

Question #85536, Chemistry / General Chemistry | for completion

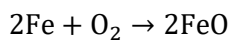
For the following reaction, 5.99 grams of oxygen gas are mixed with excess iron . The reaction yields 19.6 grams of iron(II) oxide .

iron(s) + oxygen(g) iron(II) oxide(s)

What is the theoretical yield of iron(II) oxide ?

What is the percent yield for this reaction ?

Solution:



$$\text{theoretical yield FeO} = \frac{m(\text{O}_2) \cdot M(2\text{FeO})}{M(\text{O}_2)} = \frac{5.99 \cdot 2 \cdot 71.84 \text{ g/mol}}{15.9 \text{ g/mol} \cdot 2} = 27.064 \text{ g}$$

$$\% \text{ yield} = \frac{19.6 \text{ g}}{27.064 \text{ g}} \cdot 100\% = 72.42\%$$

Answer: theoretical yield FeO = 27.064g, % yield = 72.42%.

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