

Slow Release Fertilizers

ISO Overview – New International Standard

Fertilizers and soil conditioners —
Controlled release fertilizer —
General requirements

- DRAFT INTERNATIONAL STANDARD
 - **ISO/DIS 18644**

Controlled release fertilizer — General requirements

- **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. Typical examples are coated fertilizers.
- (SOURCE: ISO/DIS 8157 *Fertilizers and soil conditioners – Vocabulary*)

Slow Release Fertilizer

- 2.1.11
- Fertilizer, of which, by **hydrolysis** and /or by **biodegradation** and / or by **limited solubility**, the nutrients available to plants is spread over a period of time, when compared to a “reference soluble” product e.g. *ammonium sulfate, ammonium nitrate, urea*
- (SOURCE: ISO/DIS 8157 *Fertilizers and soil conditioners – Vocabulary*)

1. Controlled release nutrient

It is a general term to, any or all nutrients of, nitrogen, phosphorus and potassium in controlled release fertilizers with controlled release characteristics.

Note: in quantitative denotation, controlled release nutrient does not include the parts of nutrients without controlled release characteristics. For example, in 3 elements controlled release compound fertilizer with a formula of 15-15-15, only nitrogen accounting for 10% of the total mass of the fertilizer has controlled release characteristics, and therefore nitrogen is the only controlled release nutrient here; in quantitative denotation, the term of controlled release nutrient means, nitrogen, 10% of the total mass.

Controlled release fertilizer — General requirements

- **Initial release rate of nutrient**
- There is sometime a part 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.
- *This term of initial release rate of nutrient means the mass ratio of this part of nutrient to the total of this kind of nutrient, denoted with the mass fraction of the release volume during extracting 24 hours by 25 °C static water (or such temperature specified by the manufacturer), to the total of the kinds of nutrients.*

Controlled release fertilizer — General requirements

Cumulative release mass fraction of nutrient

It means a 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:

*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 potassium or phosphorus

- **Stated release time**

- It means the release time of a controlled release nutrient, denoted with the time necessary to reach 80% cumulative release rate since the start of extracting, under the condition of 25°C static water (or such temperature specified by the manufacturer).

ITEM	VALUE
Mass fraction of total nutrient (N + P ₂ O ₅ + K ₂ O) \geq	25
Particle size (1.00 mm – 4.75 mm) /% \geq	90
Nutrient Release period - Days	Marked Value
Initial Release Rate of Nutrient % \leq	15
Cumulative release mass fraction of nutrients in 28 days % \leq	75
Cumulative release mass fraction of nutrients during nutrient release period % \geq	80