

STN	Zemina, odpady, upravené bioodpady a kaly Stanovenie celkového organického uhlíka (TOC) suchým spaľovaním	STN EN 15936 83 8461
------------	--	--

Soil, waste, treated biowaste and sludge - Determination of total organic carbon (TOC) by dry combustion

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/22

Obsahuje: EN 15936:2022

Oznámením tejto normy sa ruší
STN EN 15936 (83 8461) z februára 2013

134745

EUROPEAN STANDARD

EN 15936

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2022

ICS 13.030.01; 13.080.10

Supersedes EN 15936:2012

English Version

Soil, waste, treated biowaste and sludge - Determination of total organic carbon (TOC) by dry combustion

Sols, déchets, biodéchets traités et boues - Dosage du carbone organique total (COT) par combustion sèche

Boden, Abfall, behandelter Bioabfall und Schlamm - Bestimmung des gesamten organischen Kohlenstoffs (TOC) mittels trockener Verbrennung

This European Standard was approved by CEN on 19 December 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 15936:2022 (E)

Contents	Page
European foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Principle	6
4.1 Method A (indirect procedure)	6
4.2 Method B (direct procedure)	7
5 Interferences	7
6 Reagents	7
7 Apparatus.....	8
8 Sample pre-treatment	8
9 Procedure – Method A (indirect method)	9
9.1 Determination	9
9.1.1 General.....	9
9.1.2 Determination of the TC	9
9.1.3 Determination of the TIC.....	9
9.2 Calibration	10
9.3 Control measurements.....	10
9.4 Calculation and expression of results.....	11
10 Procedure Method B (direct method).....	12
10.1 Determination	12
10.1.1 General.....	12
10.1.2 Removal of the inorganic carbon and determination of the TOC	12
10.2 Calibration	12
10.3 Control measurements.....	13
10.4 Calculation and expression of results.....	13
11 Performance data.....	14
12 Expression of results.....	14
13 Test report.....	14
Annex A (informative) Repeatability and reproducibility data	15
A.1 Materials used in the interlaboratory comparison study	15
A.2 Interlaboratory results	16
Annex B (informative) Factors influencing dry combustion methods.....	19
B.1 Influence of temperature and modifiers on the decomposition of barium carbonate as an example for a refractory compound	19
B.2 Recovery of the control mixture A	19

B.3	Influence of aluminium oxide or sodium sulfate used for sample preparation for the recovery of TOC	20
B.4	Influence of TIC:TOC ratio on the recovery and the coefficient of variation.....	21
B.5	Method B: Influence of the temperature during the removal of inorganic carbon on the recovery of TOC.....	22
	Bibliography	23

EN 15936:2022 (E)**European foreword**

This document (EN 15936:2022) 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 August 2022, and conflicting national standards shall be withdrawn at the latest by month August 2022.

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 15936:2012.

This document combines methods from EN 15936:2012 and EN 13137:2001.

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

- New composition of the substances in control mixture A (6.10) was defined and the recovery requirement (9.3) was adapted to the results of a lab trial;
- Annex C - “Determination of total organic carbon (TOC) in solid samples using the suspension method” was skipped;
- The text was editorially revised.

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.

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

Introduction

This document is applicable and validated for several types of matrices as indicated in Table 1 (see also Annex A for the results of the validation). The results in this document are expressed in % C in relation to the dry mass (dm).

Table 1 — Matrices for which this document is applicable and validated

Matrix	Materials used for validation
Sludge	Municipal sludge
Biowaste	Compost, Fresh Compost
Soil	Sludge amended soil, Agricultural soil
Waste	Filter cake, Bottom ash, Electro-plating sludge, Dredged sludge, Rubble

WARNING — Persons using this document should be familiar with usual laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices.

IMPORTANT — It is absolutely essential that tests conducted according to this document be carried out by suitably trained staff.

EN 15936:2022 (E)**1 Scope**

This document specifies two methods for the determination of total organic carbon (TOC) in sludge, treated biowaste, soil and waste samples containing more than 0,1 % carbon in relation to the dry mass (dm).

NOTE This method can also be applied to other environmental solid matrices, provided the user has verified the applicability.

2 Normative references

There are no normative references in this document.

koniec náhľadu – text ďalej pokračuje v platenej verzii STN