Science 10 Lab

THE NEUTRALIZATION OF HCl WITH KOH

Maximum = 9

(1/2) **DATA** volume of HCl used = 10.0 mL

volume of KOH in graduated cylinder (at beginning) = 15.0 mL

volume of KOH in graduated cylinder (at the end) = 5.0 mL

(1) **OBSERVATIONS**

The solid is a white solid with a crystalline appearance.
The solid dissolves when added to water.
The solution of dissolved solid conducts electricity.

DISCUSSION QUESTIONS

1. **The changes in colour you observed when adding KOH to HCl were caused by the bromthymol blue. What is the special name for a substance that acts like bromthymol blue?**

(1/2) Bromothymol blue is called an INDICATOR.

2. **Your DATA contains a record of the volume of KOH you had in the graduated cylinder at the start of the addition process and at the end of the addition process.**
   (a) What volume of KOH solution DID YOU ACTUALLY ADD TO THE HCl?

(1/2) Volume =15.0 – 5.0 = 10.0 mL

   (b) In order to create a NEUTRAL mixture, did you have to add less KOH than HCl, more KOH than HCl or more or less equal amounts of KOH and HCl? How does your DATA show your answer to be true?

(1/2) More or less EQUAL amounts of KOH and HCl were added.

3. **The chemical reaction in this lab is HCl + KOH $\rightarrow$ two products.**
   (a) One product of the reaction is the result of joining an H (from HCl) with OH (from KOH).
      (i) What is the name and formula of this first product?

(1) The first product is WATER, H_2O

      (ii) Where did this product go when the reaction mixture was heated?

(1) The water was boiled away.

   (b) The other product is made from the "left over atoms" after H and OH are removed from the reactants.
      (i) What is the formula of the molecule made from the "left over atoms"?

(1) The other molecule is KCl

      (ii) What is the name of this compound?

(1) The name of the other product is potassium chloride

4. **Chemical reactions are supposed to form new compounds. Was a new compound formed in this lab? Explain clearly why you answered "yes" or "no".**

(1) YES. The original chemicals were HCl and KOH, whereas the final chemicals were H_2O and KCl. As a result, new chemicals were formed.

5. **If a compound conducts electricity when dissolved in water, you can be sure that the compound is actually made up of ions. What ions are present in the compound you dissolved in step 8 of the procedure? (This is the same compound referred to in DISCUSSION QUESTION 3(b).)**

(1) The ions present are K^+ and Cl^-.