Question #81650, Chemistry / General Chemistry | for completion

For the following reaction, 15.2 grams of carbon monoxide are allowed to react with 6.37 grams of oxygen gas .

carbon monoxide(g) + oxygen(g) carbon dioxide(g)

What is the maximum mass of carbon dioxide that can be formed?

grams

What is the FORMULA for the limiting reagent?

What mass of the excess reagent remains after the reaction is complete?

grams

Solution:

$2CO + O_2 = 2CO_2$

From the reaction equation: mole ratio CO: O_2= 2: 1

n(CO)= m/M= 15.2/28= 0.54 moles

$n(O_2)$= 6.32/32= 0.2 mole

CO is in excess. Limiting reagent is O_2. We need to use $n(O_2)$ for calculation

y moles 0.2moles x g

2 CO + O_2 = $2CO_2$

2moles 1mole 2*44g/mole

$m(CO_2)$= 17,2 g.

During full reaction disappeared y moles of CO.

y= 2*0.2/1 = 0.4 moles of CO

After reaction remains 0.54-0.4= 0.14 moles CO

m(CO) = n*M= 0.14*28= 3.92g

Answer: $m(CO_2)$= 17,2 g. Limiting reagent is O_2.Remains 3.92g CO