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BSI Standards Publication

Liming materials – Determination of the lime requirement in soil – Ammonium acetate buffer method pH 5,5

National foreword

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English Version

Liming materials - Determination of the lime requirement in soil - Ammonium acetate buffer method pH 5,5

Amendements minéraux basiques - Détermination du besoin en chaux d'un sol - Méthode tampon d'acétate d'ammonium pH 5,5

Kalkdünger — Bestimmung des Kalkbedarfs von Böden — Ammoniumacetat-Pufferverfahren pH 5,5

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European foreword

This document (CEN/TS 17338:2019) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials”, the secretariat of which is held by DIN.

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Introduction

pH target levels for liming of soils depend on soil types, crops to be grown and regional climatic conditions.

When pH targets have been fixed under each condition, this buffer method can be used, in addition to determine total soil acidity, to predict the amount of an effective liming material to be used to achieve this required lime status, irrespective of soil type. The buffer method will reveal the buffering capacity of any soil prior to its admixture of a liming material.

1 Scope

This document specifies a method for the determination of the lime requirement of acid soils to target pH levels at requested time of maintenance as determined by reaction with 0,1 mol/l ammonium acetate pH 5,5.

Due to general soil buffering systems, the method is applicable to all soils which are acid enough to dissociate hydrogen ions from the soil colloid system to depress the pH of the buffer solution.

NOTE 1 The method originates from research in Canada and Norway, see [1] and [2].

NOTE 2 Annex A gives regression equations to predict the maintenance of a range of pH levels at different times after liming in mineral and organic soils in Europe.

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 12944-3, *Fertilizers and liming materials — Vocabulary — Part 3: Terms relating to liming materials*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12944-3 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp/

4 Principle

The acidity of a test portion of the soil sample is liberated by reaction with an aliquot of ammonium acetate pH 5,5, corresponding to the immediate lime requirement to achieve soil neutrality or another defined pH target. To determine the lime requirement in the field the density of the soil is measured simultaneously in the laboratory.

5 Reagents

All reagents shall be of recognized analytical grade unless otherwise stated.

5.1 Water, grade 3 according to EN ISO 3696.

5.2 Hydrochloric acid solution, c = 0,1 mol/l.

5.3 Sodium hydroxide solution, c = 0,1 mol/l.