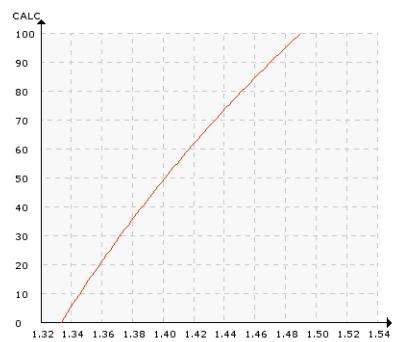


AMMONIUM NITRATE, NH_4NO_3

Typical end products
Fertilizers, explosives

Chemical curve: Ammonium nitrate R.I. per Conc% b.w. at Ref. Temp. of 20°C



Introduction

The primary industrial use for ammonium nitrate (NH_4NO_3) is in the explosives and fertilizers industries. Ammonium nitrate is also used for the treatment of titanium ores.

Application

Ammonium nitrate is produced by reacting nitric acid with ammonia. 95% ammonium nitrate solution and

quality additives are fed into a prilling tower from a final concentrator, where the solution is concentrated to 97.5-98%. Some of the concentrated solution is gravity fed into a slurry tank. Small pellets of ammonium nitrate are formed in the prilling tower.

In the slurry tank, the filler is dispersed, the oversize and small fines are melted, the 97.5% ammonium nitrate solution from the concentrator is discharged, and the moisture content of the mixture is adjusted by the addition of scrubbing liquor.

The slurry is conveyed from the tank through a hot air atomizing system to form tiny droplets. These droplets are sprayed onto a curtain of falling granules, made up from the product from the prilling tower and fines separated by screening.

After passing through the fattening drum, the material is discharged to screens, where it is classified into four fractions. The graded product is then fed into the fluidized bed cooler.

The cooled ammonium nitrate is treated against caking before storage. The treatment is performed in a rotary drum, where the liquid coating agent derivatives, made of oil and amine, are sprayed.

Installation

Ammonium nitrate end product quality control is best achieved by monitoring the process with process refractometers. The K-Patents Process Refractometer PR-23-GP is installed on the concentrator and slurry tank outflows.

The concentrator of the outflow solution of NH_4NO_3 is 90-98% and the process temperature is 160-180°C

(320-356°F). From the slurry tank, the solution of NH_4NO_3 is 90-98% and the process temperature is 150-160°C (302-320°F).

Typical measurement range is 60-100% NH_4NO_3 and typical accuracy is 0.2% NH_4NO_3 . Appropriate equipment with hazardous and intrinsic safety approvals are available when required.

Instrumentation	Description
	K-Patents Process Refractometer PR-23-GP is an industrial refractometer for large pipe sizes and tanks, cookers, crystallizers and kettles. Installation through a flange or clamp connection.
Area classification:	Intrinsic safety and hazardous area approvals available.
Measurement range:	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 % by weight.