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Fertilizers and soil conditioners — Compound fertilizer — General requirements

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Contents

Page

Foreword

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

Introduction

Compound fertilizer is the fertilizer having a declarable content of the two or more primary plant nutrients (nitrogen and/or phosphorus and/or potassium), obtained chemically or by blending, or both. Since the 1930s, the increase of crop yield has relied heavily on the amount of fertilizer usage and the development of fertilizer industry.

Compound fertilizer attracted more and more attention since it can enhance the efficiency of fertilizer, simplify the fertilization procedure, and reduce the frequency of fertilization. Since the 1980s, compound fertilizers have been wildly used.

Fertilizers and soil conditioners — Compound fertilizer — General requirements

1 Scope

This international standard specifies general requirements for testing methods, sampling and preparation of test sample, marking and labelling as well as package, transport and storage of compound fertilizers.

This standard is applicable to inorganic solid compound fertilizers. Controlled-release compound fertilizer should also follow the relevant international standard.

2 Normative references

The following referenced 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 7409, *Fertilizers — Marking — Presentation and declarations*

ISO 14820-1, *Fertilizers and liming materials — Sampling and sample preparation — Part 1: Sampling*

ISO 14820-2, *Fertilizers and liming materials — Sampling and sample preparation — Part 2: Sample preparation*

ISO 8157, *Fertilizers and soil conditioners — Vocabulary*

ISO 8397, *Solid fertilizers and soil conditioners — Test sieving*

ISO 5315, *Fertilizers — Determination of total nitrogen content — Titrimetric method after distillation*

ISO 17319, *Fertilizers and soil conditioners — Determination of water-soluble potassium content — Potassium tetraphenylborate gravimetric method*

ISO 760, *Determination of water — Karl Fischer method (General method)*

ISO 6598, *Fertilizers — Determination of phosphorus content — Quinoline phosphomolybdate gravimetric method*

ISO 15959, *Fertilizers — Determination of extracted phosphorus*

ISO 22018, *Fertilizers, soil conditioners and beneficial substances -- Determination of available phosphorus content in inorganic fertilizers -- EDTA extraction method*

ISO 25475, *Fertilizers — Determination of ammoniacal nitrogen*

ISO 15604, *Fertilizers — Determination of different forms of nitrogen in the same sample, containing nitrogen as nitric, ammoniacal, urea and cyanamide nitrogen*

ISO 5317:1983, *Fertilizers — Determination of water-soluble potassium content — Preparation of the test solution*

ISO/DIS 19745, *Fertilizers and soil conditioners -- Determination of crude (free) water content of ammoniated phosphate products -- DAP, MAP -- by gravimetric vacuum oven at 50 °C*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8157 apply.

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

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

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

3.1 Compound fertilizer

fertilizer having a declarable content of at least two of the primary plant nutrients (nitrogen, phosphorus, and potassium), obtained chemically or by blending, or both, including NP, NK, PK, and NPK product

[SOURCE: ISO 8157:2015, 2.2.7.1]

3.2 Complex fertilizer

compound fertilizer, obtained by chemical reaction, having a declarable content of at least two of the primary nutrients, including NP, NK, PK, and NPK product

[SOURCE: ISO 8157:2015, 2.2.7.2]

3.3 Blend fertilizer

fertilizer obtained by dry or liquid mixing of several components, with no chemical reaction

[SOURCE: ISO 8157:2015, 2.2.7.3]

3.4 Primary nutrient (element)

elements nitrogen, phosphorus, and potassium only

Note 1 to entry Macronutrient is also used. These include the following plant food: nitrogen (N), available phosphate (P_2O_5), and soluble potash (K_2O).

Note 2 to entry The following definition is recognized by some specific countries/regions: macro nutrient is the sum of primary and secondary nutrients, such as N, P, K, and Mg, Ca, as well as S (Na, Si).

[SOURCE: ISO 8157:2015, 2.1.3.1]

3.5 Secondary nutrient (element)

elements calcium, magnesium, and sulfur

Note 1 to entry Sodium (Na) is one of the secondary nutrients (elements) in some countries/regions.

[SOURCE: ISO 8157:2015, 2.1.3.2]

3.6 Micronutrient ; trace element

element, such as boron, manganese, iron, zinc, copper, molybdenum, cobalt, and/or chlorine, which are essential, in relatively small quantities, for plant growth

Note 1 to entry Nickel (Ni) is also called a micronutrient (element) in some countries/regions, while in Japan, nickel is classified as harmful element.

[SOURCE: ISO 8157:2015, 2.1.3.3]

3.7 Total primary nutrient

sum of total nitrogen, available phosphorus (P_2O_5), and water-soluble potash (K_2O) content, expressed as mass fraction in percent

[SOURCE: ISO 8157:2015, 2.1.36]

3.8 Available phosphorus

Sum of water soluble and the citrated or EDTA soluble phosphate, as based on regional or national regulation or in the absence of such regulations, to be considered as the sum of water soluble and citrated soluble phosphate or EDTA soluble phosphate

3.9 Marking

statement, symbol, logo, picture, and/or information, that is present on the label or package and identifies or implies a product and its quality, quantity, characteristic, usage, etc.

[SOURCE: ISO 8157:2015, 2.1.40]

3.10 Label

piece of paper or plastic, or a printed area of a package or container, marked with the necessary information to identify the product and make known its essential characteristics

[SOURCE: ISO 8157:2015, 2.1.59]

3.11 Primary nutrient formula

term used in some countries to express, by numbers, in the order of N-P_2O_5-K_2O, the respective content of these nutrients in a compound fertilizer

Note 1 to entry In some countries/regions, the mass fraction is expressed as the percentage of either element or oxide, in the order of nitrogen: phosphorus: potassium: secondary nutrients and micro-nutrients, the respective content of these nutrients in a compound fertilizer.

Note 2 to entry A zero may be used to indicate the absence of an element.

[SOURCE: ISO 8157:2015, 2.1.37]