

Let's write Mendeleev-Clapeyron's law at STP:

$$P_0 V_0 = \frac{m}{M} R T_0$$

So,

$$M = \frac{m}{V_0 P_0} R T_0$$

It's easy to notice, that $\frac{m}{V_0} = \rho$, where ρ is density.

$$M = \frac{1}{P_0} \rho R T_0$$

Let's write Mendeleev-Clapeyron's law for gas in flask:

$$P V = \frac{m}{M} R T$$

So,

$$m = \frac{P V M}{R T}$$

Substituting M :

$$m = \frac{P V \rho R T_0}{P_0 R T} = \rho V \frac{P T_0}{P_0 T}$$

So,

$$m = 3.22 * 100 * 10^{-6} \frac{100 * 10^3 * 273}{100 * 10^3 * 301} = 2.92 * 10^{-4} \text{ (kg)}$$