

## EIP-AGRI practice abstract

### Short title:

Calcium-Sodium-Phosphate from sewage sludge ash conversion with the "AshDec®" process

### Summary:

AshDec® is a thermochemical process designed to convert low plant available phosphorus in sewage sludge ash to the highly plant available Rhenania-P ( $\text{CaNaPO}_4$ ) while reducing the heavy metal content. Within the process, the ash is mixed with sodium compounds. Sodium ions replace calcium ions in the phosphates and form the plant available compound. A noticeable high amount of heavy metals evaporates in their elemental form at the prevalent temperatures.

The output material is calcined ash with 15-25 %  $\text{P}_2\text{O}_5$ , depending on the composition of the input material. It is a sandy material, which is milled and pelletized/granulated before application. The P-compounds are not soluble in water, reducing environmental risks like runoff, leaching and fixation. However, the solubility in neutral ammonium citrate is > 80 %. Hence, P is released in the presence of crop root exudates, which means a P-supply on demand. The fertilizer performance tested in several pot and field trails is comparable to Triple-Superphosphate. The product has a low content of contaminants, e.g. heavy metals. It has no organic compounds and is free of pathogens. It could be used in conventional farming (vegetable, greenhouse, arable, fruit, ornamental) referred to national regulations or to the European Fertilizer Product Regulation EU 2019/1009 as PFC1 (C) "Inorganic Fertilizer". The usage in organic farming could also be possible in future. There is a recommendation to authorize recovered fertilizers (e.g. biomass ashes) for organic farming by STRUBIAS workgroup. The dosage depends on the P-nutrient needs of the crop and the P-nutrient status of the soil. The process is not commercial yet.

For more information: [https://nutriman.net/farmer-platform/product/id\\_397](https://nutriman.net/farmer-platform/product/id_397)