

Answer on Question # 68448, Chemistry / General Chemistry

The 10.0 mL volume of bromine gas at 75.6 kPa pressure and 60.0°C is to be corrected to correspond to the volume it would occupy at STP. (6.12 mL Br₂)

Solution:

$$PV = nRT \Rightarrow n = \frac{PV}{RT}$$
$$n = \frac{75.6 \times 0.010 \times 1000}{8.31 \times (273 + 60)} = 0.273 \text{ (mol)}$$

$$PV = nRT \Rightarrow V = \frac{nRT}{P}$$
$$V = \frac{nRT}{P} = \frac{0.273 \times 8.31 \times 273}{101.3 \times 1000} = 0.006118 \text{ (l)} = 6.12 \text{ (ml)}$$

Answer: 6.12 ml.