Answer on Question#55030 – Chemistry – General Chemistry

Question:

The mass in kilograms of 4.4×10^{20} molecules of NO_2.

Solution:

N_A – Avogadro constant; 6.02×10^{23} mol^{-1};

N – number of the molecules NO_2; $N = 4.4 \times 10^{20}$;

ν – the number of moles NO_2 (mol);

m – mass of NO_2 (g);

M – molar mass of NO_2 (46 g·mol^{-1});

$\nu = \dfrac{m}{M}; \quad \nu = \dfrac{N}{NA};$

$m = M \times \dfrac{N}{NA};$

$m = 4.4 \times 10^{20} \times \dfrac{46}{6.02 \times 10^{23}} = 3.36 \times 10^{-2} \; g;$

m = 3.36×10^{-5} kg;

Answer: 3.36×10^{-5} kg