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Fertilizers and liming materials - Determination of carbon dioxide - Part 1: Method for solid fertilizers

Engrais et amendements minéraux basiques - Détermination de la teneur en dioxide de carbone - Partie 1: Méthode applicable aux engrais solides

Düngemittel und Calcium-/Magnesium-Bodenverbesserungsmittel - Bestimmung von Kohlenstoffdioxid - Teil 1: Verfahren für feste Düngemittel

This Technical Specification (CEN/TS) was approved by CEN on 12 April 2004 for provisional application.

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Foreword

This document (CEN/TS 14397-1:2004) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials”, the secretariat of which is held by DIN.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EN 14397 "Fertilizers and liming materials — Determination of carbon dioxide" consists of two parts:

— Part 1: Method for solid fertilizers and liming materials

— Part 2: Method for liming materials

1 Scope

This document specifies a method for the determination of carbon dioxide in solid fertilizers.

The method applies to all fertilizers that contain carbonates and/or bicarbonates.

NOTE If the fertilizer contains any other substances that release carbon dioxide on treatment with phosphoric acid, this will also be determined and expressed as carbon dioxide.

2 Normative references

The following referenced documents are indispensable for the application 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 1482, *Sampling of solid fertilizers and liming materials.*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987).*

3 Principle

The carbon dioxide is liberated by treatment with phosphoric acid and absorbed in a solution of barium hydroxide. Barium carbonate precipitates and the excess barium hydroxide is back-titrated with hydrochloric acid.

4 Reagents

4.1 General

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only water conforming to EN ISO 3696, grade 3. Boil the water immediately before use, to drive off any dissolved carbon dioxide.

4.2 Nitrogen, with a low content of carbon dioxide and organic impurities.

4.3 Hydrochloric acid, standard volumetric solution, $c(HCl)$ = 0,1 mol/l.

4.4 Barium hydroxide, standard volumetric solution, $c(Ba(OH)_2)$ = 0,05 mol/l approximately.

Standardize the barium hydroxide solution by titrating against the hydrochloric acid solution (4.3), using the phenolphthalein solution (4.6) as indicator.

NOTE The barium hydroxide solution should be stored so that absorption of carbon dioxide from the atmosphere is not possible (see Figure 1).

4.5 Phosphoric acid, with a volume concentration of 500 ml/l.

4.6 Phenolphthalein solution.

5 Apparatus

Usual laboratory apparatus and the following are required.