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Soil and waste characterization — Temperature dependent differentiation of total carbon (TOC_{400}, ROC, TIC_{900})

Caractérisation des sols et des déchets — Différenciation en fonction de la température du carbone total (COT_{400}, COR, CIT_{900})

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Foreword

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This document was prepared by the European Committee for Standardization (CEN) (as EN 17505:2023) and was adopted, without modifications other than those given below, by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical and physical characterization* under the fast-track procedure.

— EN ISO 10693 references have been changed to ISO 10693;

— EN 15936 has been added to the Bibliography;

— cross references in 6.2 have been corrected.

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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