

Answer on Question#52478 - Chemistry, Other | Completed

Task: A sample of nitrous oxide (N₂O) has a volume of 12.5 L at standard temperature and pressure (STP).

How many molecules of nitrous oxide are in the sample?

Solution:

According to the Avogadro's law the volume of one mole of any gas is 22,4 L. The amount of molecules in one mole is $6,02 \cdot 10^{23}$. So, the amount of N₂O molecules (N) in 12,5 L is:

$$N = \frac{6,02 \times 10^{23} \times 12,5}{22,4} = 3,36 \times 10^{23}$$

Answer: the amount of N₂O molecules in 12,5 L is $3,36 \times 10^{23}$.