Answer on Question #42754 - Chemistry - Physical Chemistry

Question:

A sample of oxygen occupies a volume of 325 mL at 35 ^{0}C. What volume will it occupy at 85 ^{0}C?

Answer:

Charles's law states that the volume of a gas varies directly with the Kelvin temperature, assuming that pressure is constant. We use the following formula:

$$\frac{V_1}{T_1} = \frac{V_2}{T_2} \quad or \quad V_1 \times T_2 = V_2 \times T_1$$

$$K = C^0 + 273$$

$$\frac{325\ ml}{35 + 273} = \frac{V_2}{85 + 273}$$

Then $V_2 = 377.8 \approx 378\ ml$

Answer: 378 ml.