Question#74852 – Chemistry – General chemistry

Question: what mass of c2h5cl can be produced from 25.00g of Cl_2

Solution:

1. An equation of the reaction:

$$C_2H_6 + Cl_2 \xrightarrow{h\vartheta} C_2H_5Cl + HCl$$

2. Find moles of C_2H_5Cl:

$$n(C_2H_5Cl) = n(Cl_2) = \frac{m(Cl_2)}{M(Cl_2)} = \frac{25.00\ g}{70.91\frac{g}{mol}} = 0.3526\ mol$$

3. Find the mass of C_2H_5Cl:

$$m(C_2H_5Cl) = n(C_2H_5Cl) \times M(C_2H_5Cl) = 0.3526\ \text{mol} \times 64.51\frac{\text{g}}{\text{mol}} = 22.74\ \text{g}$$

Answer: 22.74 g C_2H_5Cl