Answer on Question #64718, Chemistry / Inorganic Chemistry

if ozone is present in air at the odor threshold and if oxygen is 21% of the air, how many O2 molecules are there per O3 molecules? What is the ratio of O2 to O3 molecules?

Answer

odor threshold – 0,02mkg/L

In 100L air:

$m(O_3)=2mkg$

$n=\frac{m}{M}=\frac{0,0000021}{48}=4,2*10^{-8}(O_3)$

$N=n*N_A=4,2*10^{-8}*6,02*10^{23}=2,53*10^{16}$ O3 molecules.,ratio O_2 to O_3:

$3O_2=2O_3$

$\frac{3O_2}{x}=\frac{2O_2}{2,53*10^{16}}$

$x=\frac{3*2,53*10^{16}}{2}=3,795*10^{16}$,O2 molecules contained in O3