

Industrial PRODUCTS



AEL's industrial product series is supplied into South African, African and selected international markets. With direct access to AEL's large team of leading engineers and scientists, the industrial products division is able to offer a broader series of highly versatile industrial solutions, which perform well against strict quality parameters. Innovations such as curing before bagging, allow for the enhanced structural integrity of the porous prill which ensures its superior performance from the point of production to where the product is used down the hole.

Our products include solid and liquid Ammonium Nitrate (AN), nitric acid, 25 % ammonia solution as well as anhydrous ammonia, all of which are conveniently sourced from AEL's industrial hub in Gauteng. Our industrial products are known for their consistency with regards to quality standards and are supported by a highly skilled technical team.



The reliable supply of high quality industrial products forms an integral part to any mining or chemical process operation. AEL's policy is to provide to explosives divisions first.



Industrial Products

GENERAL SPECIFICATIONS OF INDUSTRIAL PRODUCTS						
Technical properties	TECHNICAL GRADE AMMONIUM NITRATE (TGAN)	HIGH DENSITY AMMONIUM NITRATE (HDAN)	AMMONIUM NITRATE 88 % SOLUTION (ANS)	NITRIC ACID 60 %	AQUEOUS AMMONIA 25 %	AMMONIA 100-I, AMMONIA 100-R
Appearance	Coarse, porous, hardened spherical particles	Glossy-white spherical particles	ANS is a clear liquid, free from suspended matter and visible impurities	Clear colourless to pale yellow	Colourless liquid, pungent odour	Clear, colourless liquid
Concentration	Not less than 99.5 % (m/m) as ammonium nitrate (when packed)	Not less than 94.2 % (m/m) as ammonium nitrate (when packed)	To lie within the range 87.5 % to 89.5 % (m/m) as NH_4NO_3	Nitric acid 59 to 61 %, balance water	Not less than 25 % ammonia content	Ammonia ca 100 %
Nitrogen Content (% N)	35 %	35 %	30 %	N/A	20 %	N/A
Oil Absorption	Not less than 6.0 % (m/m)	N/A	N/A	N/A	N/A	N/A
Bulk Density	To lie within the range 0.69 to 0.77 g/cm ³	To lie within the range 0.80 to 0.97 g/cm ³	At 120 °C: ~1.36 g/cm ³	At 20 °C: 1.367 g/cm ³	Not more than 0.88 g/cm ³	0.61 g/cm ³ at 20 °C
Moisture	Less than 0.2 %	Less than 2 %	N/A	N/A	N/A	Less than 0.05 %
Reaction	Tested for pH	Tested for pH	50 % solution at 60 °C, pH to lie within the range 3.3 to 3.9	N/A	N/A	N/A

STORAGE AND EXPIRY						
Product	TECHNICAL GRADE AMMONIUM NITRATE (TGAN)	HIGH DENSITY AMMONIUM NITRATE (HDAN)	AMMONIUM NITRATE 88 % SOLUTION (ANS)	NITRIC ACID 60 %	AQUEOUS AMMONIA 25 %	AMMONIA 100-I, AMMONIA 100-R
Storage	Must be stored in a cool, dry and unconfined space-avoid contamination and direct sunlight	Must be stored in a cool, dry and unconfined space-avoid contamination and direct sunlight	<p>The pH must remain above 2</p> <p>Cooling to below 10 °C must be avoided, else the product starts to crystallise</p> <p>Heating the product above 170 °C could lead to detonation</p>	60 % Nitric acid-stainless steel tanks	<p>Storage tanks must be earthed</p> <p>Tanks to be in well-ventilated area, no direct sunlight and heat</p>	<p>Stored in high pressure tank or at low temp to remain in liquid form</p> <p>Storage tanks must be earthed</p>
Shelf Life	<p>Bulk product can be stored in silos for up to 1 week but should ideally be used as soon as possible.</p> <p>6 months for bagged product</p>	6 months for bagged product	Recommended that ANS be used as soon as possible.	5 years	6 months	N/A

Ammonium Nitrate

TECHNICAL GRADE (TGAN)

This is essentially ammonium nitrate (NH₄NO₃) presented in the form of coarse, porous, hardened spherical particles. The material is treated with internal additives for hardening and an external anti-caking agent.

TECHNICAL SPECIFICATIONS

The material is presented in the form of free-flowing, white to cream-coloured, spherical particles. The product is free from grit, visible impurities and foreign matter.

BENEFITS

- Reduced caking and improved flowability minimises waste
- Superior fuel absorption improves blast performance by facilitating an optimal oxygen balance through the addition of fuel
- Storage and handling benefits of prill (longer shelf life, ease of handling)
- Consistent product quality improves handling and bore-hole loading rates
- Reduced dust and fines during handling, minimises health and environmental concerns
- The tight controls on product density and uniformity of particle size maximise in-process controls

FEATURES

- Topan™ prilling process
- Prill curing
- Superior hard and strong prill with reduced friability and moisture content
- High porosity
- Various packaging sizes

APPLICATION

- Pumped Emulsions
- Bulk ANFO explosives
- Heavy ANFO's



SPECIAL PRECAUTIONS

TGAN is moderately toxic and may decompose at high temperatures and may explode under certain conditions. Avoid confinement. Under extreme conditions an explosion may occur.

PACKAGING

Technical Grade (TGAN)

Bags (Packed in robust woven polypropylene bags with inner polyethylene liners to minimise moisture ingress. All bags have UN certification & conform to international requirements)	25 kg
	1,000 kg (containerised for exports)
	1,200 kg

Bulk

Bulk tanker
Rapid Reloading System (RRS)

Transport (UN Classification)

Class 5.1D, UN no. 1942, Oxidising agent

Ammonium Nitrate

EMULSION GRADE (HDAN)

HDAN comprises dense ammonium nitrate particles obtained by spray-drying ammonium nitrate solution. Once dissolved the solution can be used to manufacture base emulsion or used for other chemical processes.

TECHNICAL SPECIFICATIONS

The material is presented in the form of glossy white spherical particles and does not contain any visible impurities or foreign matter.

BENEFITS

- Reduced caking and improved flowability
- The material remains reasonably free flowing after transportation and storage
- No flocculation required after melting, prior to emulsion manufacture

FEATURES

- Superior hard prill with reduced friability and moisture characteristics
- High packing density

APPLICATION

Manufacture of base emulsion and use in chemical processes.

SPECIAL PRECAUTIONS

HDAN is moderately toxic and may decompose at high temperatures. Avoid confinement. Under extreme conditions an explosion may occur.



PACKAGING

EMULSION GRADE (HDAN)

Bags (Packed in robust woven polypropylene bags with inner polyethylene liners to minimise moisture ingress. All bags have UN certification & conform to international requirements)	1050 kg
	1,200 kg
	(containerised for exports)

Transport (UN Classification)

Class 5.1D, UN no. 1942, Oxidising agent

Ammonium Nitrate Solution (ANS)



This is a hot concentrated 88 % solution of ammonium nitrate (NH_4NO_3) used in the manufacture of base emulsion or can be used in other chemical processes (diluted or otherwise).

TECHNICAL SPECIFICATIONS

A concentrated 88 % solution of ammonium nitrate (NH_4NO_3).

BENEFITS

- Consistent concentration and purity provides consistent process control and end product quality
- Convenient temperature range for transportation over long distances

FEATURES

- Strict process control resulting in superior pH and purity

APPLICATION

- Manufacture of base emulsion
- Fertiliser raw material
- Other chemical processes

SPECIAL PRECAUTIONS

ANS may become explosive when the concentration increases due to water evaporation under elevated temperature conditions. It is critically important to use equipment which meets engineering requirements. Such compliance minimises explosion risk since the transfer of Ammonium Nitrate Solution (ANS) by mechanical means is hazardous and can lead to an explosion if not properly performed.

Furthermore, it is important to keep the material in solution at a pH of greater than 2 since a low pH can lead to fume-off of NOX gasses, which may lead to an explosion.

PACKAGING

Bulk Tanker-approximately 30 tonnes

Transport (UN Classification)

Class 5.1 UN No 2426 Elevated temperature OXIDISING AGENT

Nitric Acid



This is a 60 % solution of nitric acid (HNO₃) in the form of a clear colourless to pale yellow, fuming, corrosive liquid with a pungent odour. It is used mainly in the production of ANS and in chemical processes.

TECHNICAL SPECIFICATIONS

The material is a clear, colourless to pale yellow, fuming liquid, free from visible impurities and sediments. A chemically pure form is also available.

BENEFITS

- Consistent product quality
- A chemically pure nitric acid is available for some chemical processes

FEATURES

- Clarity of solution with low impurities
- Demineralised water used in the production process

APPLICATION

Manufacture of ammonium nitrate products and other industrial chemicals

SPECIAL PRECAUTIONS

- Full protective clothing and a face shield should be worn when handling Nitric Acid
- It is highly corrosive and attacks most metals vigorously
- It is also a powerful oxidising agent that can react violently with organic substances

PACKAGING

Bulk road tankers

Transport (UN Classification)

Class 8, UN No 2031 (60 %); Corrosive Material OXIDISING AGENT

Aqueous Ammonia



This is an aqueous solution of ammonia (ammonium hydroxide, NH_4OH) in the form of a clear, colourless to slightly yellowish liquid with a pungent, suffocating odour.

TECHNICAL SPECIFICATIONS

Concentration of solution not less than 25 % and with a density of not more than 0.907 g/cm^3

Meets SANS 52122:2007 requirements

BENEFITS

- Manufacturing facility conveniently situated in the industrial hub of Gauteng, South Africa
- Consistent product quality
- Complies with the requirements of FEMA GRAS (Flavour and Extract Manufacturers Association, Generally Recognised as Safe list)
- Complies with SANS 51122:2007

FEATURES

- Demineralised water used in the production process
- Consistent product quality
- Easy to handle and store

SAFETY HANDLING

- Avoid contact with skin/eyes
- Do not inhale vapour
- Avoid ingestion

APPLICATION

- Liquid fertiliser
- Manufacture of industrial and fine chemicals
- Metal recovery processes
- Neutralising agent for acids
- Water purification

SPECIAL PRECAUTIONS

- Avoid ingestion, inhalation, contact with the skin and eyes
- Wear full protective clothing when handling the material and ensure adequate ventilation
- Avoid sources of ignition and heat
- Care must be exercised when opening the valves

PACKAGING

Bulk Road Tankers

Transport (UN Classification)

Hazchem Code: 2P, UN No. 2672, Packing Group III, IMDG Class 8, Shipping name AMMONIA SOLUTION (10-35 % ammonia)

Ammonia 100-I, Ammonia 100-R

Anhydrous ammonia (NH_3) is a colourless gas or when stored under pressure, is a clear water-white liquid. Both forms have a sharp suffocating or intensely irritating odour. Ammonia 100-I is industrial grade and Ammonia 100-R is refrigerant grade.



TECHNICAL SPECIFICATIONS

- **Purity:** c.a. 100 percent
- **Boiling Point at atmospheric pressure:** -33.5 °C
- **Density:** 0.61g/cm³ at 20 °C
- Refrigerant Grade. Contaminants are water, less than 0.05 % m/m and oil, less than 0.001 % m/m.

BENEFITS

- Product supply facility conveniently situated in the industrial hub of Gauteng, South Africa
- Consistent product quality
- Reduced corrosiveness

FEATURES

- Commodity product
- Infinitesimal water content
- Unique logistics solution

SAFETY HANDLING

- Avoid contact with skin/eyes
- Do not inhale vapour
- Avoid ingestion

APPLICATION

Ammonia 100-I

- Manufacture of Nitric Acid
- Manufacture of ANS
- Manufacture of other chemicals

Ammonia 100-R

- Refrigeration liquid

SPECIAL PRECAUTIONS

- Engineering standards must be met for storage and handling to ensure that ammonia is not released into the atmosphere
- The boiling point at atmospheric pressure is -33.34 °C, at which the product evaporates- take care during handling!
- Avoid sources of ignition and heat
- Care must be exercised when opening the valves
- Do not confine without adequate vapour space or pressure relief valve with discharge piped to a safe place

PACKAGING

Sold in bulk tankers or ISO Containers

Transport (UN Classification)

Hazchem Code: 2PE, UN No. 1005-IMDG Class: 2(2.3),
Shipping Name: AMMONIA, ANHYDROUS, LIQUEFIED