For the following reaction, 4.63 grams of oxygen gas are mixed with excess carbon (graphite) . Assume that the percent yield of carbon dioxide is 94.8 %.

carbon (graphite)(s) + oxygen(g) carbon dioxide(g)

What is the theoretical yield of carbon dioxide ?
grams
What is the actual yield of carbon dioxide ?
grams

Solution:

1.$C+O_2=CO_2$;

2.$n(O_2)=m(O_2)/M(O_2)$; $M(O_2)=32$gram/mole

$n(O_2)=4.63/32=0.145$ mol

3.$n(O_2)=n(CO_2)$, for the equation of reaction;

So,$n(CO_2)=0.145$ mol

4.$m(CO_2)=n(CO_2)\times M(CO_2)$;

$M(CO_2)=44$ gram/mole;

$m(CO_2)=0.145\times 44=6.38$ gram.It is theoretical yield.

5.$m'(CO_2)=m(CO_2)\times 94.8\%/100\%$

$m'(CO_2)=6.38\times 94.8\%/100\%=8.89$ gram.It is actual yield.

Answer:$m(CO_2)=6.38$ gram; $m'(CO_2)=8.89$ gram.