

AMMONIUM SULPHATE/NITRATE FROM POULTRY MANURE BY "POUL-AR®" TECHNOLOGY



Keywords: • poultry manure • ammonium sulphate • ammonium nitrate • mineral fertilizer-like

Key facts:

- **Focusing geographical areas:** EU28
- **Product category:** Ammonium sulphate can be regarded as a mineral fertiliser. According to the current fertiliser regulation EU2003/2003 ammonium sulphate is a nitrogen fertiliser solution and recognized 'EC fertiliser' (category C1 n°1) only if the N-concentration is at least 15%. In the new Fertiliser Regulation it should be able to be categorised as a PFC 1(C)(I)(b): Liquid inorganic macronutrient fertiliser – given the technically feasible, lower N-content criteria (1,5 or 3%). However, it is not clear if an inclusion of ammonium sulphate from manure in CMC 11 (designated animal by-products for fertiliser production) in the new European fertiliser regulation is required. Finally, the Nitrates Directive defines this product as animal manure and not as mineral N fertiliser. Therefore the product has to fulfil requirements of animal manure. A European project Safemanure is currently ongoing to potentially validate EU-wide ammonium sulphate as a mineral fertiliser as well.
- **Product status:** TRL 7
- **Input material:** fresh poultry manure and sulfuric acid or nitric acid
- **General appearance:** liquid, transparent
- **Nutrient content N-P-K:** 9% N%
- **Other micro elements:** /
- **Permit availability:** cfr supra requires no certification, derogation nor manure transport documents (Flanders)



Summary:

The output of the Poul-AR® is a substrate with acceptable N-levels to use in a thermophilic CSTR. The digester produces biogas, for the smallest installation about 1 MWe. The digestate is separated, and all liquid fraction is reused to dilute the incoming manure. The other output is the N-fertilizer. This can be ammonium sulphate or – nitrate, or any other ammonium solution, and is related to the N-content of the ingoing manure. This product is comparable to commercial available artificial fertilisers and has a target value (RENURE/FPR) of 50€-75€/T. The N-fertiliser has been tested over last years through universities and farmer organisations mainly in the Netherlands, but also in other EU countries (Belgium, Spain and Italy).



How to use:

- **Type of farming:** conventional agri- and horticulture
- **Cultivation methods:** open field, greenhouses, irrigation systems
- **Recommended crops:** all
- **Application doses:** +/- 1 m³/ha (depending on soil, season, crop,...)

Key product features:

- Mineral fertiliser-like
- Organic carbon content: 0%
- N-(and S) based nutrient – no phosphorous
- Plant available nutrient content %: 100% N(H4) (and S(O4))
- pH: 4-7
- Free of pathogens, insect larvae and weed seeds
- Poul-AR[®] technology currently TRL 7. First full-scale installation into operation 2019 leading to TRL 9 from 2020 onwards

Key product benefits:

- Produced from selectively retrieved organic waste streams: fresh poultry manure. All types of poultry dung is applicable: from layers, broilers, etc
- Closing material and nutrient cycle: secure source of carbon, nitrogen, phosphor, and other macro-/micro-elements
- The product can be put together in the same concentrations as the commodity fertilisers. This opens a broad market, as existing machinery can be used to spread these fertilisers.

Competitive position and advantages:

The ammonium nitrate or ammonium sulphate fertiliser resulting from Colsen's Poul-AR[®] technology is a competitively priced artificial fertilizer-like nitrogen fertilizer which can be applied similarly and at similar concentrations as the commodity fertilisers.

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