Given:
A 100 L container contains 4 kg of R-134a at a pressure of 160 kPa.

Required:
Determine the temperature, the quality, and the enthalpy of the refrigerant.

Solution:
The total volume and mass, and the pressure are defined as

$V_{tot} := 100\ \mathrm{L}$ $\quad m_{tot} := 4\ \mathrm{kg}$ $\quad m_{tot} := 4\ \mathrm{kg}$ $\quad P_1 := 160\ \mathrm{kPa}$

The specific volume at the state point is found by

$$\nu_1 := \frac{V_{tot}}{m_{tot}} = 0.025\ \frac{\mathrm{m}^3}{\mathrm{kg}}$$

Going to Table A-12 @ $P := P_1 = 160\ \mathrm{kPa}$ shows

$T_{sat} := (-15.60)\ \mathrm{°C}$ $\quad \nu_f := 0.0007437\ \frac{\mathrm{m}^3}{\mathrm{kg}}$ $\quad \nu_g := 0.12348\ \frac{\mathrm{m}^3}{\mathrm{kg}}$

$h_f := 31.21\ \frac{\mathrm{kJ}}{\mathrm{kg}}$ $\quad h_g := 241.11\ \frac{\mathrm{kJ}}{\mathrm{kg}}$

Since $(\nu_f < \nu_1) < \nu_g$, the state point occurs in the two-phase region. Thus the temperature at the state point is the saturation temperature or

$$\boxed{T_1 := T_{sat} = -15.6\ \mathrm{°C}}$$

The quality may be found by using the state point specific volume and the v and v values found from the table. This is shown below.

$$\boxed{x_1 := \frac{\nu_1 - \nu_f}{\nu_g - \nu_f} = 0.1976}$$

The specific enthalpy at the state point is found by

$$h_1 := h_f + x_1 \cdot (h_g - h_f) = 72.6924\ \frac{\mathrm{kJ}}{\mathrm{kg}}$$

The enthalpy at the state point is then

$$\boxed{H_1 := m_{tot} \cdot h_1 = 290.8\ \mathrm{kJ}}$$