

37.26 $1000 \frac{Btu}{lb}$ of heat is added to $70^\circ F$, $14.7 psia$ air. What is the temperature after heating?

- A. $3665^\circ F$
- B. $3815^\circ F$
- C. $3965^\circ F$
- D. $4125^\circ F$

Consider the condition of the air before heating as State 1 and the condition of air after heating as State 2. Use the **Air at Low Pressure** tables to look up the enthalpy of air at $70^\circ F$. For low pressure air, enthalpy may be reasonably approximated as a function of temperature only.

$$h_1 \approx 126 \frac{Btu}{lb}$$

Calculate the enthalpy after heating.

$$h_2 = 126 \frac{Btu}{lb} + 1000 \frac{Btu}{lb} = 1126 \frac{Btu}{lb}$$

Return to the low pressure air table to look up the corresponding temperature for State 2. Without interpolating, notice h_2 is about halfway between two values, making the temperature straightforward to obtain.

$$T_2 \approx 3665^\circ F$$

Answer A