

Recovery and utilisation of nutrients for low impact fertiliser



Fertiliser product fact sheet – Ammonium Nitrate

Nitrogen fertiliser recovered from anaerobic effluents by bioelectrochemical systems

Ammonium nitrate (NH_4NO_3) is an odourless, colourless or white, crystal salt and highly soluble in water. It is produced by the reaction of ammonia and nitric acid and predominantly used in agriculture as a high-nitrogen fertiliser either directly or as an important component of a tailor-made mixed fertiliser. Ammonium nitrate is a popular fertiliser since it contains around half of the nitrogen in nitrate form and the other half as ammonium. Within Run4Life, a bio-electrochemical system (BES) was developed by Leitac, with the purpose of producing ammonium nitrate from the effluent of the anaerobic membrane bioreactor (AnMBR) in Vigo. In the BES system, ammonia (NH_3) is concentrated from the AnMBR effluent in the cathodic chamber and then stripped to a gas stream. This is followed by a scrubbing step in which the ammonia gas is absorbed in a nitric acid solution, obtaining a liquid ammonium nitrate fertiliser. This product can be used to replace artificial fertiliser.

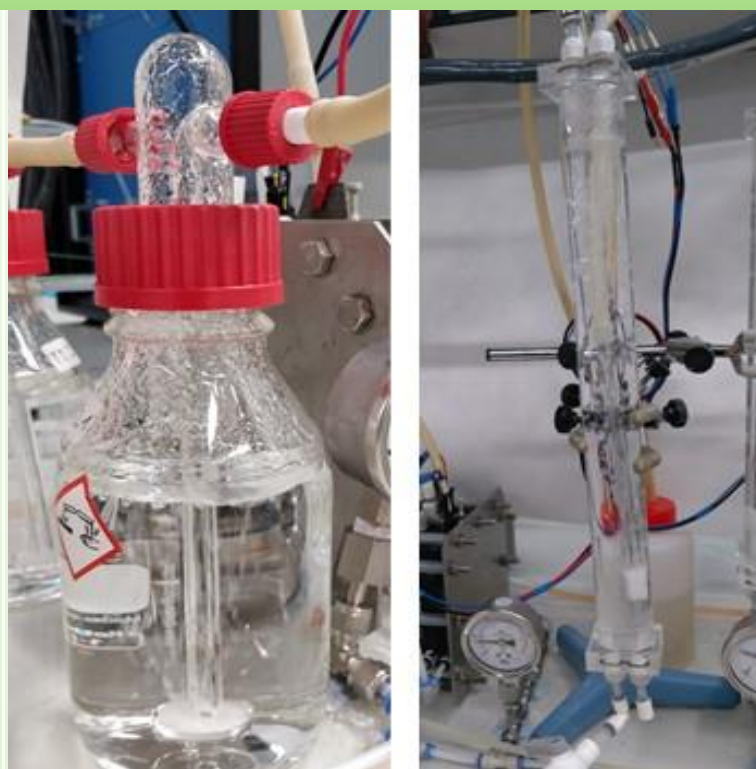
Key facts

- General appearance: liquid solution
- High nitrogenous fertiliser
- Quick-release fertiliser
- Half of nitrogen as nitrate and half as ammonium

Ammonium nitrate in Run4Life

- Produced via BES from anaerobically treated wastewater
- Demosite: Vigo

(see corresponding factsheets)



Part of the scrubbing process to obtain the liquid ammonium nitrate fertiliser. Image by LEITAC.

