

## STRUVITE FROM DIGESTED SLUDGE AND WASTEWATER BY “NURESYS” PROCESS



*Keywords: • BioStru • Struvite • phosphorus recovery*

### Key facts:

- **Product Category:** mineral fertilizer
- **Input material:** digestate dewatering liquor, digestate, wastewater
- **General appearance:** pure crystalline pellets
- **Nutrient Content (N-P-K %):** 5.6N; 12.6 P; 0 K; 10 Mg (%w/w)
- **Product status:** available on the market
- **Limitation of application:** to be used according to national legislation
- **Permit availability:** end of waste status (Flanders)/ Fertilizer (Flanders and Wallonia)/ NF U 42-001-1 (France)
- **Geographical area:** Belgium –Netherlands – Germany (current units). Activity world wide
- **Price range:** 80-120 euro/ton



### Summary:

NuReSys technology can be applied **both on digested sludge or post dewatering**. The produced struvite, given the crystallization technology used, results in a pure, contaminant free, product ready for direct reuse or by preference as commodity product to be blended in with other nutrients to obtain an equilibrated nutrient ratio. Also, struvite has already been recognized for its slow release properties and has as such been incorporated in successful custom-made fertilizers (ic. SmartPhosDG by The Andersons Plant Nutrition). This pure crystalline product has non-detectable heavy metal content or well below admitted levels (Zn).

### How to use:

- **Type of farming:** conventional
- **Cultivation methos:** both domestic and open field
- **Recommended crops:** horticulture/Food & Feed Crop
- **Application doses :** to adapt according to specific demand. Biostru© can be applied directly and is available for domestic use in 1-10 kg package. Biostru© is also available in bulk to use for blending with other fertilizer to optimise nutrient ratio's.

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### Key product features:

- P-precipitation from digestate dewatering liquor, digestate, wastewater industrial, source separated urine
- Organic carbon content (% of dry matter by weight): max 1%
- Total carbon content (% of dry matter by weight): 0.5%
- Total Nitrogen content % dry matter: 5.6 % w/w as N
- Phosphorus content mg/kg dry matter: 12.6 w/w as P
- Other macro and micro elements (mg/kg dry matter): 10% w/w as Mg
- Plant available nutrient content % : non water soluble/soluble in acidic soil conditions
- Plant available nutrient content % : 100% soluble in dilute strong acid/soluble in citric acid
- Dry matter content: 98-100 %
- Particle density (g cm<sup>-3</sup>): 1.7

### Key product benefits:

- Pure crystalline product with non-detectable heavy metal content or well below admitted levels (Zn)
- Cadmium and uranium free phosphorus source
- Stable non-odorous product that can be processed with existing equipment
- Proven slow-release properties in combination with enhanced microbial activity
- Reduced climate impact versus industrial fertilizer: 5 to 6 tonnes of CO<sub>2</sub>/ton nutrient equivalent

### Competitive position and advantages:

Uncontrolled struvite formation is a major cause of high maintenance costs and downtime on municipal sludge processing lines especially when combined with biological phosphate removal. The NuReSys technology wants to tackle these operational problems by controlling the struvite process. The produced struvite, given the crystallization technology used, results in a pure, contaminant free, product ready for direct reuse or by preference as commodity product to be blended in with other nutrients to obtain an equilibrated nutrient ratio. When maximizing the phosphorus flux towards struvite crystallization up to 40% of the incoming phosphorus in municipal wastewater can be recovered using relatively low-tech equipment. This proportion could substantially contribute to cover agricultural needs in Europe and render the impact of imported and to be processed phosphate rock to a minimum. In addition, developing struvite recovery related to digestion, manure and agro-feed-food industry could further increase the overall recovery potential. Struvite has a proven full-scale track record and therefore is ready to contribute to a closed loop phosphorus driven feed/food agriculture.

