Answer on Question #50322 - Chemistry – Other

Question

How many grams of NaCl will be produced when 2235 g of HCl are neutralized by an excess of NaOH according to the equation below?

HCl + NaOH ---> H_2O + NaCl

Answer:

Molar mass of NaCl equals:

$$M(NaCl) = M(Na) + M(Cl) = 23.0 + 35.5 = 58.5 \frac{g}{mole}$$

Molar mass of HCl equals:

$$M(HCl) = M(H) + M(Cl) = 1.0 + 35.5 = 36.5 \frac{g}{mole}$$

If 1 mole of HCl is neutralized, 1 mole of NaCl will be produced, i.e. 58.5 g of NaCl form by neutralizing 36.5 g of HCl. Then we make a proportion:

58.5 g of NaCl form by neutralizing 36.5 g of HCl

x g of NaCl – 2235 g of HCl

$$x = \frac{58.5 \cdot 2235}{36.5} = 3582.1\ g$$

Answer: m(NaCl) = 3582.1 g.