

**Answer on Question #52579-Physics-Molecular Physics-Thermodynamics**

A spray can at 250 PSI is at room temperature. What will its temperature be if it expands to 16.5 x the volume when released?

**Solution**

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

So,

$$T_2 = \frac{P_2 V_2}{P_1 V_1} T_1$$

$$T_2 = \frac{14.7 \text{ PSI} \cdot 16.5 \cdot V_1}{250 \text{ PSI} \cdot V_1} \cdot 294.15 \text{ K} = 285.38 \text{ K} = 54.01^\circ\text{F} = 12.23^\circ\text{C}$$