

27175, Chemistry, Other | Completed

rust contains iron(III) oxide .how many moles of iron (III) ions are present in 4.0 g of rust?

Solution:

Firstly, we determine the molar mass of iron(III) oxide:

$$M(\text{Fe}_2\text{O}_3)=56\cdot 2+16\cdot 3=160 \text{ g/mol.}$$

Then, we calculate the amount of moles of iron(III) oxide, which it's included in 4.0 g of rust:

$$n(\text{Fe}_2\text{O}_3)=\frac{m(\text{Fe}_2\text{O}_3)}{M(\text{Fe}_2\text{O}_3)}=\frac{4.0}{160}=0.025 \text{ mole .}$$

One mole of Fe_2O_3 includes two moles of iron(III), so 0.025 moles of Fe_2O_3 include $0.025 \cdot 2 = 0.05$ moles.

Answer:

The amount of Fe_2O_3 is 0.05 moles.