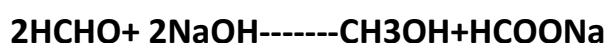


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CANNIZARRO AND CROSSED CANNIZARRO REACTION

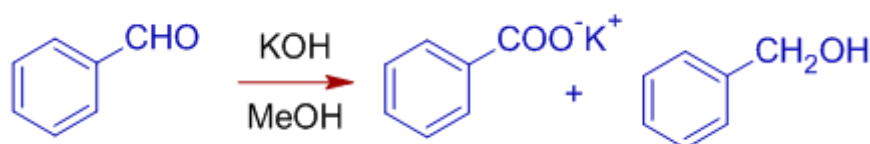
BASE catalyzed disproportionation of two molecule of non enolizable aldehydes goes self-oxidized and reduced form to yield a carboxylic acid (-COOH) and a primary alcohol (-CH₂OH)

Under this condition aliphatic aldehyde which lack alpha hydrogen undergoes ALDOL CONDENSATION



Note: Ketones don't react under these reaction

2 mole of Benzaldehyde can be converted to benzoic acid and benzyl alcohol.



Potassium benzoate further hydrolyzed to get benzoic acid

In the above reaction:

1. Two similar aldehyde molecules involved
2. Reaction proceeds with 50% aqueous or ethanolic alkali

Reaction mechanism:

Step 1 attack of OH⁻ on the carbonyl carbon

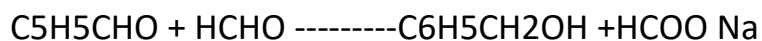
H⁺ Hydride ion transfer reaction to anion formation [fast reversible]

Step 2: Formation of alkoxide and acid (slow)

Step 3: Formation of carboxylate anion and primary-Alcohol (fast)

CROSSED CANNIZARO REACTION:

This reaction involved 2 different aldehydes to produce better yield (In the presence of alkali and H³O⁺)



In the above reaction aromatic aldehyde-benzaldehyde and aliphatic aldehyde-formaldehyde with lack of alpha hydrogen

CROSSED ALDOL condensation reaction:

Reaction of benzaldehyde and aliphatic aldehyde containing alpha –hydrogen in the presence of NaOH to yield unsaturated carbonyl compound and water

Example:

Reaction between dissimilar carbonyl compound like benzaldehyde and acetaldehyde to give cinnamaldehyde

