

STN	Charakterizácia pôdy a odpadov Teplotne závislá diferenciácia celkového uhlíka (TOC400, ROC, TIC900)	STN EN 17505 83 8241
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Soil and waste characterization - Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Soil and waste characterization - Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900)

Caractérisation des sols et des déchets - Différentiation
en fonction de la température du carbone total
(COT400, COR, CIT900)

Boden- und Abfallbeschaffenheit -
Temperaturabhängige Unterscheidung von
Gesamtkohlenstoff (TOC400, ROC, TIC900)

This European Standard was approved by CEN on 16 July 2023.

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

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European foreword

This document (EN 17505:2023) has been prepared by Technical Committee CEN/TC 444 “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of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

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FprEN 17505:2023 (E)**Introduction**

Carbon occurs in soils and materials similar to soil in a variety of compounds and forms. When determining carbon in soils or soil-like materials, an overall determination of the different mass fractions is most feasible. The summarized declaration of carbon is yet done by differentiating organic and inorganic carbon (EN 15936, ISO 10694). In the proportion classified as “organic carbon”, a fraction of very stable highly aromatic and highly condensed carbon compounds can be present, sometimes in significant mass fractions. Since this black (pyrogenic) carbon is only very slowly decomposed and released, its environmental relevance has to be differently evaluated than the proportions of organic carbon which are faster chemical-biologically decomposed. The environmental relevance is estimated if e.g. the suitability of soils and soil-like materials for disposal in landfill is assessed. For a differentiated assessment, a separate declaration of the different mass fractions of organic, black (pyrogenic) and inorganic carbon is necessary. Using the specified temperature-gradient method and utilizing the combustion characteristic(s), the carbon fractions established according to this standard in soil and soil-like materials can be differentiated.

In respect of the hazard potential, the content of solely organically bonded carbon in solids determined with the described method can be important for disposal and/or recycling.

The method has been validated with the materials listed in Table 1, see also Annex A.

Table 1 — Materials used for validation

Material type	Materials used for validation
soils from natural material	mineral soils soil with anthropogenic admixtures (urban soils)
tailing material (tailings)	tailing material from coal mining
sediment	sediment
waste	waste incineration ash foundry sand construction waste

1 Scope

This document specifies a method for the differentiated determination of the organic carbon content (TOC₄₀₀) which is released at temperatures up to 400 °C, the residual oxidizable carbon (ROC) (including e.g. lignite (brown coal), hard coal, charcoal, black carbon, soot) and the inorganic carbon (TIC₉₀₀) which is released at temperatures up to 900 °C.

The basis is the dry combustion or decomposition of carbon to CO₂ in the presence of oxygen or non-oxygen conditions using temperatures ranging from 150 °C to 900 °C in dry solid samples of sediment, soil, soil with anthropogenic admixtures and solid waste (see Table 1) with carbon contents of more than 1 g per kg (0,1 % C) (per carbon type in the test portion).

NOTE TIC₉₀₀ includes the TIC measured after acid addition e.g. by ISO 10694 or EN 15936. TOC₄₀₀ is a fraction of TOC measured according to e.g. ISO 10694 or EN 15936.

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 16179, *Sludge, treated biowaste and soil - Guidance for sample pretreatment*

EN 15002, *Characterization of waste - Preparation of test portions from the laboratory sample*

ISO 11464, *Soil quality — Pretreatment of samples for physico-chemical analysis*

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