24958, Chemistry, Other | Completed

How many grams of carbon dioxide are produced if 68.2 grams of Fe3O4 are reacted?

Solution:

Fe_3O_4 react with carbon oxide following the reaction:

$Fe_3O_4+4CO=3Fe+4CO_2$.

We use the periodic table in order that calculate the molar mass of Fe_3O_4 and CO_2.

$M(Fe_3O_4)=55.847\cdot3+15.999\cdot4=231.537$ g/mol,

$M(CO_2)=12.011+15.999\cdot2=44.009$ g/mol.

$$\underset{231.537}{\overset{68.2}{Fe_3O_4}}+4CO=3Fe+\underset{4\cdot44.009}{\overset{x}{4CO_2}}.$$

So $x=\dfrac{68.2\cdot4\cdot44.009}{231.537}=51.852\,\text{g}.$

Answer:

The mass of CO_2 is 51.852 g.