SLOVENSKI STANDARD
SIST EN 12049:1999

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Trdna gnojila in sredstva za apnjenje - Določevanje vlage - Gravimetrična metoda sušenja pri znižanem tlaku (modificiran ISO 8189:1992)

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

Feste Düngemittel und Calcium-/Magnesium-Bodenverbesserungsmittel - Bestimmung des Feuchtegehaltes - Gravimetrisches Verfahren durch Trocknung unter reduziertem Druck (ISO 8189:1992 modifiziert)

Engrais solides et amendements calciques et/ou magnésiens - Détermination de la teneur en eau - Méthode gravimétrique par séchage sous pression réduite (ISO 8189:1992 modifiée)

Ta slovenski standard je istoveten z: **EN 12049:1996**

ICS:

65.080 Gnojila Fertilizers

SIST EN 12049:1999 **en**

EUROPEAN STANDARD

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EN 12049

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English version

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

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This European Standard was approved by CEN on 1996-03-06. 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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

The text of the International Standard from technical committee ISO/TC 134 " Fertilizers and soil conditioners" of the International Organisation for Standardization (ISO) has been taken over as a European Standard by the Technical Committee CEN/TC 260 "Fertilizers and liming materials" the secretariat of which is held by AFNOR.

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 March 1997, and conflicting national standards shall be withdrawn at the latest by March 1997.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of International Standard ISO 8189:1992 was approved by CEN as a European Standard with agreed common modifications as given below :

- the title and scope have been extended to include liming materials ;

- in the list of fertilizers to which the method is not applicable the reference to magnesium sulfate has been amended to "magnesium sulfate containing one to seven molecules of water of crystallization for each molecule of magnesium sulfate" ;

- in clause 2 and clause 6, the reference to ISO 8358:1991 has been replaced by EN 1482:1996 ;

- in clause 9, a requirement to include the method of sampling and sample preparation in the test report has been added ;

- a bibliography has been added as informative annex ZA.

The common modifications have been inserted in the text of the reference document and indicated by a vertical line in the left margin.

1 Scope

This European standard specifies a gravimetric method, by drying under reduced pressure, for the determination of the moisture content of fertilizers and liming materials.

The method is not applicable to fertilizers and liming materials containing the following :

- calcium nitrate ;

- calcium hydroxide ;

- calcium sulfate containing less than two molecules of water of crystallization for each molecule of calcium sulfate ;

- magnesium sulfate containing one to seven molecules of water of crystallization for each molecule of magnesium sulfate ;

- salts which effloresce readily at ambient temperatures or those which absorb water (desiccants).

2 Normative reference

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendements to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1482:1996 Sampling of solid fertilizers and liming materials

3 Principle

Drying a test portion at a pressure of 66 x 10^3 Pa and a temperature of 25 °C for 24 h and determination of the resulting loss in mass.

4 Material

4.1 Silica gel desiccant, self-indicating, particle size 2 mm to 5 mm.

Activate the silica gel, immediately prior to use, by placing about 100 g in the evaporating basin (5.4) and transferring the basin to the oven (5.5), set at 105 °C, for 2 h. Transfer the basin with its contents to a desiccator and allow to cool to ambient temperature.

5 Apparatus

Ordinary laboratory apparatus and, in particular, the following :

5.1 Weighing bottle, 70 mm to 80 mm diameter, fitted with a stopper.

5.2 Vacuum desiccator, internal diameter about 200 mm, containing silica gel desiccant (4.1).

5.3 Vacuum pump, fitted with a pressure gauge.

5.4 Evaporating basin, internal diameter about 100 mm.

5.5 Oven, capable of being controlled at (105 ± 2) °C.

6 Preparation of test sample

Prepare the test sample, without grinding, in accordance with EN 1482.

If necessary, quickly crush (not grind) the material in a mortar. Mix all the material and immediately take the test portion (7.1).

NOTE 1 : It is advisable to crush the material in an atmosphere of relative humidity 40 % to 60 %.

7 Procedure

7.1 Test portion

Remove the stopper from the weighing bottle (5.1) and heat both for 2 h in the oven (5.5) set at 105 °C. Cool in the desiccator (5.2). After cooling to room temperature, fit the stopper and weigh to the nearest 0,001 g. Weigh, to the nearest 0,001 g, about 10 g of the test sample into the prepared weighing bottle, with the stopper placed alongside.

7.2 Determination

Place the unstoppered weighing bottle (5.1) containing the test portion, and the stopper, adjacent to each other, in the desiccator (5.2) containing the freshly activated silica gel (4.1).

Using the vacuum pump (5.3), reduce the pressure in the desiccator to an absolute pressure of $(66 \pm 1{,}3) \times 10^3$ Pa [(500 ± 10) mm Hg] and maintain at this pressure for 24 h, at a temperature of (25 ± 3) °C.

WARNING - Before use, it is essential to check that the vacuum desiccator is free from defects. It should be placed behind a safety screen before applying a vacuum and should not be removed until atmospheric pressure has been restored.

Allow the pressure inside the desiccator to return to that of the atmosphere by gradually admitting air which has been dried by passage through the activated silica gel (4.1). Open the desiccator, quickly restopper the weighing bottle and weigh the bottle, stopper and contents to the nearest 0,001 g.

8 Expression of results

The moisture content of the fertilizer or liming material, expressed as a percentage by mass, is given by the formula :

$$\frac{m_0 - m_1}{m_0} \times 100$$

where :

m_0 is the mass, in grams, of the test portion before drying ;

m_1 is the mass, in grams, of the test portion after drying.

Round the result, the mean of at least two determinations, to 0,1 % (*m/m*).

9 Test report

The test report shall include the following information :

a) a reference to this European standard ;

b) the method of sampling and sample preparation ;

c) the results and the method of expression used ;

d) all information necessary for the complete identification of the sample ;

e) any unusual features noted during the determination ;

f) any operation not included in this European standard or in the European standard to which reference is made, or regarded as optional.

ANNEX A
(informative)

Precision

A.1 General

The precision data were determined from an experiment conducted in 1979 involving 21 laboratories using one sample of each of five different types of fertilizer. Since it is not certain whether these data are valid for all fertilizers to which this international standard applies, they are included for information only.

A.2 Repeatability

The difference between two single test results obtained from identical test material by one analyst using the same apparatus within a short time-interval should exceed the repeatability limit, r, given by the following equation, on average not more than once in 20 cases in the normal and correct operation of the method.

$$r = 0,1\sqrt{m}$$

where :

m is the arithmetic mean of the two test results (i.e. two determinations).

A.3 Reproducibility

The difference between two single and independent test results found by two analysts working in different laboratories using identical test material should exceed the reproducibility limit, R, given by the following equation, on average not more than once in 20 cases in the normal and correct operation of the method.

$$R = 0,4\sqrt{M}$$

where :

M is the arithmetic mean of the two test results (i.e. two determinations).

ANNEX ZA (informative)

Bibliography

ISO 3963:1977	Fertilizers - Sampling from a conveyor by stopping the belt
ISO 7742:1988	Solid fertilizers - Reduction of samples
ISO 8633:1992	Solid fertilizers - Simple sampling method for small lots

INTERNATIONAL STANDARD

ISO 8189

First edition
1992-11-01

Solid fertilizers — Determination of moisture content — Gravimetric method by drying under reduced pressure

Engrais solides — Détermination de la teneur en eau — Méthode par séchage sous pression réduite

Reference number
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