SLOVENSKI STANDARD
SIST EN 1236:1998

01-maj-1998

Gnojila - Določanje prostorninske gostote (brez potresanja) (ISO 3944:1992, modificiran)

Fertilizers - Determination of bulk density (loose) (ISO 3944:1992 modified)

Düngemittel - Bestimmung der Schüttdichte (ISO 3944:1992 modifiziert)

Engrais - Détermination de la masse volumique sans tassement (ISO 3944:1992 modifiée)

Ta slovenski standard je istoveten z: **EN 1236:1995**

ICS:

65.080	Gnojila	Fertilizers

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EUROPEAN STANDARD **EN 1236**

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English version

Fertilizers - Determination of bulk density (loose) (ISO 3944:1992 modified)

Engrais - Détermination de la masse volumique sans tassement (ISO 3944:1992 modifiée)

Düngemittel - Bestimmung der Schüttdichte (ISO 3944:1992 modifiziert)

This European Standard was approved by CEN on 1994-12-04. 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 ISO/TC 134 "Fertilizers and soil conditioners" of the International Organization for Standardization (ISO) has been taken over as a European Standard by the Technical Committee CEN/TC 260 "Fertilizers and liming materials".

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of an identical text or by endorsement, at the latest by December 1995, and conflicting national standards shall be withdrawn at the latest by December 1995.

According to 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 the United Kingdom.

Endorsement notice

The text of the International Standard ISO 3944:1992 was approved by CEN as a European Standard with agreed common modifications as given below :

- in clause 1 "Scope" of ISO 3944 the applicability is limited to dry fertilizers only. This requirement has been amended to free flowing fertilizers. Furthermore a limit for particles with more than 5 mm in diameter has been set at 20 % ;

- the bulk density (loose) is expressed in grams per cubic centimetre (g/cm^3) in ISO 3944, in this European standard it is expressed in kilograms per cubic metres (kg/m^3) ;

- the normative references to International Standards ISO 7742:1988 and ISO 8358:1991 concerning methods of sampling and sample preparation have been deleted and the method used has to be indicated in the test report ;

- an informative annex ZA "Bibliography" has been added.

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

Introduction

The bulk densities (loose and tapped) of a fertilizer provide information relative to the required size of packaging materials, store-houses, stock-rooms, etc. Generally, the bulk density (tapped) is up to 10 % greater than the bulk density (loose), and sometimes it may exceed this value. Both bulk densities depend on the actual density, surface form and particle size of the fertilizers.

The bulk density (loose) can be used to calculate the maximum volume of a given weight of fertilizer which may be expected in practice. The actual volume occupied by a given weight of fertilizer will normally be within the range calculated from the bulk density (loose) and the bulk density (tapped).

1 Scope

This International Standard specifies a method for the determination of the bulk density (loose) of solid fertilizers except powder fertilizers. The method is applicable to free flowing fertilizers.

The method is not suitable for materials which contain more than 20 % by mass of particles exceeding 5 mm in diameter.

Annex ZA lists the bibliography.

2 Definition

For the purposes of this International Standard, the following definition applies.

2.1 bulk density (loose) of a fertilizer

The mass per volume of a material tipped into a container and under clearly specified conditions.

The bulk density (loose) is expressed in kilograms per cubic metre (kg/m^3).

3 Principle

Pouring of the fertilizer from a specified funnel into a specified measuring cylinder of known volume and weighing of the contents of the cylinder.

4 Apparatus

4.1 Balance, capable of weighing to the nearest 1 g.

4.2 Apparatus for determination of bulk density (loose), having the approximate dimensions given in figure 1 and consisting of the following.

4.2.1 Removable measuring cylinder, without a spout. The capacity up to the brim shall be known to the nearest cubic centimetre.

CAUTION : It is important that those parts of the apparatus which are in contact with the fertilizer are made of corrosion-resistant material (glass, plastics, etc.).

4.2.2 Firmly mounted funnel

4.3 Spatula, approximately 120 mm x 20 mm, or other suitable scraper.

5 Preparation of test sample

Prepare the test sample by appropriate methods ensuring that the sample is sufficient to carry out two separate determinations.

6 Procedure

Pour into the closed funnel (4.2.2) a quantity of the fertilizer greater than that needed to fill the measuring cylinder (4.2.1). Fully open the slide of the funnel so that the contents discharge into the measuring cylinder in 6 s to 12 s.

If the fertilizer does not flow freely, keep the outlet clear by inserting a rod of 3 mm to 4 mm diameter into the opening.

When the cylinder overflows, close the slide of the funnel and scrape away the surplus fertilizer using the spatula or other suitable tool (4.3). Avoid vibration of the filled measuring cylinder.

Remove the measuring cylinder from below the funnel and weigh its contents to the nearest 1 g.

Carry out two determinations, in rapid succession, on separate test portions taken from the same test sample.

7 Expression of results

7.1 Method of calculation

The bulk density (loose), ρ, of the fertilizer, in kilograms per cubic metre, is given by the equation

$$\rho = \frac{m}{V}$$

where,

m is the mass, in kilograms, of the test portion,

V is the volume up to the brim, in cubic metres, of the measuring cylinder.

Take as the result the arithmetic mean of the two determinations provided that the requirement for repeatability (see 7.2) is satisfied.

7.2 Repeatability

The difference between the results of two determinations, carried out in rapid succession by the same operator using the same apparatus, shall not exceed 10 kg/m^3.

8 Test report

The test report shall include the following particulars :

a) identification of the sample ;

b) reference to the method used ;

c) the result and the method of expression ;

d) any unusual features noted during the determination ;

e) any operation not included in this International Standard or regarded as optional ;

f) method of sampling and sample preparation.

Dimensions (approximate) in millimetres

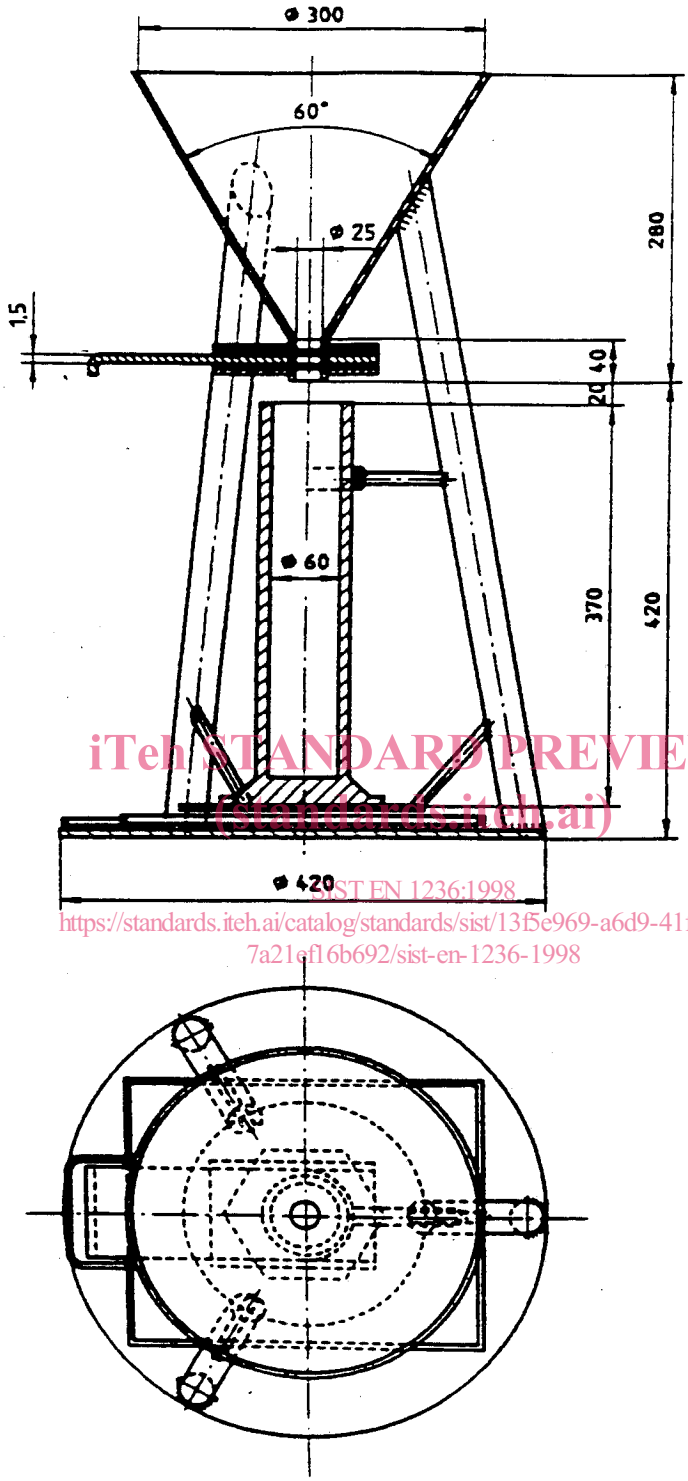

Figure 1 : Apparatus for the determination of bulk density (loose) of fertilizers

Annex ZA (informative)

Bibliography

ISO 3963:1977	Fertilizers - Sampling from a conveyor by stopping the belt
ISO 7410:1983	Fertilizers and soil conditioners - Final samples - Practical arrangements
ISO 7742:1988	Solid fertilizers - Reduction of samples
ISO 8538:1991	Solid fertilizers - Preparation of samples for chemical and physical analysis
EN 1237	Fertilizers - Determination of bulk density (tapped)
Pr EN 1482	Sampling of solid fertilizers