

Answer on the Question #63294, Chemistry / Other

Number of moles of O₂ required to completely reacts with 75 grams of Sb?

Solution:

Oxidation of Sb completely occurs by the following reaction:



The mole number of O₂ is equal to mole number of Sb by this equation (it follow from the reaction):

$$3n(\text{O}_2) = 4n(\text{Sb})$$

$$n(\text{O}_2) = \frac{4}{3}n(\text{Sb})$$

Let's define the mole number of the Sb:

$$n(\text{Sb}) = \frac{m(\text{Sb})}{M(\text{Sb})} = \frac{75\text{g}}{\frac{121.8\text{g}}{\text{mol}}} = 0.62 \text{ mol}$$

Now we can calculate the number of moles of O₂ required to completely reacts with 75 grams of Sb:

$$n(\text{O}_2) = \frac{4}{3}n(\text{Sb}) = \frac{4}{3}0.62 \text{ mol} = 0.83 \text{ mol}$$

Answer: the number of moles of O₂ correspond to 0.83 moles.