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Fertilizers and soil conditioners — Controlled-release fertilizer — General requirements

Matières fertilisantes — Engrais à libération contrôlée — Exigences générales

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Foreword

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The committee responsible for this document is ISO/TC 134, *Fertilizers and soil conditioners.*

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Fertilizers and soil conditioners — Controlled-release fertilizer — General requirements

1 Scope

This International Standard specifies the requirements for testing methods, sampling and preparation of test sample, marking and labelling, as well as package, transport, and storage of controlled-release fertilizer.

This International Standard is applicable to controlled-release products having one or more primary fertilizer nutrient (nitrogen and/or phosphorous and/or potassium) in a controlled-release form. They can be made by bulk blending (BB) fertilizers or by special processes.

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

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

ISO 7409, *Fertilizers — Marking — Presentation and declarations*

ISO 7410, *Fertilizers and soil conditioners — Final samples — Practical arrangements*

ISO 7742:1988, *Solid fertilizers — Reduction of samples*

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

ISO 8633, *Solid fertilizers — Simple sampling method for small lots*

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

EN 13266, *Slow-release fertilizers — Determination of the release of the nutrients — Method for coated fertilizers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
controlled-release fertilizer
fertilizer in which nutrient release is controlled, meeting the stated release rate of nutrient and the stated release time at a specified temperature

Note 1 to entry: Typical examples are coated fertilizers.

[SOURCE: ISO 8157:2015, 2.1.12, modified]

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3.2
controlled-release nutrient
one or more of the primary nutrient/s, nitrogen and/or phosphorus and/or potassium, in controlled-release fertilizers with controlled-release characteristics

Note 1 to entry: In quantitative denotation, controlled-release nutrient does not include the parts of nutrients without controlled-release characteristics. For example, if a 15-15-15 compound fertilizer only contains controlled-release nitrogen, and on a mass fraction basis only 10 % of the total mass is controlled-release nitrogen, then the term controlled-release nutrient only applies to the 10 % nitrogen.

3.3
initial release rate of nutrient
ratio of the fraction released within a 24 h time period at 25 °C (or such temperature specified by the manufacturer) in static water, divided by the total controlled release fraction

Note 1 to entry: Sometimes there is a portion of the nutrient in the production of controlled-release fertilizer that does not exhibit controlled-release characteristics, and as such is released ahead of time.

Note 2 to entry: The initial release rates of nutrients of multiple nutrient elements in controlled-release fertilizers shall be denoted with the total nitrogen release rates; if no nitrogen is contained, the initial release rates of nutrient shall be denoted as the release rates of phosphorus and/or potassium.

3.4
cumulative release mass fraction of nutrient
mass ratio of the cumulative released nutrient during a given period to the total of the nutrients, denoted with the mass ratio of the cumulative released nutrients during several consecutive periods as a whole, under condition of 25 °C static water (or such temperature specified by the manufacturer), to the total of the nutrients

Note 1 to entry: The cumulative release mass fraction of multiple nutrient elements in controlled-release fertilizers shall be denoted with the total nitrogen release mass fraction; if no nitrogen is contained, the cumulative release mass fraction of nutrient shall be denoted with release mass fraction of phosphorus or potassium.

3.5
stated release time
release time of a controlled release nutrient, denoted with the time necessary to reach 75 % cumulative release rate since the start of extraction, under the condition of 25 °C static water (or such temperature specified by the manufacturer)

Note 1 to entry: The release time for controlled-release fertilizer must be stated. Different countries/regions may have various numbers of percentages concerning stated release time.

4 Classification

The products shall be classified by core categories, such as controlled-release nitrogenous fertilizer, controlled-release phosphorus fertilizer, controlled-release potash fertilizer, controlled-release compound (N, P, K) fertilizer, controlled-release bulk blend fertilizer (BB fertilizer), and any other primary (N, P, K) nutrient that may be coated as controlled released.

5 Requirements

5.1 Appearance: The product shall be in granules, free flowing, moisture free, and without any foreign matter.

5.2 The controlled-release fertilizer shall be in accordance with the requirements set forth in Table 1, as well as the values declared on containers.

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