Anti-caking effect in powdered or granulated fertilizers

SIPERNAT® D 17, the hydrophobic free flow and anti-caking agent for the agricultural industry

The preparation of soil with adequate fertilizer products before and during cultivation is a critical factor for a high-yield harvest. The concentration and correct dosage per hectare of a high-quality fertilizer is one of the basic factors for a successful crop season. An addition of hydrophobic SIPERNAT® D 17 improves the flowability as well as the long-term stability by its anti-caking performance and ensures a lump free, uniform fertilizer distribution. Thus SIPERNAT® D 17 contributes to a more effective and efficient use of fertilizers enabling a more sustainable and environmentally responsible application.

How can SIPERNAT® D 17 help to improve long-term stability of powdered or granulated fertilizers?

SIPERNAT® D 17 ...

- builds up a protective layer between the host powder and the environment.
- prevents further moisture up–take of the host powder during production or storage.
- is hydrophobic and therefore not wettable by water.
- reduces caking behavior, the powder or granules remain free flowing and free of lumps after transport and storage.
- improves free flow properties, that leads to a more accurate dosing .
- needs much lower dosage to achieve the same free flow and caking properties compared to hydrophilic silica.
- increases productivity thus saving costs.
- makes a fertilizer easier to handle at customers' site and to apply in the soil.

Example long-term stability improvement with SIPERNAT® D 17

A) NPK fertilizer without silica addition after 8 days storage in the climatic chamber

B) NPK fertilizer containing 0.3 % SIPERNAT® D 17 after 8 days storage in the climatic chamber

Table 1: Applications of SIPERNAT® D 17 in fertilizer

Your application	SIPERNAT® D 17
NPK Fertilizer (powdered/granulated)	highly recommended
NP Fertilizer (powdered/granulated)	highly recommended
NK Fertilizer (powdered/granulated)	highly recommended
Ammonium Sulphate	recommended
Urea	recommended

Conclusion

SIPERNAT® D 17 prevents caking of fertilizers on a sustainable basis, improves the flowability as well and enables convenient handling for you and your customers. With an addition of only 0.3 % SIPERNAT® D 17 a significant improvement can be achieved. Thus, the effective use of SIPERNAT® D 17 also contributes to a more controlled distribution of fertilizer thereby providing benefits in multiple parts of the process; production, storage and application in the field.

Table 2: Properties of SIPERNAT® D 17

Properties	Unit	SIPERNAT® D 17
Particle size d50, Laser diffraction according to ISO 13320	µm	10.0
Loss on drying, 2 h at 105 °C according to ISO 787-2	%	≤ 6.0
Loss on ignition, 2 h at 1000 °C[1] according to ISO-3262-1	%	≤ 6.0
pH-value, 5 % in water/methanol 1:1 according to ISO 787-9	–	8.0
Tamped density*, not sieved according to ISO 787-11	g/l	150
SiO_2 content[2], according to ISO 3262-19	%	≥ 97
Wettability by methanol, (internal method)	%	≥ 52
Carbon content, method ISO 3262-19	%	1.7

[1] based on dry substance (2 h/105 °C) [2] based on ignited substance (2h/1000 °C) * explant

The given data are typical values. Specification on request.

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