Question #70146 - Chemistry - General Chemistry

How many moles of NaClO3 are needed to produce 6.00 moles of SO2 in the following two-step reaction?

$2NaClO3 \rightarrow 2NaCl + 3O2$
$S + O2 \rightarrow SO2$

Solution

Find how many moles of O_2 are needed to produce 6.00 moles of SO_2:

$S + O_2 \rightarrow SO_2$
1 1
? 6

n (O_2) = (1*6)/1=6 *moles*

Then find how many moles of $NaClO_3$ are needed to produce 6.00 moles of O_2:

$2NaClO_3 \rightarrow 2NaCl + 3O_2$
2 3
? 6

n ($NaClO_3$) = (2*6)/3=4 *moles*

Answer

It has to be 4 moles of $NaClO_3$ to produce 6.00 moles of SO_2