

#63188 Chemistry, General Chemistry

A spray can is used until it is empty except for the propellant gas, which has a pressure of 1344 torr at 23°C. If the can is thrown into a fire (T = 475°C), what will be the pressure in the hot can?

Answer:

According to Gay Lussac's Law, the pressure of a given amount of gas is directly proportional to its temperature on the Kelvin scale when the volume is held constant. It can be described by the equation:

$$\frac{P_2}{P_1} = \frac{T_2}{T_1}$$

In the case of a can with a propellant, the equation will take the form:

$$\frac{P_2}{1344} = \frac{(475 + 273)}{(23 + 273)}$$

$$P_2 = (748 \cdot 1344) / 296 = 3396 \text{ torr}$$