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SIST EN 1482:1998

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EUROPEAN STANDARD

EN 1482

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 1996

ICS 65.080

Descriptors: fertilizers, manure, solids, sampling, sampling tables, specifications, samples, labelling

English version

Sampling of solid fertilizers and liming materials

Echantillonnage des matières fertilisantes solides et des amendements calciques et/ou magnésiens

Probenahme und Vorbereitung der Proben von festen Düngemitteln und Calcium-/Magnesium-Bodenverbesserungsmitteln

This European Standard was approved by CEN on 1996-03-14. 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.

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CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 260 "Fertilizers and liming materials" of which the secretariat 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of an identical text or by endorsement, at the latest by October 1996, and conflicting national standards shall be withdrawn at the latest by October 1996 .

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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, United Kingdom.

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0 Introduction

This European Standard covers the following aspects of sampling, derived from the International Standards and documents indicated but presented in a simplified and condensed form. The titles of the International Standards are given in Annex A.

- Sampling plans and quantitative data : ISO 8633 - ISO 8634 - ISO/TR 5307 - ISO/TR 7553 and EEC 77/535 (annex A);
- Sampling methods : ISO 3693 - ISO 5308 - ISO 8633 -ISO/DIS 10978 and EEC 77/535 (annex A);
- Reduction and preparation of samples for analysis : ISO 7410 - ISO 7742 - ISO 8358 and EEC 77/535 (annex A);
- Sampling reports : ISO 5306 and EEC 77/535 (annex A).

Figure 1 gives a schematic diagram of the sampling process.

The fundamental principle of representative sampling is that every particle has an equal chance of being selected or rejected. This principle cannot easily be complied with in the case of bulk heaps as the majority of the material cannot be reached by any sampling device. The fertilizer in these heaps can be sampled during transfer, either during the building up of the heap or during its break down for dispatch.

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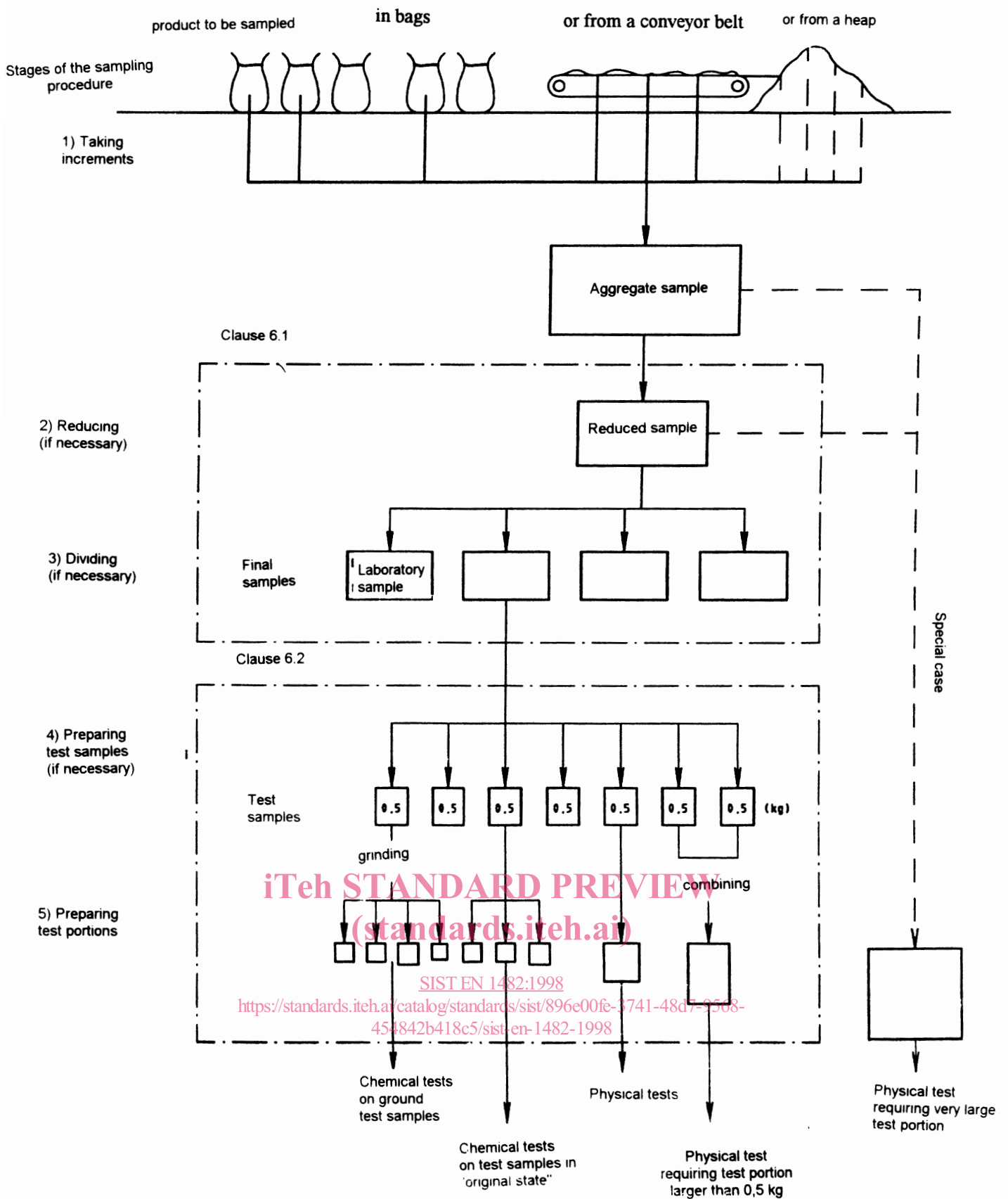


Figure 1 : Schematic diagram of sampling process

1 Scope

This European Standard describes and/or specifies sampling plans, methods of sampling, methods for the reduction and division of samples, and establishes the requirements for sampling reports.

This European Standard is applicable to deliveries of fertilizer or liming material supplied to third parties for resale under their own responsibility in smaller lots each of which would be subject to local, national or regional legislation.

It is not intended to and does not override any statutory control methods which have to be followed when samples are taken by control authorities.

The techniques and methods given in this European Standard apply to all solid fertilizers and liming materials in packages up to 50 kg in mass, and in bulk, provided the product is being moved. Static heaps of product are not included. Product in Intermediate Bulk Containers holding up to 1 000 kg may be treated either as packages or as bulk.

NOTE : The term fertilizer is used throughout the body of this Standard and should be taken to include liming materials unless otherwise indicated.

This European Standard does not cover complete, statistical sampling plans.

2 Normative references

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 amendments 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.

- | | | |
|--------------|------|---|
| ISO 2602 : | 1980 | Statistical interpretation of test results - Estimation of the mean - Confidence interval |
| ISO 3301 : | 1975 | Statistical interpretation of data - Comparison of two means in the case of paired observations |
| ISO 3310-1 : | 1990 | Test sieves - Technical requirements and testing - Part 1 : Test sieves of metal wire cloth |
| EN 1235 | 1995 | Solid fertilizers - Test sieving (ISO 8391:1988 modified) |
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3 Definitions

For the purposes of this standard the following definitions apply :

3.1 aggregate sample

Combination of all increments from the lot.

NOTE : The increments can be grouped together in equal numbers in order to form several samples which can be reduced and analysed separately.

3.2 delivery

Quantity of material transferred at one time.

NOTE : A delivery can be made up of one or more lots or parts of a lot.

3.3 division

Process of producing a number of representative smaller portions, approximately equal in mass to each other, from a larger mass.

3.4 final sample

Representative part of the reduced sample or, where no intermediate reduction is required, of the aggregate sample.

NOTE : Often, more than one sample is prepared, at the same time, from the reduced sample (or from the aggregate sample). One or more of these final samples is used as a laboratory sample or as laboratory samples, while others may be stored for reference purposes.

3.5 increment

Representative quantity of material taken from a sampling unit.

NOTE : An increment can be constituted from a number of partial samples.

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3.6 laboratory sample

Final sample intended for laboratory inspection or testing.

3.7 lot

Total quantity of material, assumed to have the same characteristics, to be sampled using a particular sampling plan.

3.8 reduced sample

Representative part of the aggregate sample obtained by a process of reduction in such a manner that the mass approximates to that of the final (laboratory) samples.

3.9 reduction

Process of producing a representative smaller mass of fertilizer from a larger mass, with the remainder being discarded.

3.10 sampling unit

Defined quantity of material having a boundary which may be physical, or hypothetical.

NOTE : An example of a physical boundary is a container. An example of a hypothetical boundary is a time interval for a flow of material.

3.11 test portion

Quantity of material taken from the test sample (or if both are the same, from the laboratory sample) and on which the test or observation is actually carried out.

3.12 test sample

Sample prepared from the laboratory sample and from which test portions are taken.

4 Sampling plans and quantitative data

4.1 General

Correct sampling is a difficult operation which requires great care. The need to obtain a fully representative sample for both the chemical and physical testing of fertilizers cannot be stressed too much. Sampling plans have been produced to cover a range of quantities of fertilizer and these form the basis of International Standards (see Annex A).

The sampling plans given in this European Standard are not based on strict statistical principles but samples obtained by following the procedures described in this clause may be considered to be representative of the original lot or sample portion.

This clause specifies sampling plans for the evaluation of deliveries of solid fertilizers but there may be statutory control plans which have to be followed in certain circumstances.

For the simple evaluation of a small quantity of fertilizer, one single representative sample is sufficient.

For the evaluation of a large delivery which is supplied for resale in smaller lots a number of samples representing parts of the delivery are required in order to assess the variability of the lot.

The methods of sampling to be used are to be found in clause 5.

4.2 Sampling plans

4.2.1 Determination of the number of sampling units

4.2.1.1 General

The number of sampling units depends on the size of the lot and also the purpose of the sampling. For large deliveries the total amount should be treated as a number of smaller lots and one sample prepared for each smaller lot.

NOTE : For example a delivery of 5000 t should be treated as at least five deliveries of 1000 t each and five separate samples should be collected and prepared.

The determination in this European Standard is based on a simple relationship between the amount to be sampled and the minimum number of increments to be taken.

4.2.1.2 Product in packages

In the case of product in packages, the sampling unit is a package and the number of individual packages to be sampled should be in accordance with table 1. In this context a package is normally taken to hold no more than 50 kg - larger containers such as Intermediate Bulk Containers (IBCs) may be treated as packages but preferably should be treated as product in bulk (see 4.2.1.3).

Table 1 : Number of individual packages to be sampled

Lot size	Minimum number of sampling units
4 or fewer packages	All packages
More than 4 and fewer than 11	4
More than 10 and fewer than 101	10
More than 100 packages	The nearest whole number above the square root of the number of packages present

For packages weighing 5 kg or less, the entire contents are taken as the increment (or sample). For packages weighing less than 1 kg each, it may be necessary to increase the number taken to ensure a sufficiently large aggregate sample.

4.2.1.3 Product in bulk

In the case of product in bulk, the size of the sampling unit depends on the total mass present. The number of sampling units to be sampled should be in accordance with table 2.

Table 2 : Number of sampling units to be sampled

Lot size	Minimum number of sampling units
5 t or less	10
More than 5 t	The nearest whole number above the square root of 20 times the number of tonnes present

4.2.2 Identification of the sampling units to be sampled

4.2.2.1 Product in packages

Number the packages in the sample portion consecutively and by using a source of random numbers, select the packages to be sampled and mark them.

4.2.2.2 Product in bulk during loading or unloading

If the loading or unloading is carried out using grabbing equipment such as a crane or automatic shovel loader, the sampling unit is the quantity of material corresponding to one grab. If loading or unloading is carried out in a continuous operation such as a conveyor belt, each sampling unit is made up of a mass of approximately 50 kg taken during the operation.

Calculate the number of sampling units present from the total mass and by using a table of random numbers select the sampling units from which increments are to be taken during the loading or unloading operation. Number the sampling units in chronological order of their formation in the grabbing equipment or on the conveyor belt. In the latter case number the time intervals taking account of the operating rate of the equipment.

NOTE : Automatic mechanical samplers normally work at fixed time intervals. In this case the increments are collected over the whole time scale and cannot be regarded as having been taken randomly.

4.2.3 Collection of increments

4.2.3.1 Product in bags

Take one increment from each of the selected packages, preferably by the use of a mechanical divider (see clause 6) or by emptying the contents onto a clean dry surface, mixing thoroughly with a shovel and removing one shovelful.