

Chapter 17 Problem 28 [†]

Given

$$L_s = 573 \text{ kJ/kg}$$

$$m = 250 \text{ g} = 0.25 \text{ kg}$$

Solution

Find the heat extracted to sublime the carbon dioxide.

Since the carbon dioxide is already at its sublimation point, extracting heat only causes it to go through a phase change. The heat due to a phase change is

$$Q = mL_s$$

$$Q = (0.25 \text{ kg})(573 \text{ kJ/kg}) = 143 \text{ kJ}$$

[†]Problem from Essential University Physics, Wolfson