SIST

SLOVENSKI STANDARD
oSIST prEN 1482-3:2015

01-maj-2015

Gnojila in sredstva za apnjenje - Vzorčenje in priprava vzorcev - 3. del: Vzorčenje statičnih kupov

Fertilizers and liming materials - Sampling and sample preparation - Part 3: Sampling of static heaps

Düngemittel und Kalkdünger - Probenahme und Probenvorbereitung - Teil 3: Probenahme aus statischen Haufwerken

Engrais et amendements minéraux basiques - Échantillonnage et préparation de l’échantillon - Partie 3 : Échantillonnage des tas statiques

Ta slovenski standard je istoveten z: **prEN 1482-3**

ICS:

65.080	Gnojila	Fertilizers

oSIST prEN 1482-3:2015 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1482-3

February 2015

ICS 65.080

English Version

Fertilizers and liming materials - Sampling and sample preparation - Part 3: Sampling of static heaps

Engrais et amendements minéraux basiques - Échantillonnage et préparation de l'échantillon - Partie 3 : Échantillonnage des tas statiques

Düngemittel und Kalkdünger - Probenahme und Probenvorbereitung - Teil 3: Probenahme aus statischen Haufwerken

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (prEN 1482-3:2015) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

EN 1482 “Fertilizers and liming materials — Sampling and sample preparation” consists of three parts:

— Part 1: Sampling;

— Part 2: Sample preparation;

— Part 3: Sampling of static heaps [1)].

1) In preparation.

Introduction

The establishment of European Standards for methods of sampling and analysis is of utmost importance to guarantee a uniform application and control of the European legislation in all Member States. Standardized methods of sampling and analysis are essential elements in guaranteeing a high level of quality and safety of EC fertilizers for the benefit of purchasers. In order to avoid any improper use of the term “EC fertilizer” Member States are required to check the nutrient content of such fertilizers. To achieve this, representative sampling is essential for reliable analytical results.

Competent authorities have limited resources for conformity assessment, and these are most efficiently deployed at the downstream end of the supply chain. The purpose of Regulation (EC) No 2003/2003 [1] is to ensure that the fertilizer meets European requirements and complies with the declaration of the required characteristics applied to it when delivered to a purchaser. EN 1482-1:2007 might not fully satisfy the needs of Member States, when a large quantity of fertilizer is stored in a static heap that cannot be realistically put into motion. An evaluation was requested to be carried out by CEN to see what, if any, fertilizer heaps could be representatively sampled at affordable costs.

The fundamental principle of representative sampling is that every particle has an equal chance of being sampled. This principle cannot easily be complied with in the case of bulk static heaps of solid fertilizers as the majority of the material cannot be reached by any sampling device. Wherever possible, this fertilizer should be sampled during transfer, during the building up of the heap, during dispatch or where it can practically be moved solely for sampling purposes. However, in some cases the sampling in the way described is not practicable. The European Commission asked CEN/TC 260/WG 1 to draft a European Standard in response to mandate M/454, which requires the development of a method of sampling static heaps that could not be sampled according to EN 1482-1:2007, which states that the sampling of static heaps should only be carried out when the product is in motion.

In response to the mandate, sampling methods to sample static heaps have been developed and standardized as specified in this document.

1 Scope

This document is applicable to the sampling of fertilizers or liming materials supplied or ready for supply to third parties, as a lot or in smaller lots where such supply or readiness for supply is subject to legal requirements.

This document specifies plans and methods of sampling of a lot of solid fertilizers or liming materials, if sampling in motion is not possible, to obtain samples for chemical analysis from static bulk heaps in order to ascertain compliance with legal requirements in particular in relation to the accuracy of compulsory or permitted statutory declarations.

The document is applicable to single nutrient fertilizers, to uniform complex fertilizers and to milled or granulated liming materials.

The methods described in this document are not suitable for sampling blended fertilizers.

NOTE The term 'fertilizer' is used throughout the body of this European Standard and includes liming materials unless otherwise indicated.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1482-1:2007, *Fertilizers and liming materials - Sampling and sample preparation - Part 1: Sampling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1482-1:2007 and the following apply.

3.1
fertilizer
solid inorganic material designated for use as a fertilizer including liming materials

3.2
sampling point
point in the sampling unit from which a sub-sample is taken

Note 1 to entry: For the definition of sub-sample, see EN 1482–1:2007, 3.5.

3.3
static heap
quantity of fertilizer stored in bulk in a single mass

4 Sampling plans and quantitative data

4.1 General

The objective of sampling is to acquire a sample of the lot to establish its composition and properties. The methods of sampling to be used are specified in Clause 5 and Clause 6.

4.2 Characterization of the lot to be sampled

Before a sampling plan is determined, a description of the characteristics of the lot that is intended to be sampled shall be undertaken. In particular, the following physical characteristics shall be noted:

— kind/type,

— texture,

— colour,

— storage conditions, e.g. uncovered/covered,

— foreign matters.

If the owner of the material is applying the same description and statutory information to the whole lot, sampling should proceed in accordance with this document. Only if there is evidence of deterioration or contamination, should consideration be given to the dividing of the lot into parts from which separate samples should be taken.

4.3 Sampling plan

4.3.1 General

The sampling plan shall be determined after the characteristics according to 4.2 have been considered. Any variations from the stated sampling plan shall be documented in written form.

The sampling plan shall define the course of the sampling process, and associated provisions, in reproducible manner.

Sampling only around the base of the heap or from a single part of the heap does not supply a representative sample.

4.3.2 Elements of the sampling plan

Within the sampling plan, the following elements shall be stated:

— boundary of the lot,

— determination of the volume/mass of the lot,

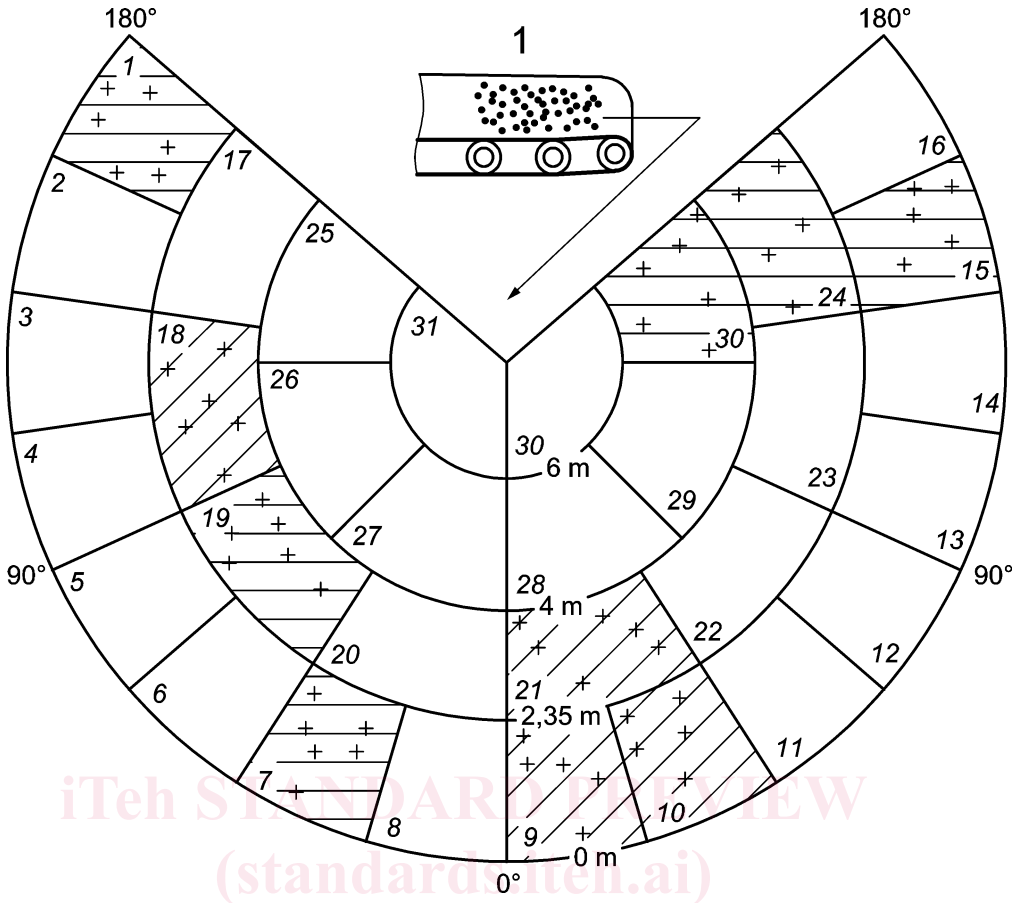
— determination of the number and location of sampling units,

— determination of sampling units from which the increments shall be taken,

— if necessary, preparation of a sketch-map of the sampling areas (see Figure 1),

— determination of the minimum number of sampling points from which sub-samples are to be taken to form the incremental sample,

— determination of minimum amount or minimum volume of increments.



Key

1	conveyor belt
1 to 32	number of sampling units of equivalent surface
	10 random selected sampling units for sampling
+	sampling points (random distribution in the sampling unit)
top ring	2 sampling units (180° each)
second ring	6 sampling units (60° each)
third ring	8 sampling units (45° each)
fourth ring	16 sampling units (22,5° each)
Characteristics of the heap:	
angle of repose:	36 %
base diameter:	12 m
height:	5,3 m
circumference:	37,70 m
ridge:	8 m
volume:	200 m^3

Figure 1 — Example of sampling plan for a conical heap (developed)

4.4 Determination of the volume/mass of the lot

The volume/mass of the lot either should be determined by reference to production/purchase/sales records of the owner or, if this is not possible, shall be estimated by the methods described in Annex A.

4.5 Determination of the number and the location of the sampling units

4.5.1 General

The total number of sampling units depends on the size of the lot (see Table 1). Each sampling unit will be represented by approximately the same surface area.

4.5.2 Minimum number of sampling units

The total number of sampling units that the lot needs be divided into shall be in accordance with Table 1.

Table 1 — Number of sampling units that the lot needs be divided into

Lot size t	Number of sampling units
25 or less	10
More than 25 and up to 400	The nearest whole even number above the square root of 4 times the quantity, in tonnes, present
More than 400	40

Select randomly 10 sampling units from the total number of sampling units in Table 1 according to Annex B. Incremental samples shall be taken from the 10 selected sampling units.

4.5.3 Determination of sampling points to be sampled

A quantity of material shall be taken from the selected sampling units at randomly selected sampling points within each unit. These shall be mixed to form the incremental sample from the unit.

The number of randomly selected sampling points is determined by the minimum quantity of the increment according to EN 1482-1:2007, 4.3.1.

4.6 Quantitative data

4.6.1 Determination of the minimum mass or the minimum volume of increments

One incremental sample shall be taken from each selected sampling unit.

All increments shall have approximately the same mass or the same volume respectively.

The size of each incremental sample shall be considered when choosing the sampling device and the sampling method.

4.6.2 Mass of increments

The incremental sample from any one sampling unit should be at least 250 g.

4.6.3 Aggregate/reduced and final samples

Incremental samples from the static heap should be dealt with in accordance with EN 1482-1:2007, 4.3.2 to 4.3.4.