

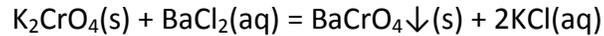
## Answer on Question #46599 - Chemistry – Other

### Question

If you have 48.00g of  $K_2CrO_4$ , what volume of 0.1500 M  $BaCl_2$  solution is needed to completely react with all the  $K_2CrO_4$ ?

### Answer:

Balanced reaction equation is:



Molar masses of  $K_2CrO_4$  and  $BaCl_2$  equal:

$$M(K_2CrO_4) = 2M(K) + M(Cr) + 4M(O) = 2 \cdot 39.098 + 52.996 + 4 \cdot 15.999 = 195.188 \frac{g}{mol}$$

$$M(BaCl_2) = M(Ba) + 2M(Cl) = 137.327 + 2 \cdot 35.45 = 208.227 \frac{g}{mol}$$

Number of moles of  $K_2CrO_4$  equals:

$$n = \frac{m(K_2CrO_4)}{M(K_2CrO_4)} = \frac{48.00}{195.188} = 0.246 \text{ mol}$$

According to reaction equation 1 mol of  $K_2CrO_4$  reacts with 1 mol of  $BaCl_2$ , so 0.246 mol of  $BaCl_2$  is needed to completely react with all the  $K_2CrO_4$ .

The volume of 0.1500 M  $BaCl_2$  solution needed is:

$$V = \frac{n(BaCl_2)}{C} = \frac{0.246}{0.1500} = 1.64 \text{ L}$$

**Answer:** 1.64 L