Copper(II) hydroxide carbonate

$CuCO_3 \cdot Cu(OH)_2$

Copper(II) hydroxide carbonate is a blue-green, fine crystalline powder insoluble in cold water. In hot water it decomposes into CuO, CO_2 and H_2O.

Copper(II) hydroxide carbonate is obtained according to the reaction equation:

$$2\ CuSO_4 + 2\ Na_2CO_3 + H_2O \longrightarrow CuCO_3 \cdot Cu(OH)_2 + CO_2 + 2\ Na_2SO_4$$

Realization:

In 100 cm^3 of water dissolve 15 g of $CuSO_4 \cdot 5\ H_2O$ and filter into a 250 cm^3 beaker. In another beaker, dissolve 18 g of $Na_2CO_3 \cdot 10\ H_2O$. Heat both solutions to 50-60 °C. Then pour the warm sodium carbonate solution into the warm copper(II) sulfate solution, stirring intensively. Check with indicator paper that the solution above the precipitate is alkaline. If not, add some more sodium carbonate solution. Heat the precipitate and mix it until $CuCO_3 \cdot Cu(OH)_2$ becomes granular. Then filter and wash with warm water to remove the sulfate ions. After drying the obtained compound at 50°C, weigh it and calculate the process efficiency.

Equipment:

- Graduated cylinder for 250 cm^3,
- Beakers: 500 cm^3, 2x250 cm^3,
- Heating set,
- Filtration set,
- Stirring rod,
- Test tubes.

Reagents:

- Copper(II) sulfate pentahydrate $CuSO_4 \cdot 5\ H_2O$ - 15 g,
- Sodium carbonate decahydrate $Na_2CO_3\ 10\ H_2O$ - 18 g,
- Chloric acid 1M,
- Ammonia solution 10%,
- Phenolphthalein or universal indicator papers.