Omex Environmental Ltd

Product Guide

www.omexenvironmental.com

We are OMEX

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Service is at the heart of the OMEX offer. OMEX supply a complete treatment package from sample analysis of a wastewater treatment or biogas plant effluent to delivery of a custom made nutrient formulation, ensuring waste streams produced by industrial treatment processes meet current consent parameters before discharge.

OMEX Environmental Ltd is based in the UK and operates both nationally and internationally. It provides a range of liquid and solid treatment solutions for the energy, water, construction and transport sectors.

Micronutrient and Biological Additives

These include trace element additives to optimise biogas production, iron solutions to minimise hydrogen sulphide levels and enzyme solutions to improve fibre breakdown, all of which help to optimise plant performance and increase return on investment.

Water Treatment

With it's range of biological wastewater treatment solutions, OMEX are helping companies to comply with government legislation regarding wastewater discharge. These include odour and septicity control, anti- bulking agents, acid neutralisers, N&P solutions and microbiological augmentation products.

Concrete Admixtures

Anomex Ca is a calcium nitrate solution developed for the construction industry as a multi-purpose concrete admixture which allows concrete to set quickly even at very low temperatures. Unlike other concrete admixtures, it also works to prevent corrosion which helps to strengthen the structure and counterbalances any possible delays to the process which can be caused by other admixtures such as plasticisers.

Biological Compounds

Biological compounds used to optimise biological activity in aerobic wastewater treatment plants as well as high performance bacteria that will break down fat and grease permanently.

Deicers

OMEX liquid deicers are applied to most UK airport runways and a number of key road and rail bridges. Liquid deicer is less abrasive and corrosive, leaves less residue than grit salt and works down to below -20°C.

Nutromex® TEA

Trace Element Additives

In order for anaerobic plants to operate effectively they require a variety of nutrients for the micro-organisms to grow and function properly, including trace elements such as Iron (Fe), Nickel (Ni), Cobalt (Co), Manganese (Mn), Zinc (Zn), Copper (Cu), Molybdenum (Mo) and Selenium (Se).

These nutrients are critical for the successful operation in anaerobic conditions and for correct bacterial growth as deficiencies often occur and can affect plant performance and biogas production. This can lead to poor COD and/or organic solids removal, elevated VFA levels, bacterial slime production, poor microbial growth and poor granulation in UASB type reactors.

Nutromex® TEA is a range of bioavailable micronutrients created for the AD Market to ensure effective operation with optimised process performance.

Benefits of Nutromex® TEA

- Increased biogas production
- Increased methane content of biogas
- Decreased digester VFA (Volatile Fatty Acids) content
- Increased profitability
- Enhanced bioavailability

Back Up Service

- Macro and micro-nutrient profiling
- VFA specification
- Advice on process optimisation

Enzymes
Biogas Additives

OMEX supply enzymes for anaerobic digestion which effectively consume substrates with a high dry matter content to improve biogas production, reduce viscosity and minimise mixability issues in digesters.

These include enzymes applicable to cereal based fibre substrates and waste water treatment plants to improve substrate conversion (more biogas, less sludge).

Process optimisation

•Higher biogas/methane output
•Increased process stability
•Optimised feedstock usage
•Improved mixing

Process efficiency

•Lower electricity consumption
•Higher efficiency

Economic advantages

•Lower operation costs
•Lower maintenance costs

Active Fe
Active Iron Powder

Easy to apply
straight into the fermenter

Prevents
against acidification

Fast results

Optimises
methane content

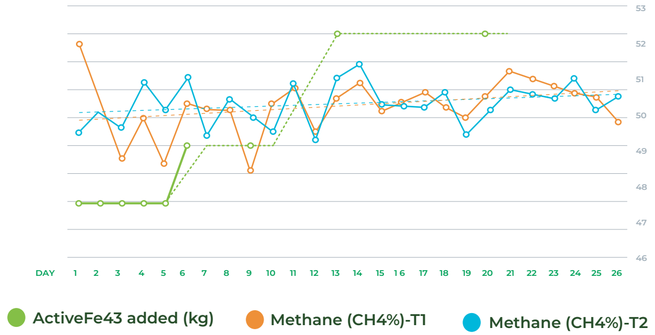
Non-hazardous
compared to other iron products in the market

OMEX Environmental supply a non-hazardous iron powder product to the anaerobic industry for the minimisation of hydrogen sulphide levels in a plant's fermenter.

Hydrogen sulphide needs to be removed to avoid odour and corrosion issues occurring. The dissolved H2S in high concentrations can be toxic to the bacteria in the slurry which can inhibit the production of biogas and cause its composition to alter. The presence of hydrogen sulphide in biogas also makes it corrosive to metal parts. Iron is subject to surface attack, although not major corrosion. However the effect on non-ferrous metals in components, such as pressure regulators, gas meters, valves and mountings, is much more serious as they are very quickly corroded.

Active Fe is designed to minimise hydrogen sulphide levels in the fermenter by binding it immediately during formation. Therefore allowing the AD process to occur uninhibited resulting in optimal biogas yields and methane content, along with reduced levels of corrosion.

Methane behaviour with Active Fe 43 addition



pHast®
Silage Additives

The pHast range is a range of silage additives by OMEX Environmental. Silage additives are blends of engineered bacteria in both powder and liquid form that are applied during foraging via a low volume applicator and help to optimise the nutritional quality of the substrates.

These substrates are then either added to an anaerobic digester to assist with good quality and efficient biogas production or added to optimise the nutritional and physical properties of livestock feeds.

Silage additives help to inhibit the growth of undesirable microorganisms which in turn helps to reduce the production of ammonia and increase the ratios of acetic to lactic acid which in turn helps to reduce fermentation losses, increase clamp and aerobic stability and reduce energy waste.

The pHast range can be added to Grass, Maize or Cereal silage and have been successfully developed to optimise the nutritional quality of the substrates before being fed to the anaerobic digestion plant. The products in the feed range aim to maximise animal performance from the harvested material.

Features and Benefits

- Reduce fermentation losses
- Increase ratio of acetic to lactic acid- Increase aerobic and clamp stability
- Reduce production of ammonia
- Reduction of energy waste
- More energy retained

Nutromex ® NP & PLUS
Nitrogen and Phosphorus Blends

In biological wastewater systems, microorganisms metabolise the soluble potential pollutants, producing carbon dioxide, water and more micro-organisms (sludge).

To do this with optimum efficiency, the microorganisms need a balanced diet that contains the correct ratios of mineral nutrients. Nutritionally, most wastewaters have been found to lack Nitrogen (N) and Phosphorus (P).

OMEX Environmental Ltd has developed the Nutromex® NP and the Nutromex® PLUS range of solutions designed to optimise biological activity in both Aerobic and Anaerobic wastewater treatment plants.

Back-Up Service

- Macro and Micro nutrient profiling to establish the optimum NUTROMEX®NP solution for your individual needs
- Microbiological analysis and reporting
- Advice on process optimisation

Benefits

- Optimal COD and BOD removal
- Minimised solids loss
- Stable operation
- Minimised fluctuations in N&P Outlet

Magmex®

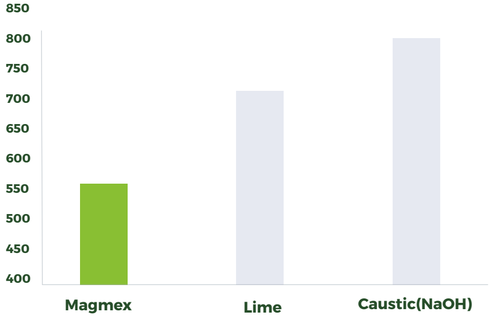
Magnesium Hydroxide Suspensions

A range of magnesium hydroxide suspensions for treating acidic wastewaters and controlling pH levels within both anaerobic and aerobic systems.

Traditionally, sodium hydroxide (caustic soda) and calcium hydroxide (lime) have been used to neutralise acidic solutions. However, these compounds are reactive and can cause high pH levels if not controlled correctly.

The Magmex range is the environmentally friendly answer to the neutralisation of acidic wastewater. It is safe, ready-to-use and overcomes the majority of problems associated with the traditional acid neutralisers such as caustic soda or lime.

Alkali used (kg) to neutralise 1 tonne sulphuric acid (98%)



Magmex 1060

A unique formulation specifically designed for use in situations where higher pH levels are needed to enhance precipitation

Magmex 740

The standard formulation for use where a safe, efficient alkali is required for pH correction and where minimal sludge volumes are needed.

Magmex 706

A stable formulation for use in smaller scale applications where longer term storage is required without the need for agitation.

Magmex OP Series

OMEX's exclusive range of magnesium oxide and hydroxide powder products, which are available for a wide range of applications.

Anomex®

Sodium and Calcium Nitrate Solutions

Odour problems are of growing concern to wastewater treatment and municipal sewage treatment plant operators. Hydrogen sulphide is usually the major gaseous component with the typical 'bad egg' smell, detectable at very low levels.

Smell and septicity occurs when bacteria in the wastewater utilise all the available oxygen and start to reduce any sulphates present into sulphides. Lack of air supply, stagnant areas and warm temperatures all promote this undesirable biological activity.

ANOMEX® has been developed to prevent this odour and sulphide gas build up, by substituting nitrogen into the microbial respiratory processes.

Ferromex®

Ferrous Salts

Treatment and disposal of sewage sludge are major factors in the operation of all wastewater treatment plants. Two basic goals of treating sludge before final disposal are to reduce its volume and to stabilize the organic materials.

Ferromex® was created to improve the coagulation of fine suspended solids in wastewater treatment plants. OMEX's range of ferrous salt solutions have been designed to combat problems such as filamentous bulking, pin flocs, poor floc structure and turbid effluent which can be caused by many factors, such as nutrient deficiency, poor oxygenation and compounds in the wastewater stream that are preferentially consumed by filamentous bacterial species.

As Ferromex® does not consist of any chlorides, the action of biological organisms will not be inhibited, and the removal of phosphorous can still be achieved to an equally high degree. Ferromex also benefits from having a higher pH, which results in reduced impact of material corrosion when compared to using solutions with lower/ more acidic pH values.

Bio Block

Biological Fat & Grease Treatment

Bio Block is a water soluble product that gradually dissolves over a 30 – 90 day period. The slow release provides a continuous supply of high performance bacteria that will break down fat and grease permanently. Bio Block keeps the bacteria where you want them to work and overcomes the problem of unreliable manual application hence avoiding difficult and expensive installation of mechanical dosing. Bio Block also reduces foul odours such as hydrogen sulphide and mercaptans.

The bacteria in Bio Block are able to reduce the build-up of fat and grease across a wide range of applications and is ideal for situations of high water flow, difficult access points and isolated locations such as pumping stations, wastewater treatment plants and settlement lagoons. Bio Block is easily and safely installed by suspending the block into the water flow. This makes it practical and cost effective for use in multiple areas of varying flow such as connecting drains or sewer systems.

Anti-Foam

Foaming Control Agent

In anaerobic digestion foaming can occur due to various causes related to the use of inadequate substrates, increases in grain-rich feedstocks or suboptimal operating conditions. From an operational perspective, organic overloading of an anaerobic digestion plant, heavy mixing, insufficient digestate recirculation or heating can also lead to excessive foaming.

OMEX Environmental can supply a range of products to address these types of foaming events for both aerated and anaerobic biological processes. These products are aimed at minimizing the effect of an active event and, for processes with the tendency for frequent foaming, these products can offer stable and effective mitigation measures against the reappearance of foaming in the process.

Micromex®

Biological Compounds

The main purpose of a biological wastewater treatment plant is to break down waste organics. Micro-organisms metabolise the soluble pollution, producing carbon dioxide, water and more micro-organisms (sludge).

The performance of a biological system is highly dependent on the microbial strains present and, in many cases, the biological population in an effluent treatment plant is not ideally adapted to cope with variations in loading and composition and therefore unable to provide optimum performance.

OMEX offers the Micromex® EU range, a range of bio augmentation solutions designed to optimise the biological activity in aerobic wastewater treatment plants, individually tailored for all types of effluent.

Micromex® will result in optimal COD and BOD removal, sludge flocs with superior settling characteristics and the ability to target specific pollutants amongst other things.

Anomex Ca

Concrete Admixtures

Anomex Ca is a calcium nitrate solution developed for the construction industry as a multi-purpose concrete admixture which is used as a concrete setting accelerator even in cold temperatures. Calcium increases the rate of early hydration of the concrete, thus creating a speedier setting time and strength development of the concrete. It also works to prevent corrosion in reinforced concrete by forming an oxide protective layer around the steel reinforcement which helps to strengthen and increase the lifetime of the structure.

Another advantage of Anomex Ca is that it counterbalances the retardation effect which can be created by other admixtures such as plasticisers and superplasticisers.

Key Benefits

- Ability to cast concrete in extremely cold temperatures
- Prevent corrosion in reinforced concrete
- Shorter setting time
- Counterbalance of retardation process due to other admixtures

Deicers

Liquid and Solid Deicers

OMEX manufactures and supplies an advanced range of non-toxic, non-corrosive and non-hazardous liquid deicers.
Liquid deicers are the most widely used form of non-corrosive deicer, especially on larger areas such as airport runways due to rapid and accurate application.

OMEX also supply solid granular deicers for easy application in difficult to reach access areas. They are also ideal for use in amenity areas, where conventional salt can cause damage to plants and structures.

Packaging
OMEX deicers are supplied in a range of pack sizes from 10 litre drums and 1000 litre IBC containers to bulk tanker loads and in 25 kg or 500 kg bags.

Application
Application is straightforward with a varied choice of applicators available, from a simple watering can with a fine rose or backpack sprayer, to pedestrian powered sprayers, to a range of towed sprayers

Dosing Units

Commissioning, Installation & Delivery

OMEX supply a wide range of dosing units to dose a wide range of products. OMEX's standard dosing units for sodium and calcium nitrate solutions, range from 1400 Litres to 10,000 Litres in duty, duty standby and duty assist configurations. Profile dosing and telemetry connections are supported with septicity modelling also available for every project on request.

OMEX will visit a site and ascertain dosing requirements to provide the optimum dosing system. The complete unit is delivered on site and supplied with a commissioning fill of OMEX product. OMEX's dosing units are easy to install and maintain.

All that is needed for installation is a suitable flat surface or plinth for the unit, a power supply and means of getting the dosing line to the wet well. The dosing pump is equipped with a fully programmable timer system to enable a range of dosing rates which is also set during installation.

Technical Support

Nutrient Profiling, Sample Analysis and more

Technical support and advice is available from the very start of business with OMEX, from sample analysis in a fully equipped laboratory, to the recommendation of daily dosage rates of the required chemical for treatment plants, to tailor made nutrient solutions specifically designed for individual requirements.

Biological Support contracts are available upon request to fulfil specific operating licence requirements, giving you peace of mind that you are receiving expert advice from our Technical Team with regular analysis and telephone support to discuss daily operations or quickly troubleshoot any issues that may arise, as well as on site visits to assist in plant operations.

OMEX offer a nutrient profiling service to all their new and existing customers from their fully equipped laboratories. OMEX can assess and advise the correct nutrient dosage, both amount and type, to be used in a specific biological treatment plant. It is also a way of giving periodical checks on the health of the overall system to enable optimum performance.

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