

AMMONIUM NITRATE BASED FERTILISERS IN SC “ACHEMA”

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SHORT HISTORY

- Establishment of the company “Azotas”.
First ammonia plant launched 09.02.1965
- Methanol plant launched 1968
- Urea plant launched 1971
- Nitric acid plant launched 1972
- AN plant launched 1973
- “Azotas” becoming a member of IFA 1989
- Privatization of “Azotas” – establishment of SC “Achema” 1994
- Production of urea-ammonium nitrate (UAN) launched 1995
- Quality Management System ISO 9002 implemented 1998
- Environment Protection Management System
ISO 14001 implemented 2000
- Launch of CAN production 2003
- Launch of cogeneration unit 2003
- Independent fertilizer testing laboratory launched 2004

AN BASED FERTILIZERS

- AN prilled 570 kTPY
- CAN granulated 540 kTPY
- UAN solution 1000 kTPY

AN prilled

PRODUCT CHARACTERISTIC

- Nitrogen content, % 34,4±0,3
- Water content, mass% max 0,3
- pH of 10% water solution min 5
- Granule strengt, N/granule min 14
- Granulometry analysis, %:
 - 1-4 mm min 97
 - 2-4 mm min 88
 - up to 1 mm max 1,5

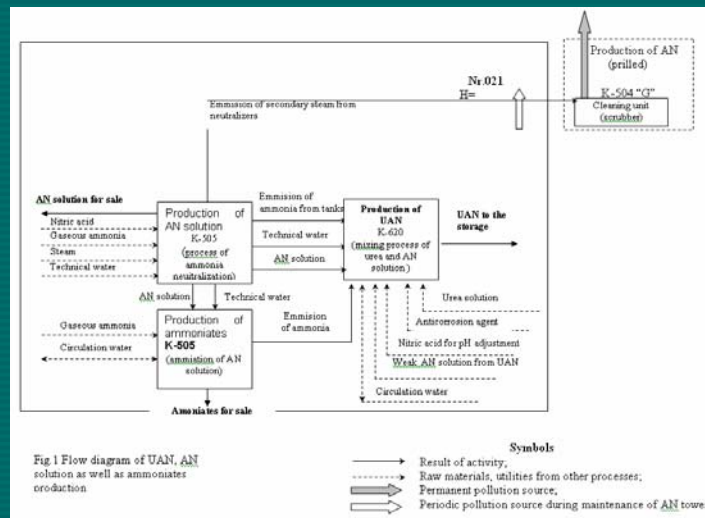
STAGES OF AN PRODUCTION

- Obtaining of AN aqueous solutions
- Evaporation of AN solution
- Granulation of AN melt and cooling down of final product
- Treatment of air and gases to be emitted to the atmosphere
- Packing as well as storage of the final product

UAN solution PRODUCT CHARACTERISTIC

Characteristic	UAN-28	UAN-30	UAN-32
1. Appearance	Colorless or brownish liquid without deposits		
2. Content of total nitrogen (N), mass %	28,0 ± 0,6	30,0 ± 0,6	32,0 ± 0,6
including:			
Content of ammonia nitrogen (N-NH ₃), mass %	7 ± 0,7	7,5 ± 0,7	8 ± 0,8
Content of nitrate nitrogen (N-NO ₃), mass %	7 ± 0,7	7,5 ± 0,7	8 ± 0,8
Content of urea nitrogen (N-NH ₂), mass %	14 ± 1,4	15 ± 1,5	16 ± 1,6
3. Mass ratio of urea and ammonium nitrate	0,73 ÷ 0,83	0,73 ÷ 0,83	0,73 ÷ 0,83
4. pH	6,5 ÷ 7,5	6,5 ÷ 7,5	6,5 ÷ 7,5

Flow diagram of UAN, AN solution as well as ammoniates production



CAN granulated PRODUCT CHARACTERISTIC

Characteristic	Value
Content of nitrogen (N), mass %	27,0 ± 0,4
Content of:	13,5 ± 0,5
Ammonia nitrogen (N-NH ₃), mass %	13,5 ± 0,5
Nitric nitrogen (N-NO ₃), mass %	
Content of calcium oxide (CaO), mass % min	6,0
Content of magnesium oxide (MgO), % min	4,0
The content of calcium carbonate and magnesium carbonate (CaCO ₃ + MgCO ₃), mass % min	20
Average size of granule, mm min	3,5
Moisture, % max	0,3
Static strength of granule (kg/ granule) min	35 (3,5)

MAIN STAGES OF CAN PRODUCTION

- Dolomite unloading, storage and milling;
- Production of 94-95 % ammonium nitrate;
- Production of calcium ammonium nitrate;
- Final product storage, packing, delivery;
- Waste water treatment

CONCLUSION

1. Prilled Ammonium Nitrate (34,5% N) leaves the road for the AN based fertilizers with less AN content like CAN and/or NPK
2. Nitrogen fertilizers containing sulphur (NS)based on AN with anhydrite (CaSO_4) set to the limestone and/or dolomite hasn't any approval to be more dangerous in terms of the risk of AN detonation than that of CAN
3. Liquid fertilizers containing AN, came to a considerable part of "Achema's" industrial practice
4. AB "Achema" will sponsor programme devoted to improve nitrogen use efficiency.