



URMIA PETROCHEMICAL COMPANY



Abstract:

Urmia petrochemical company are in production from 1995 for producing 4000T/Y Melamine and 40000T/Y Ammonium sulfate (after capacity increasing in 2016).

Acid Sulfuric production started in 2015 with 50000T/Y .

And all of the plants are in service and production.

Our feeds are Urea and Ammonia and Sulfuric Acid and sulfur. New projects for producing of Potassium sulfate 40000T/Y and HCL 33% 50000T/Y production are in progress and contract.

Expansion of complex and increasing of capacity are future aims. Complex is in Road of Urmia to Mahabad in west Azerbaijan province of Iran.



product	ton
Crystal Melamine	12.12 ton/day
Ammonium Sulphate	121 ton/day
Acid Sulfuric	150 ton/day

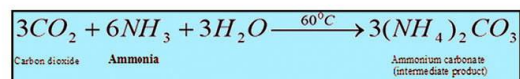
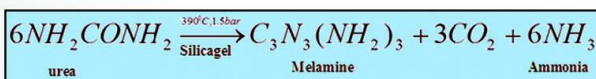
Melamine Crystal Description

Urea are feed in 385-395 C in silica catalyst and fluidized bed Reactor. And then converted to melamine and then purified with solving and crystallizing again in plant.

Feeds in melamine unit	
Amount of use (ton of year)	Feed consumable
15200	Urea
7800	Ammonia

Products in melamine unit	
Amount of Production (ton of year)	Name of product
4000	Melamine crystal powder
18600	Ammonia carbonate slotion

reactions in melamine unit



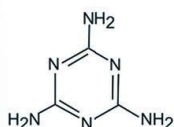
Melamine Uses :

Wood indusy : for clear, heat resistant and fire covering of wood. Paint Industry : for producing amino paints (car and bicycle paints ...etc). Paper Industry : for producing clear, waterproof and non-wrinkleable paper(bank notes). Textile Industry : for producing waterproof and non-shrinkable cloths and enhancing washability and fireproofness.



Leather Industry : for producing clear , waterproof and durable leather. Rubber Industry : for enhancing rubber adhesiveness effect. Moulding Industry : as cellulose fiber and for manufacturing kitchenware and as glass fiber for manufacturing kitchenware and as glass fiber for manufacturing plugs, stockets and electrical .

Melamine Structure :



Ammonium Sulfate

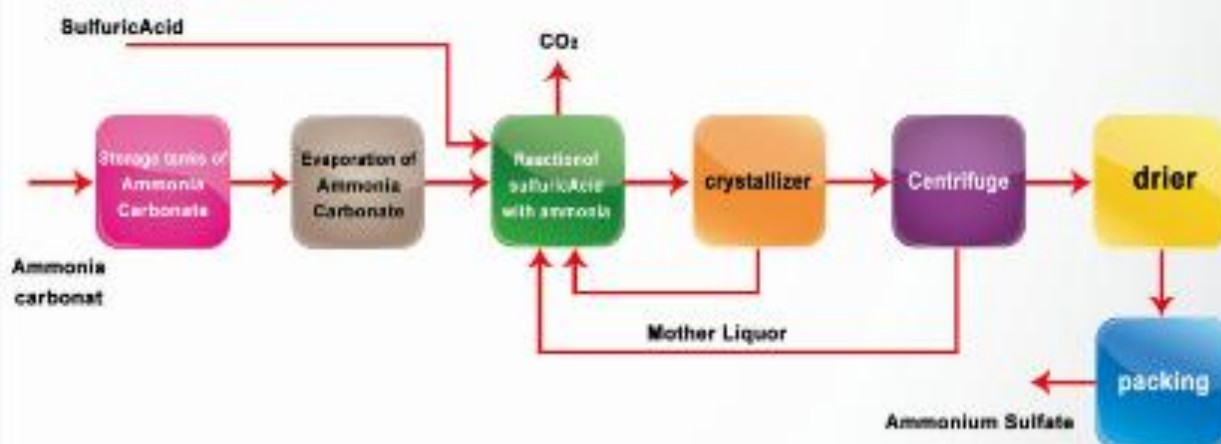
Ammonium Sulfate is produced as a by product in UPC. By reaction between sulfuric acid and ammonium carbonate. The final product was accepted as a fertilizer by farmers. Also it should be used in some chemical industries such as leather, detergents.

Ammonium carbonate produced in melamine plant or Ammonia with sulfuric acid reacted in 100C and produced ammonium sulfate solution and sent to crystallizer and centrifuge and drier and packaging system

Ammonium Sulfate Specification			
No.	Property	Unit	Value
1	N Content (on dry basis)	Wt%	20.8 min
2	Moisture (H ₂ O)	Wt%	1.0 max
3	Free acid content (H ₂ SO ₄)	Wt%	0.2 Max
4	Sulfur (S)	Wt%	24%min



PROCESS



Sulfuric Acid Unit

The manufacture of sulfuric Acid is based on Double Contact Double Absorption (DCDA) process. Sulfuric Acid Plant has a rated capacity of producing 150 TPD (98.5%) Technical Grade Sulfuric Acid. It has a flexibility of operation in a range of 30-110% of its rated capacity.

The main steps consists of Burning of elemental Sulfur in excess of air to form Sulfur Dioxide (SO_2). Conversion of Sulfur Dioxide to Sulfur Trioxide (SO_3) in presence of Vanadium Pentoxide (V_2O_5) Catalyst and finally reacting Sulfur Trioxide. So formed, with water to produce a solution containing 98.5% H_2SO_4 as product. On account of the exothermic nature of the reactions in the Sulfur burning. Conversion and absorption. Lot of heat is generated. This heat is partially utilized for melting Sulfur & deaeration & balance heat is utilized for generating steam at $10 \frac{Kg}{cm^2g}$

The total amount of steam generated is 9.5 tons per hour.

Sulfuric acid referred as universal chemical, king of chemicals due to the numerous applications for sulfuric acid as a raw material or processing agent. Sulfuric acid is the most commonly used chemical in the world and used in almost all industries like

☑ Sulfuric Acid Uses :

- Fertilizers
- Pharmaceuticals
- Gasoline
- Automobile batteries
- Paper bleaching
- Sugar bleaching

☑ Water treatment

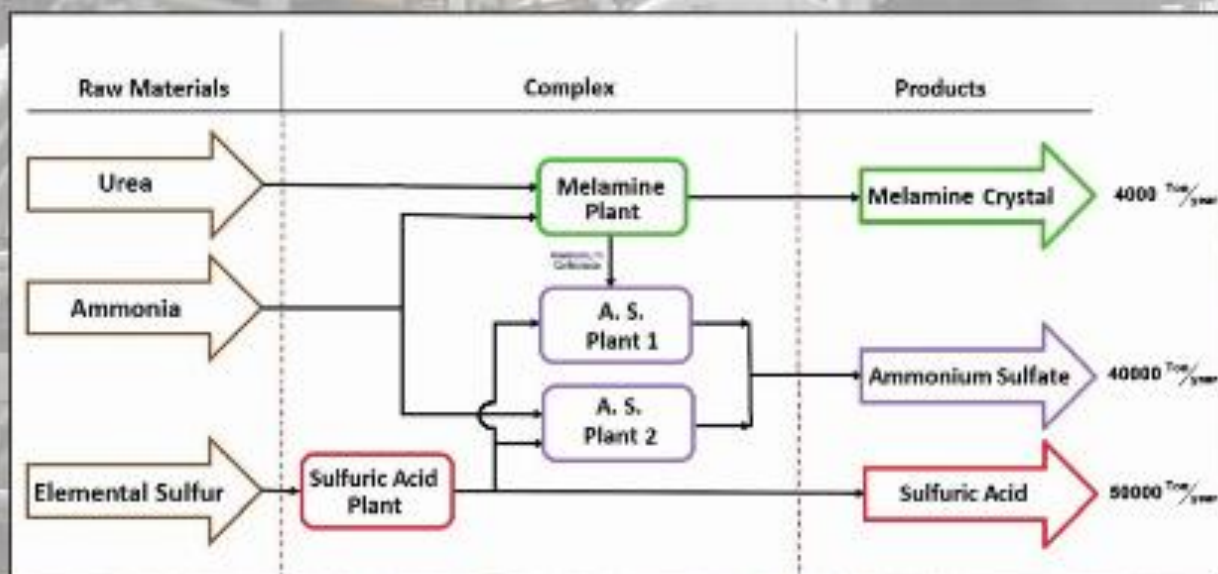
- Sulfonation agents
- Cellulose fibers
- Steel manufacturing
- Coloring agents
- Amino acid intermediates
- Regeneration of ion exchange resins



Figure 1 Uses of sulfuric acid.



**Melamine crystal, Ammonium sulfate, Sulfuric Acid
production of process**



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