Worked example 1 – Chapter 1

This worked example shows how to determine which is the limiting reactant when molar amounts of the reactants are given.

Which reactant is in excess when 0.0100 mol C_4H_{10} reacts with 0.0200 mol O_2?

$$\mathbf{2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O}$$

Here we will use the method of dividing the number of moles by the coefficient to quickly determine the limiting reactant:

$$C_4H_{10} = \frac{0.0100}{2} = 0.00500 \text{ mol}$$

$$O_2 = \frac{0.0200}{13} = 0.00154 \text{ mol}$$

0.00154 is smaller than 0.00500, therefore O_2 is the limiting reactant.

C_4H_{10} is in excess.