TECHNICAL SPECIFICATION

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CEN/TS 15937

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English Version

Sludge, treated biowaste and soil - Determination of specific electrical conductivity

Boues, biodéchets traités et sols - Détermination de la conductivité électrique spécifique

Schlamm, behandelter Bioabfall und Boden - Bestimmung der spezifischen elektrischen Leitfähigkeit

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Foreword

This document (CEN/TS 15937:2013) has been prepared by Technical Committee CEN/TC 400 “Project Committee - Horizontal standards in the fields of sludge, biowaste and soil”, the secretariat of which is held by DIN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

The preparation of this document by CEN is based on a mandate by the European Commission (Mandate M/330), which assigned the development of standards on sampling and analytical methods for hygienic and biological parameters as well as inorganic and organic determinants, aiming to make these standards applicable to sludge, treated biowaste and soil as far as this is technically feasible.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The determination of the specific electrical conductivity is carried out to obtain an indication of the content of water-soluble electrolytes in soil, treated biowaste and sludge.

WARNING — Persons using this Technical Specification should be familiar with usual laboratory practice. This Technical Specification 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 and to ensure compliance with any national regulatory conditions.

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

1 Scope

This Technical Specification specifies a method for the determination of the specific electrical conductivity in aqueous suspensions of sludge (fresh), treated biowaste (fresh) or soil (fresh or air-dry).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 ISO 3696, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
electrical conductivity
specific conductance
EC
reciprocal of the resistance, measured under specified conditions, between the opposite faces of a unit cube of defined dimensions of an aqueous solution

Note 1 to entry: This is often expressed as “electrical conductivity” and may be used as a measure of the concentration of ionisable solutes present in the sample.

Note 2 to entry: The electrical conductivity is expressed in siemens per metre (S/m).

Note 3 to entry: Adapted from ISO 6107-2:2006, 130.

4 Principle

Either fresh sludge, fresh treated biowaste or air-dried (or fresh) soil is extracted with water at a ratio of 1:5 (m/V). Liquid sludge is measured without adding water. The specific electrical conductivity of the filtered extract is measured at room temperature and the result is corrected to a temperature of 25 °C.

5 Interferences

The measured values of the specific electrical conductivity can be influenced by contamination of the electrodes. Air bubbles on the electrodes perturb the measurements. Measurements < 1 mS/m are influenced by gaseous carbon dioxide (CO_2) or ammonia (NH_3) from the atmosphere. Other sources of error are associated with materials containing sulfidic minerals or volatile acids.

6 Reagents

Use only reagents of recognised analytical grade.