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Liming materials - Determination of product effect on soil pH - Soil incubation method

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

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English Version

Liming materials - Determination of product effect on soil pH - Soil incubation method

Amendements minéraux basiques - Détermination de l'effet d'un produit sur le pH d'un sol - Méthode par incubation du sol

Kalkdünger - Bestimmung des Produkteinflusses auf den Boden-pH-Wert - Bodeninkubationsverfahren

This European Standard was approved by CEN on 19 May 2016.

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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

European foreword ... 4
Introduction ... 5
1 Scope ... 6
2 Normative references ... 6
3 Terms and definitions ... 7
4 Principle ... 9
4.1 General ... 9
4.2 Method A ... 9
4.3 Method B ... 9
5 Method A ... 10
5.1 Reagents and materials ... 10
5.1.1 Reference soil, ... 10
5.1.2 Reference liming material (RLM), ... 10
5.1.3 Water, ... 10
5.2 Apparatus ... 10
5.2.1 Temperature-controlled room, ... 10
5.2.2 pH meter, ... 10
5.2.3 Beakers, ... 10
5.2.4 Pots, ... 10
5.2.5 Volumetric spoons, ... 10
5.2.6 Magnetic stirrer ... 10
5.2.7 Balance, ... 10
5.2.8 Precision balance, ... 10
5.2.9 Test sieves, ... 11
5.3 Sampling of products and sample preparation ... 11
5.4 Procedure ... 11
5.4.1 Preparation of the standard soil ... 11
5.4.2 Test portions ... 11
5.4.3 Preparation of pots ... 11
5.4.4 Incubation ... 12
5.4.5 pH measurements ... 12
5.5 Expression of results ... 12
5.6 Precision ... 14
5.6.1 General ... 14
5.6.2 Repeatability ... 14
5.6.3 Reproducibility ... 15
6 Method B ... 17
6.1 Reagents and materials ... 17
6.1.1 Standard soil, ... 17
6.1.2 Alternative standard soils, ... 18
6.1.3 Reference liming material, ... 18
6.1.4 Water, ... 18
6.2 Apparatus ... 18
6.2.1 Temperature-controlled room, ... 18

6.2.2 pH meter, ... 18
6.2.3 Beakers, ... 19
6.2.4 Pots, ... 19
6.2.5 Volumetric spoons, ... 19
6.2.6 Magnetic stirrer 19
6.2.7 Balance, ... 19
6.2.8 Precision balance, ... 19
6.2.9 Test sieves, ... 19
6.3 Sampling of products and sample preparation 19
6.4 Procedure 19
6.4.1 Preparation of the standard soil 19
6.4.2 Test portions 20
6.4.3 Preparation of pots 20
6.4.4 Incubation 21
6.4.5 pH measurements 21
6.5 Expression of results 21
6.5.1 pH measurements 21
6.5.2 Soil-lime efficiency data 21
6.6 Precision 22
6.6.1 General 22
6.6.2 Repeatability 22
6.6.3 Reproducibility 23
7 Test report 26
Annex A (informative) Variations to the test methods 27
A.1 General 27
A.2 Variations 27
A.2.1 Different measurement periods 27
A.2.2 Supply of different amounts 27
A.2.3 Soil different from the standard soil 27
A.2.4 Different incubation temperature 28
A.2.5 Additional measurements 28
Annex B (normative) Determination of moisture at full soil water holding capacity 29
Bibliography 31

European foreword

This document (EN 14984:2016) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials”, 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 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

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 14984:2006.

The following changes have been made to the former edition:

a) effective neutralizing value by incubation (*ENVI*) added as alternative way for the expression of results;

b) Formula for calculation of *ENVI* for method A added;

c) Formula for calculation of *ENVI* for method B added;

d) editorially revised.

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, 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 chemical methods for determining the neutralizing value (*NV*) (see EN 12945) and the reactivity (see EN 13971 and EN 16357) of liming materials are not always appropriate indicators for any material claimed to have a liming effect in the soil, particularly materials with a high organic matter content.

The biological mineralization of organic matter contained in some products can, in the field, have an effect on pH, which cannot be quantified by the chemical methods.

The two methods described in this document overcome these problems.

Both methods characterize products through their effect on the pH of a soil under controlled, standard conditions, and establish the efficiency of products when applied to a standard soil.

Method A specifies a reference soil with tight characteristics with respect to pH range before incubation, cation exchange capacity (CEC), mass fraction of organic carbon, and mass fraction of particles finer than 0,002 mm (clay).

Method B can apply the same reference soil as Method A, but also allows alternative standard soils with a wider content of particles finer than 0,002 mm (clay), and a wider range of mass fraction of organic matter. Clay and organic matter are the decisive reactants to a liming material

However, attention is drawn to the limitations of these methods. They are laboratory methods carried out under controlled conditions and care should be taken when applying the results to field conditions. The quality of incorporation of the liming material into the soil and the eventual need to break down the product agglomerates, together with the soil and climate conditions, can affect the results. Nevertheless, these methods allow a comparison of the potential neutralizing effect of liming products under optimum and reproducible conditions.

1 Scope

This document specifies two methods (method A and method B) of measuring the effect of the addition of any material claimed to have a liming effect on the soil, using the same basic principles.

Method A measures the changes to the soil pH resulting from the addition of any material claimed to have a liming effect on a standard soil, measured over a period of one month.

Method B assesses the efficiency of any material claimed to have a liming effect, using a range of defined soils and measured over a period of up to 2,5 years.

The methods are not applicable to mineral products coarser than 6,3 mm for method A or 20 mm for method B, determined according to EN 12948.

NOTE These methods allow comparison of products under controlled climatic conditions but do not replace field experiments.

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 1482-1, *Fertilizers and liming materials - Sampling and sample preparation - Part 1: Sampling*

EN 1482-3, *Fertilizers and liming materials — Sampling and sample preparation — Part 3: Sampling of static heaps*

EN 12048, *Solid fertilizers and liming materials - Determination of moisture content - Gravimetric method by drying at (105 +/- 2)°C (ISO 8190:1992 modified)*

EN 12049, *Solid fertilizers and liming materials - Determination of moisture content - Gravimetric method by drying under reduced pressure (ISO 8189:1992 modified)*

EN 12945, *Liming materials - Determination of neutralizing value - Titrimetric methods*

EN 12948, *Liming materials - Determination of size distribution by dry and wet sieving*

EN 13040, *Soil improvers and growing media - Sample preparation for chemical and physical tests, determination of dry matter content, moisture content and laboratory compacted bulk density*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

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*

ISO 10390:2005, *Soil quality — Determination of pH*

ISO 11272, *Soil quality — Determination of dry bulk density*

ISO 11277, *Soil quality — Determination of particle size distribution in mineral soil material — Method by sieving and sedimentation*

ISO 11465, *Soil quality — Determination of dry matter and water content on a mass basis — Gravimetric method*

ISO 14235, *Soil quality — Determination of organic carbon by sulfochromic oxidation*

NF X31-130, Soil quality — Chemical methods — Determination of the cationic exchange capacity (CEC) and extractible cations (buffered at pH = 7, Metson method)[1)]

1) No international buffered method is available at pH = 7. As soon as an International Standard is available for cation exchange capacity buffered at pH = 7, it will replace the NF X 31-130.