Answer on Question #55458 – Chemistry – General Chemistry

Question:

Chloroform is a common liquid used in labs. It vaporizes readily. If the pressure of the cholorform vapor in a flask is 195 mm Hg at 25º Celsius and the density of the vapor is 1.25 g/L, what is the molar mass of choloform?

Answer:

According to the gas laws,

$$M = \frac{\rho RT}{P}$$

R = 62.3637 L·Torr/mol·K or L·mmHg/mol·K

$$M = \frac{1.25 \cdot 62.3637 \cdot (25 + 273)}{195} = 119 g/mol$$