

REGULAR LAB 7b: Empirical formula of an oxide of copper

Aim To determine the empirical formula of an oxide of copper

Chemicals An oxide of copper, 3 M HCl, zinc metal (mossy and polished strips), distilled water

Apparatus Beakers, graduated cylinders, stirring rods, filter paper, funnels

Method

1. Mass an empty 100 mL beaker.
2. Add between 1.75 and 2.25 g of the oxide powder to the beaker and mass again.
3. Using a graduated cylinder, add 25.0 mL of distilled water to the beaker.
4. Slowly add 25.0 mL of 3 M HCl to the beaker with *constant stirring*. After you have added all of the 25.0 mL, if any solid has not dissolved, continue to add small portions of HCl (in 1.00 mL additions up to a maximum of 30.0 mL).
5. Add 3.00 g of the 'mossy' zinc to the beaker, and stir for 10 minutes. You should see some copper deposited in the beaker, and the solution should slowly change color.
6. Hold a small piece of shiny zinc in the solution. If a dark color forms on the surface of the shiny zinc continue to add a few more pieces of mossy zinc *with stirring*, but keeping the additions to a minimum. Continue to add small amounts of additional mossy zinc, until the shiny zinc no longer turns dark when dipped into the solution.
7. Add 25.0 mL of 3 M HCl to the beaker in order to react with the mossy zinc. Continue to stir, until no more bubbles are evolved and all of the zinc pieces have dissolved.
8. Determine the mass of a piece of filter paper and carefully filter the solution through it.
9. Wash the beaker out with distilled water and pass the washings through the filter paper.
10. Allow the filter paper to dry overnight and then mass the filter paper.

Results

Mass of empty beaker	
Mass of beaker plus the oxide	
Mass of the filter paper	
Mass of the filter paper + copper metal	



Conclusions/Calculations

Use your data to calculate the empirical formula of the oxide of copper that you were given.

