

# 1 Important reactions

**Frasch process** - Elemental sulfur mining

**Finish process** - Elemental sulfur from pyrites ( $\text{FeS}_2$ ).

**Contact process** - Sulphuric acid manufacturing from  $\text{SO}_2$  (upto 98 % pure acid is possible).

**Chamber process** - Old method for sulphuric acid manufacturing (only 80 % concentration is possible).

**Merseburg process** - Gypsum ( $\text{Ca}_2\text{SO}_4 \cdot 2\text{H}_2\text{O}$ ) from the wet process for the Phosphoric acid is converted into ammonium sulfate and calcium carbonate (limestone) by reacting it with ammonium carbonate.

**Leblanc process** - Oldest known method for the manufacturing of soda ash from sodium sulfate and limestone.  $\text{Na}_2\text{SO}_4 + \text{CaCO}_3 \rightarrow \text{CaSO}_4$  (gypsum) +  $\text{Na}_2\text{CO}_3$  (soda ash) This is no longer used and it is replaced by Solvay process.

**Solvay process** - Production of soda ash from limestone, coal, and brine.

**Lime causticization** - aka lime-soda ash process, is first followed method for the manufacturing of caustic soda ( $\text{NaOH}$ ).  $\text{Ca(OH)}_2 + \text{Na}_2\text{CO}_3 \rightarrow \text{NaOH} + \text{CaCO}_3$ . Later this method is replaced by brine electrolysis.

**Claude process** - Air liquification process at very high pressure. It is also a pressure modification (In the 100 - 1000 atm range, >900 atm pressure is used) of the  $\text{NH}_3$  synthesis process.

**Casale process** - Pressure modification (In the 100 - 1000 atm range, 600 atm pressure is used) of the  $\text{NH}_3$  synthesis process.

**Haber's process** - Pressure modification (In the 100 - 1000 atm range, 200 - 300 atm pressure is used) of the  $\text{NH}_3$  synthesis process.

**Mont cenis process** - Pressure modification (<100 atm range) of the  $\text{NH}_3$  synthesis process.

**Inventa process** - Urea production. Unreacted ammonia is absorbed in urea nitrate and then later stripped and recycled to the autoclave.

**Chemico process** - Urea production.  $\text{CO}_2$  is stripped from the off-gas ( $\text{NH}_3$  -  $\text{CO}_2$ ) using monoethylamine (MEA) and  $\text{NH}_3$  is recompressed and recycled to the autoclave. ("C"hemico - "C" $\text{O}_2$  stripping using MEA).

**Kraft process** - Pulp manufacturing - Chemical (Sulfate) treatment of wood to extract cellulose content alone from the non-cellulose and the lignin.

**Fourdrinier process** - Process of converting the fibre suspension (0.5 percentage) into paper product using the three steps (Wet web formation, pressing and drying, finishing). Machine in which this process is carried out is called Fourdrinier machine.

**Linde process** - Air liquefaction process.

**Wulff process:** - Acetylene production by pyrolysis of hydrocarbons.

## 2 Trade names of compounds

Soda ash/Salt cake	: $\text{Na}_2\text{CO}_3$
Washing soda	: $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
Baking soda	: $\text{Na}_2\text{SO}_4$
Caustic soda	: $\text{NaOH}$
Limestone	: $\text{CaCO}_3$
Gypsum	: $\text{CaSO}_4$
Quick lime	: $\text{CaO}$
Pickling/slaked/caustic lime	: $\text{Ca}(\text{OH})_2$
Phosphate rock	: $\text{CaF}_2 \cdot 3\text{Ca}_3(\text{PO}_4)_2$
Bone phosphate of lime (BPL)	: Amount of $\text{Ca}_3(\text{PO}_4)_2$ Used for measuring the phosphate content of a phosphate rock.
Simple Superphosphate (SSP)	: $7\text{CaSO}_4 \cdot 3\text{CaH}_4(\text{PO}_4)_2$ (Phosphate rock + $\text{H}_2\text{SO}_4$ )
Triple Superphosphate (TSP)	: $10\text{CaH}_4(\text{PO}_4)_2$ (Phosphate rock + $\text{H}_3\text{PO}_4$ )
Nitrophosphates	: Mixture of ammonium nitrate ( $\text{NH}_4\text{NO}_3$ ) and various phosphates.
Orthophosphoric acid	: $\text{H}_3\text{PO}_4$
Metaphosphoric acid	: $\text{HPO}_3$ (Heating $\text{H}_3\text{PO}_4$ to 900 deg C)
Pyrophosphoric acid	: $\text{H}_4\text{P}_2\text{O}_7$ (Heating $\text{H}_3\text{PO}_4$ to 250 deg C)
Biuret (dimer)	: $\text{NH}_2\text{-CO-NH-CO-NH}_2$
Ammonium Carbamate	: $\text{NH}_4\text{-COO-NH}_2$
Vanaspathi	: Hydrogenated oil.
Raney (aka spongy) nickel	: Washed Sodium Alluminate ( $\text{NaAlO}_3$ ).