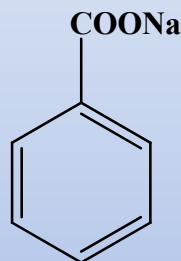


Assay of Sodium Benzoate



□ Introduction

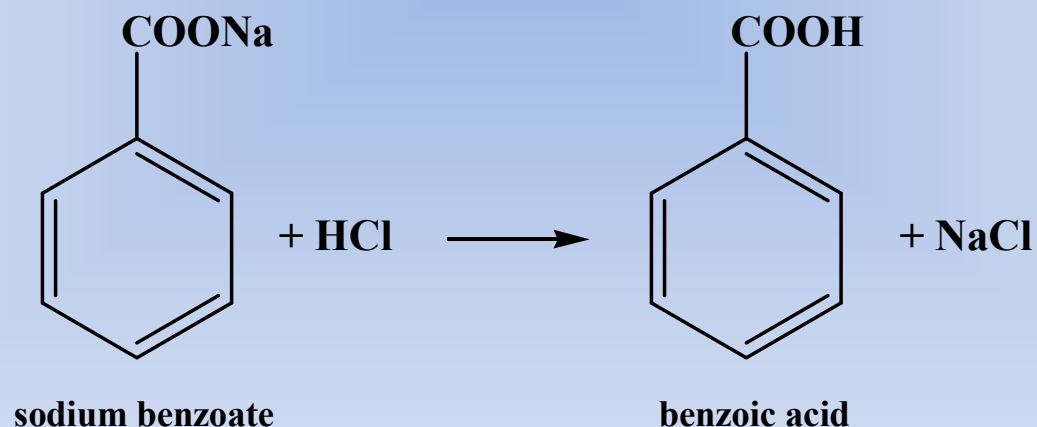
Sodium benzoate ($C_7H_5NaO_2$, m. wt.= 144.1) is a white, crystalline or granular powder or flakes. It is slightly hygroscopic, freely soluble in water, and sparingly soluble in alcohol. The powder when dried contains not less than 99 % of sodium benzoate.

Sodium benzoate has antibacterial and antifungal properties. It is used as a preservative in pharmaceutical formulations including oral preparations in concentrations up to 0.5 %. Sodium benzoate is also a common ingredient of cough preparations.

Assay of Sodium Benzoate

□ Chemical principle

Sodium benzoate is a salt derived from a weak acid and a strong base, so its aqueous solution is alkaline. Therefore, solutions containing sodium benzoate are assayed using a standard $N/2$ hydrochloric acid solution in an acid- base titration.



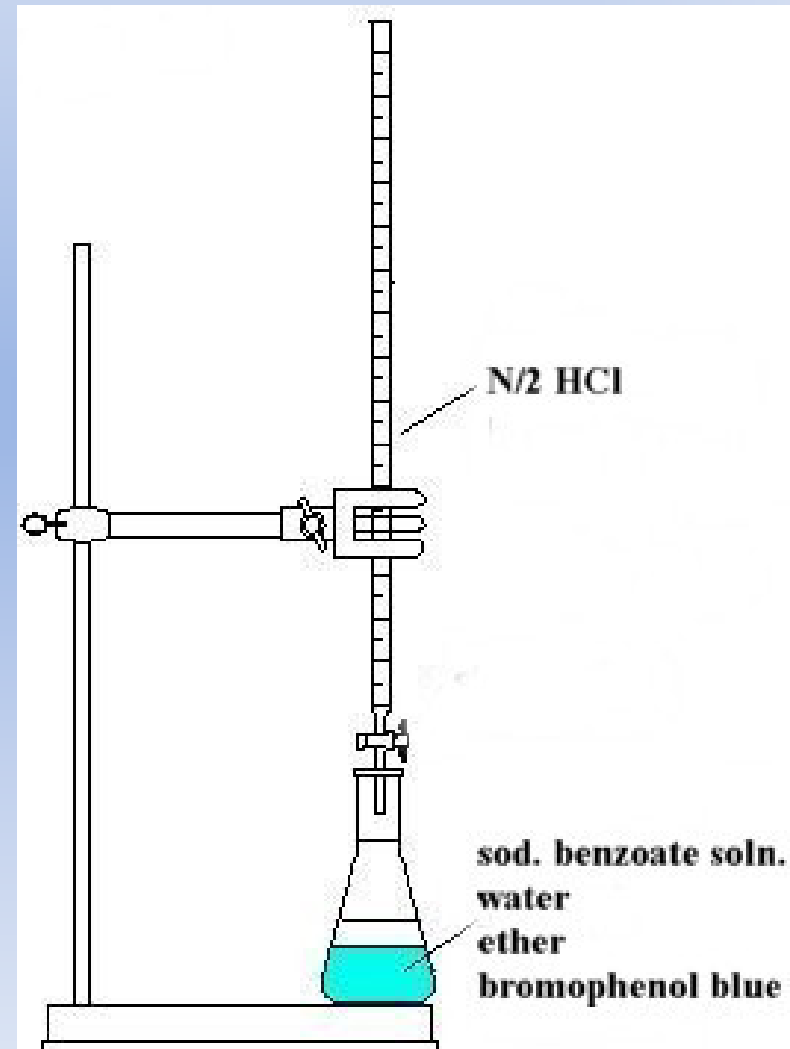
Assay of Sodium Benzoate

□ procedure

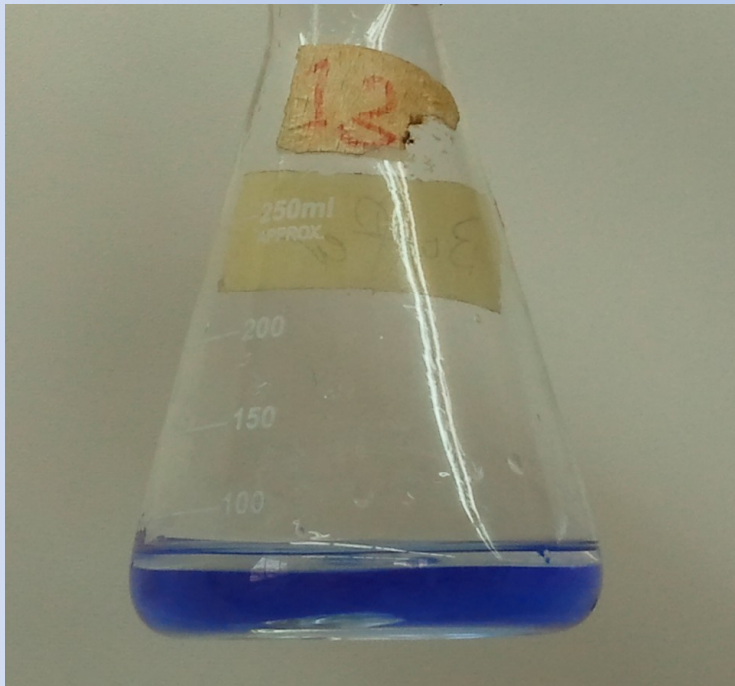
- wash the burette with the D. W. and the titrant (HCl)
- fill the burette with $N/2$ HCl to a level (adjust it)
- put 10 mL of an unknown sodium benzoate solution in a clean conical flask
- add 25 mL of D. W. and 15 mL of ether
- add 6 drops of bromophenol blue
- start titration by adding HCl drop wise with shaking the aqueous and ethereal layers until a light green colour persists in the aqueous layer (end point)
- record the volume of HCl used

Assay of Sodium Benzoate

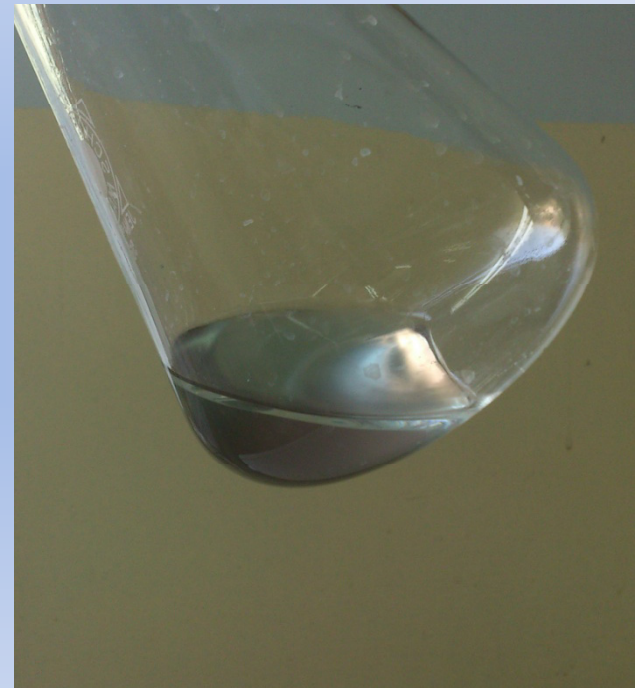
□ titration apparatus



Assay of Sodium Benzoate



**start point
(violet - blue)**



**end point
(bluish green)**

Assay of Sodium Benzoate

□ calculations

- calculate the chemical factor:
(each 1 mL of *N*/2 hydrochloric acid is equivalent to 0.07205 g of $C_7H_5NaO_2$)
- correct the volume of HCl solution used into *N*/2 volume
- calculate the quantity of sodium benzoate present in your sample
- calculate the percentage w/v of you sodium benzoate sample