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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

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 134, *Fertilizers, soil conditioners and beneficial substances*.

This first edition is based on EN 1482-3.

A list of all parts in the ISO ISO 14820 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The establishment of this document for methods of sampling and analysis is of utmost importance to guarantee a uniform application and control of fair trade. Standardized methods of sampling and analysis are essential elements in guaranteeing a high level of quality and safety of fertilizers for the benefit of purchasers. Competent authorities have limited resources for conformity assessment, and these resources are most efficiently deployed at the downstream end of the supply chain. Representative sampling is essential to achieve reliable analytical results.

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 a large proportion of the material cannot practically 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, sampling in the way described is not practicable. Sampling of static heaps should only be carried out when the product is not in motion.

Fertilizers and liming materials — Sampling and sample preparation —

Part 3: Sampling of static heaps

1 Scope

This document is applicable to the sampling of mineral fertilizers and 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 fertilizer or liming material, if sampling in motion is not possible, to obtain samples from bulk static heaps in order to ascertain compliance with legal requirements, in particular in relation to the accuracy of compulsory or permitted statutory declarations. The methods specified in this document are not applicable to obtain samples for physical size analysis or for chemical analysis which may be altered by particle granulometric segregation.

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

The methods described in this document are not suitable for sampling other types of fertilizer, for example blended fertilizers.

NOTE The term 'fertilizer' is used throughout the body of this document 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.

ISO 14820-1:2016, *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 ISO 14820-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

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/partial sample, see ISO 14820-1:2016, note in 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 representative sample of the lot to establish its composition and properties. The methods to be used for sampling static heaps are specified in the following clauses.

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 (granular, powder, etc.),

— texture (round, pelleted, etc.),

— colour (red, green, brown, white, etc.),

— storage conditions (uncovered/covered),

— foreign matter (note if present/absent).

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,

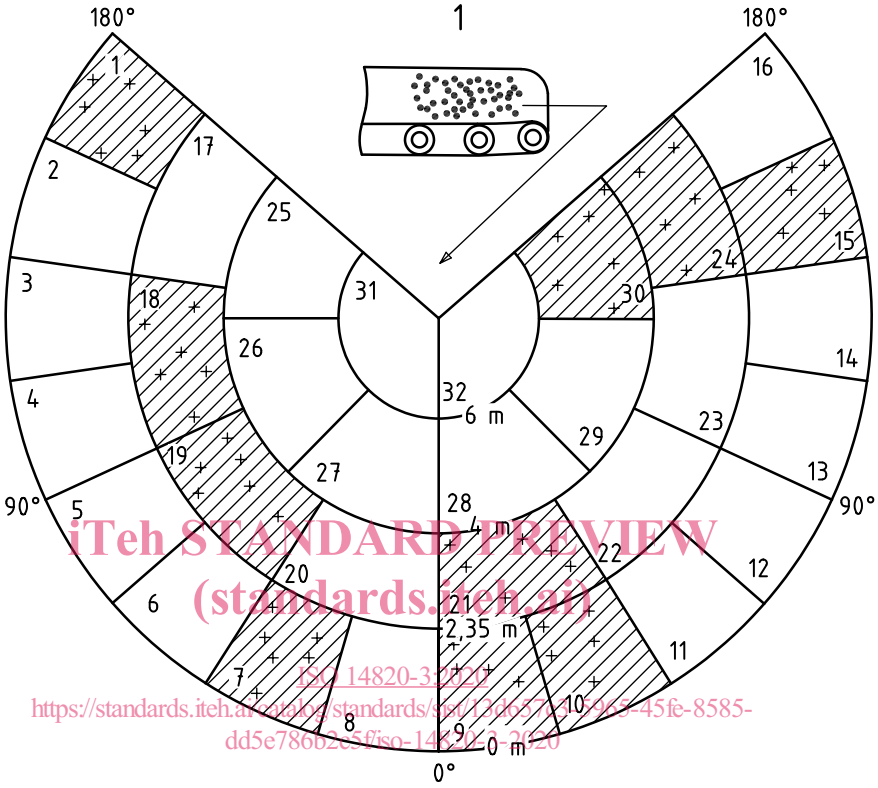
— determination of the number and location of sampling units,

— 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 volume/mass 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)