Thiophene

Molecular formula → C_4H_4S

Properties

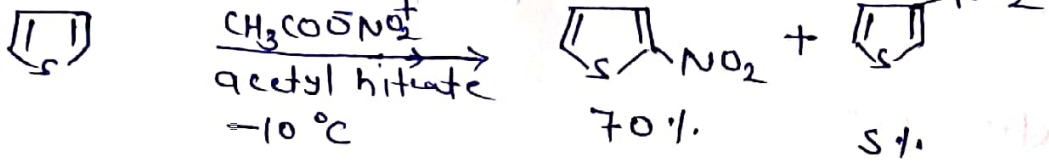
- Thiophene is a colourless liquid.
- It is insoluble in water but freely soluble in ethanol ether and acetone.

Reaction of thiophene

* Electrophilic substitution Reaction

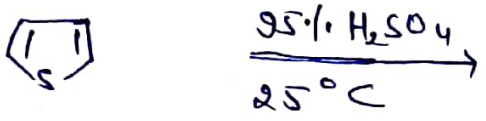
Thiophene is much more reactive than benzene. Thus thiophene undergoes the electrophilic substitution reaction like benzene under moderate condition.

1) Nitration Reaction



2-nitrothiophene 3-nitrothiophene

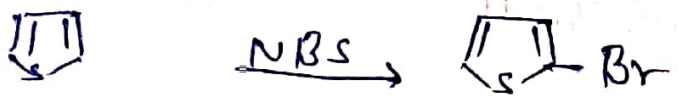
(2) Sulfonation Reaction



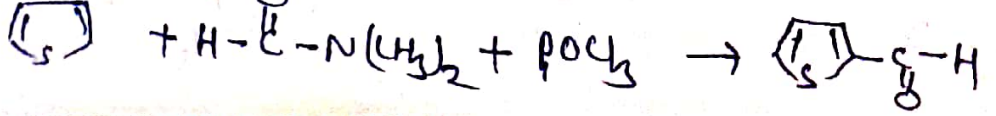
(69–76%)

Thiophene-2-sulfonic acid

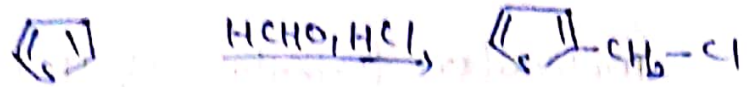
(3) Reaction with NBS



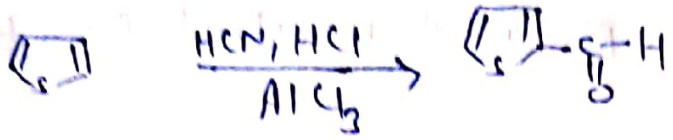
(4) Vilsmeier-Haack formylation Reaction



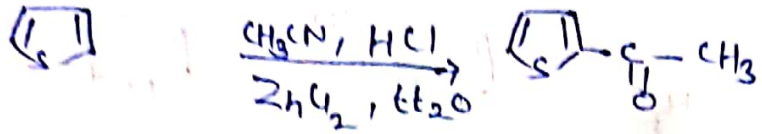
(5) Chloromethylation Reaction



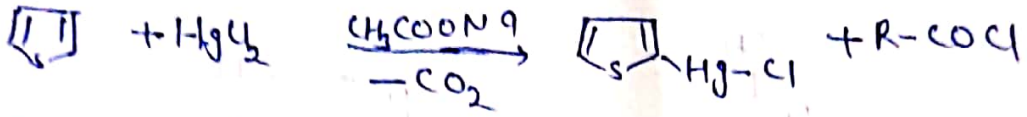
(6) Gattermann synthesis



(7) Houben Hoesch Reaction

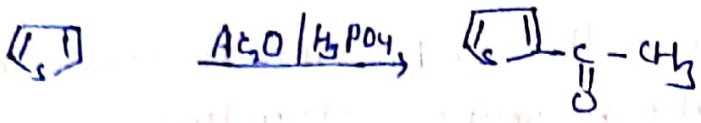


(8) Mercuration Reaction

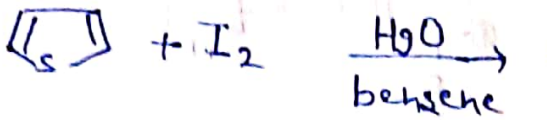


(9) Lithiation Reaction

(10) Friedel Crafts reaction

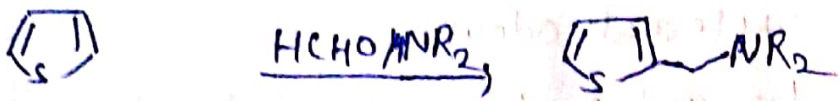


(11) Iodination Reaction

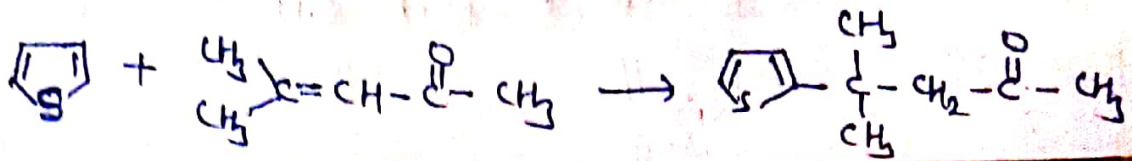


2- Iodothiophene

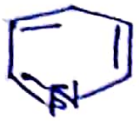
(12) Mannich Reaction



(13) Michael Addition Rxn



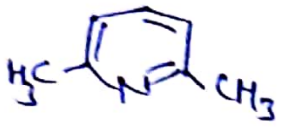
Pyridine



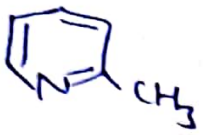
Molecular formula – C_5H_5N

- Pyridine occurs in coal tar and in the distillate from bone (bone boil) and has been produced industrial from these sources.

Derivates of Pyridine



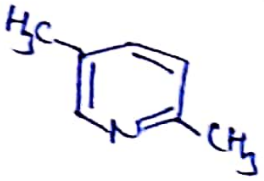
2,6-Lutidene



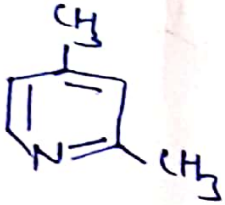
α-Picoline

β-Picoline

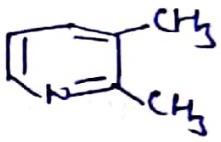
γ-Picoline



2,5-Lutidine



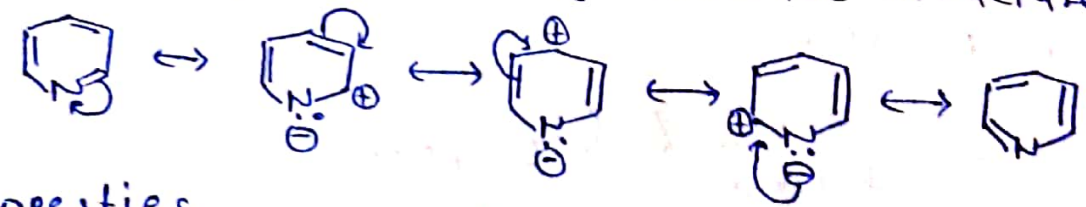
2,4-Lutidene



2,3-Lutidene

Resonating structure of Pyridine:

According to the resonance theory, Pyridine is considered to be hybrid of the following resonance structure.



Properties

- Pyridine is a colourless liquid
- Having characteristic unplesant odour
- It is soluble in water and most organic solvents.
- It react with strong acid to form salt