HIGH NP PELLETIZED DIGESTATE FROM ANIMAL MANURE AND ORGANIC WASTE DIGESTATE BY "ARBIO AND NPIRRIK-PROJECT" PROCESS

Keywords: dried digestate • reverse osmosis (RO) • backmixing • pellet • fertiliser/soil improvers

Key facts:

- → **Focusing geographical areas**: EU28
- → **Product category**: Dried digestate (pellets) can be categorized as PFC 1 A (solid organic fertiliser) or PFC 3 A (organic soil improver)(or in blend). Furthermore products with Vlaco-certificate should be eligible to be categorised as Component Material Category (CMC) 5 ('other digestate than energy crops digestate') cfr Fertiliser Regulation: 'A CE marked fertilising product' shall consist solely of component materials complying with the requirements for one or more of the Component Material Categories'.
- → **Product status**: close to market (2019)
- → **Input material**: mix of manure and organic wastes (cfr Vlarema (Flanders) and positive list FOD (B))
- → **General appearance**: dry pelletised dark end product
- → **Nutrient content N-P-K**: 5,9 N% (dry matter), 3% P2O5 (dry matter)
- → **Other micro elements**: 2,5% K2O (dry matter), 3% CaO (dry matter), 1% MgO (dry matter)
- → **Permit availability**: 31904097538-41905097483-31907097508 (Vlaco) & EM103.Y- EM103.YE (FOD)

Summary:

The digestate of Arbio (biogasinstallation digesting manure and organic wastes) is separated into a liquid and a solid fraction. The liquid fraction is concentrated via Reverse Osmosis (RO). This concentrate (NK) is then 'backmixed into the drying of the solid fraction digestate just before drying. Finally, pelletised, this results in an easy to distribute fertiliser-pellet with an optimised (higher) N/P-content - 5,5% N (TN fresh weight) of which 50% mineral N -, and 2,8% P2O5 (fresh weight). The nitrogen in the concentrate is due to the high ammonium content on the one hand very easily absorbed by plant roots but volatilizes quickly on the other hand and must therefore be used professionally. In the new Fertiliser Regulation dried digestate (pellets) can be categorized as PFC 1 A (solid organic fertiliser) or PFC 3 A (organic soil improver)(or in blend). At the end of 2019 the full industrial scale of the NPirriK post-treatment flow can realise about 1500 tonnes/y of the high N/P-pellets. The market price for the pellets is estimated to rise due the optimised post-treatment add-on from 25€/t to 45€/t. The second RO-stream - water - can under certain conditions be either discharged into surface water, used as process water or, in case of drought, be used to irrigate nearby agricultural plots.

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How to use:

- → **Type of farming**: low input, conventional
- → **Cultivation methods**: open field, greenhouse
- → **Recommended crops**: fresh vegetables and strawberries, potatoe, sugar beet, fresh vegetables and strawberries, grapes, permanent crops (fruit trees), permanent grassland, ..
- → **Application doses**: average 4 t/ha (depending on soil, season, crop,…)

Key product features:

- → Dried digestate-pellets
- → Animal manure status
- → Free of pathogens, insect larvae and weed seeds
- → Multi-nutrient:
  - 5,9% nitrogen (TN dm) half of which mineral
  - 3% P2O5 (dm)
  - 2,5% K2O (dm) - 3% CaO (dm) - 1% MgO (dm)
- → OC: 40% (dm)
- → DM: 90%
- → pH: 8,5-9,3
- → Conform strict requirements (ARC (Fl); Fertiliser (EU)) as to organic and inorganic/physical contaminants
- → Iinput/output inspected on visual contaminants

Key product benefits:

- → Closing material and nutrient cycle: secure source of carbon, nitrogen, phosphor, and other macro-/micro-elements
- → Improved N/P-ratio
- → Fertilising
- → Improves soil biodiversity by increasing
- → Dry pelletised – optimized storage & transport, and long shelf life

Competitive position and advantages:

- → Dried digestate pellets are low priced
- → Boosted N-content (50% of which is mineral)
- → Improves soil biodiversity by increasing

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