Answer on Question #64984 - Chemistry – Other

Task:

How many grams of nitrogen oxide two (NO) needed to win 20dm^3 nitrogen oxide four (NO_2).

$2NO+O_2$--->$2NO_2$

Solution:

The equation of the chemical reaction:

$$2NO + O_2 = 2NO_2$$

By the equation:

$$\nu(NO) = \nu(NO_2);$$

$$\frac{m(NO)}{M(NO)} = \frac{V(NO_2)}{Vm};$$

The molar volume of an ideal gas (V_m) at 1 atmosphere of pressure is 22.414 dm^3/mol at 0 °C.

The molar mass of nitrogen oxide (II): M(NO) = 30.01 g*mol^{-1}.

Then,

$$m(NO) = \frac{V(NO_2)}{Vm} \times M(NO) = \frac{20 \times 30.01}{22.414} = 26.7779 \approx 26.78(g)$$

Answer: m(NO) = 26.78 g.