



*Ammonia in its natural state is a colourless gas with a pungent odour. In industry the gas is handled either under pressure to condense it into a liquid or dissolved in water or other chemical and handled as an ammonia solution. Also known as: Ammonium Hydroxide, aqueous ammonia*

**Applications**

Ammonia is commonly used for its nitrate content and antiseptic properties. It is the second largest chemical used in industry by volume and used in a great number of processes.

- Fertilizer production
- Commercial/Industrial cleaning products such as glass and oven cleaner
- Refrigeration
- Anti-microbial for food packaging/foodstuffs
- pH correction in fermentation
- Nitrogenous compounds
- Explosives
- Pharmaceuticals/Smelling salt stimulants
- Scrubbing gases from fossil fuel processing
- Textile production
- Specialist wood treatment

**Pumping considerations**

The main considerations for handling liquid ammonia in a pumping system are to contain the fluid and vapour lock.

Ammonia gas is harmful to human health, particularly to the lungs and respiratory system.



Where ammonia is a gas handled under pressure, any leak in the system or pump unit will release the ammonia into the atmosphere, potentially exposing risk to the surrounding workforce.

Cast iron parts will rust when drained of ammonium hydroxide and not protected with oil.

**The pumping process**

Although the pump specification for ammonia may differ depending on how it is maintained in a liquid state, the focus should be on the containment from the atmosphere.



### Mag drive technology

A mag drive pump is recommended for ammonia – This is due to the pump being leak-free as there are no mechanical seals. With no moving parts or wearable seal between the fluid and atmosphere, the o-ring sealing system will ensure containment.

A mag drive pump can sustain higher pressures than many other pump types as well as low temperatures. If the ammonia is kept at low temperature or condensed through a pressurized system, a mag drive pump will be able to handle it safely.

Ammonia solution is very susceptible to 'gassing off' I.e. the gas parts of



the solution evaporating from the liquid, even within a closed line during transfer, potentially causing 'vapour lock' i.e. where a pocket of gas causes a stoppage in the flow path. It is recommended the system contains sufficient function to release the gas appropriately, particularly if the

pump's working principle is pulsating.

Common specifications include both metallic and non-metallic wetted materials such as stainless steel. It is recommended to avoid using cast iron, brass, bronze and rubber-based elastomers.



A Verdermag Global mag drive pump with stainless steel pump end. The unit has no mechanical seals. Instead the pump features an o-ring assembly for its containment so it will not leak. Verdermag Globals have been installed in ammonia processes at fertilizer plants all over Europe.

Verder UK supply pumps for virtually every chemical type and application. The Verder range includes leak-free mag drive pumps, chemically inert non-metallic AODD pumps, peristaltic dosing pumps for the accurate delivery of chemical including abrasive and solid-laden types.

Contact us for advice on specifying a pump for your ammonia process on 01924 221 001 or email [sales@verder.co.uk](mailto:sales@verder.co.uk)

*Disclaimer: The information contained in this sheet has been researched from credible sources and should be considered as a guide only. Due to the many variables in a process, it is recommended contacting Verder for advice about your exact fluid and operating conditions.*



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