et essais géotechniques - Dénomination, description et classification
des sols - Partie 2: Principes pour une classification (ISO 14688-2:2004)

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Ta slovenski standard je istoveten z: EN ISO 14688-2:2004

ICS:

13.080.05	Preiskava tal na splošno	Examination of soils in general
93.020	Zemeljska dela. Izkopavanja. Gradnja temeljev. Dela pod zemljo	Earthworks. Excavations. Foundation construction. Underground works

SIST EN ISO 14688-2:2004**en**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 14688-2

July 2004

ICS 93.020

English version

**Geotechnical investigation and testing - Identification and
classification of soil - Part 2: Principles for a classification (ISO
14688-2:2004)**

Reconnaissance et essais géotechniques - Dénomination,
description et classification des sols - Partie 2: Principes
pour une classification (ISO 14688-2:2004)

Geotechnische Erkundung und Untersuchung -
Benennung, Beschreibung und Klassifizierung von Boden -
Teil 2: Grundlagen von Bodenklassifizierung (ISO 14688-
2:2004)

This European Standard was approved by CEN on 24 June 2004.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN ISO 14688-2:2004 (E)**Foreword**

This document (EN ISO 14688-2:2004) has been prepared by Technical Committee ISO/TC 182 "Geotechnics" in collaboration with Technical Committee CEN/TC 341 "Geotechnical Investigation and Testing", the secretariat of which is held by DIN.

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 January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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.

Endorsement notice

The text of ISO 14688-2:2004 has been approved by CEN as EN ISO 14688-2:2004 without any modifications.

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INTERNATIONAL STANDARD

ISO
14688-2

First edition
2004-07-15

Geotechnical investigation and testing — Identification and classification of soil — Part 2: Principles for a classification

*Reconnaissance et essais géotechniques — Dénomination, description
et classification des sols —
Partie 2: Principes pour une classification*

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Reference number
ISO 14688-2:2004(E)

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Published in Switzerland

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ISO 14688-2:2004(E)

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 14688-2 was prepared by Technical Committee ISO/TC 182, *Geotechnics*, Subcommittee SC 1, *Geotechnical investigation and testing*.

ISO 14688 consists of the following parts, under the general title *Geotechnical investigation and testing — Identification and classification of soil*:

- *Part 1: Identification and description* [SIST EN ISO 14688-2:2004](https://standards.iteh.ai/catalog/standards/sist/4179030-59a7-4e9a-bdd1-7111dd9c0be2/sist-en-iso-14688-2-2004)
- *Part 2: Principles for a classification* <https://standards.iteh.ai/catalog/standards/sist/4179030-59a7-4e9a-bdd1-7111dd9c0be2/sist-en-iso-14688-2-2004>
- *Part 3: Electronic exchange of data on identification and description of soil*

Geotechnical investigation and testing — Identification and classification of soil —

Part 2: Principles for a classification

1 Scope

This part of ISO 14688, together with ISO 14688-1, establishes the basic principles for the identification and classification of soils on the basis of those material and mass characteristics most commonly used for soils for engineering purposes. The relevant characteristics may vary and therefore, for particular projects or materials, more detailed subdivisions of the descriptive and classification terms may be appropriate.

Identification and description of soil are covered by ISO 14688-1.

The classification principles established in this part of ISO 14688 permit soils to be grouped into classes of similar composition and geotechnical properties and, with respect to their suitability for geotechnical engineering purposes, such as

- foundations,
- ground improvements,
- roads,
- embankments,
- dams, and
- drainage systems.

This part of ISO 14688 is applicable to natural soil and similar man-made material *in situ* and redeposited, but it is not a classification of soil by itself.

Identification and description of rock are covered by ISO 14689-1.

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.

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*

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ISO 14688-1, *Geotechnical investigation and testing — Identification and classification of soil — Part 1: Identification and description*

ISO 14689-1, *Geotechnical investigation and testing — Identification and classification of rock — Part 1: Identification and description*

3 Terms and definitions

For the purposes of this document, the terms and definitions of ISO 14688-1 and the following apply.

3.1**soil classification**

assignment of soil into soil groups on the basis of certain characteristics, criteria and genesis

3.2**soil group**

a particular collection of soils of similar composition and geotechnical properties

3.3**uniformity coefficient**
 C_U

measure of the shape of the grading curve within the range from d_{10} to d_{60}

$$C_U = d_{60}/d_{10}$$

NOTE d_{10} and d_{60} are the particle sizes corresponding to the ordinates 10 % and 60 % by mass of the percentage passing.

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3.4**coefficient of curvature**
 C_C

measure of the shape of the grading curve within the range from d_{10} , d_{30} to d_{60}

$$C_C = (d_{30})^2/(d_{10} \cdot d_{60})$$

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3.5**water content**
 w

mass of water which can be removed from the soil, usually by drying, expressed as a percentage of the dry mass

3.6**liquid limit**
 w_L

water content at which a fine soil passes from the liquid to the plastic condition, as determined by the liquid limit test

3.7**plastic limit**
 w_P

water content at which a fine soil becomes too dry to be in a plastic condition, as determined by the plastic limit test

3.8**plasticity index**
 I_P

numerical difference between the liquid limit and plastic limit of a fine soil

$$I_P = w_L - w_P$$

3.9**liquidity index** I_L

numerical difference between the natural water content and the plastic limit expressed as a percentage ratio of the plasticity index

$$I_L = (w - w_p)/I_p$$

3.10**consistency index** I_C

numerical difference between the liquid limit and the natural water content expressed as a percentage ratio of the plasticity index

$$I_C = (w_L - w)/I_p$$

3.11**density index** I_D

(coarse soils (sands and gravels)) index dependent upon the void ratio (e) and the void ratios corresponding to the minimum density (e_{\max}) and the maximum density (e_{\min}), as measured in the laboratory

$$I_D = (e_{\max} - e)/(e_{\max} - e_{\min})$$

3.12**undrained shear strength** c_u

shear resistance of soil in the undrained condition

3.13**void ratio**

ratio of the volume of voids to the volume of solids of a soil

3.14**compressibility index** C_c

compressibility index is defined according to the relation

$$C_c = - \frac{\Delta e}{\lg[(\sigma' + \Delta\sigma')/\sigma']} = - \frac{\Delta e}{\Delta(\lg \sigma')}$$

NOTE Δe is the change in void ratio (negative value when Δe decreases) and $\frac{\Delta e}{\Delta(\lg \sigma')}$ is the change in void ratio Δe for a relative increase of effective stress from $\lg \sigma'$ to $\lg(\sigma' + \Delta\sigma')$.

4 Principles of soil classifications**4.1 General**

Soils shall be classified into soil groups on the basis of their nature which is the composition only, irrespective of their water content or compactness, taking into account the following characteristics:

- particle size distribution (grading);
- plasticity;
- organic content;
- genesis.

NOTE Some principles for soil classification are given in Annex A.