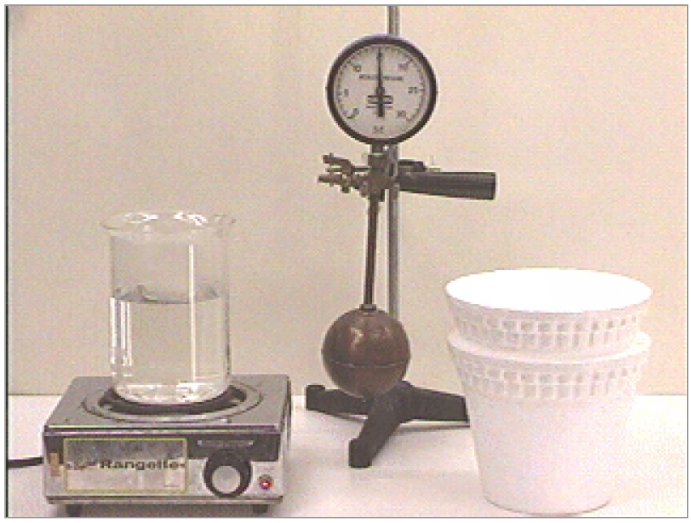
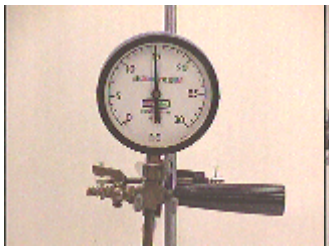
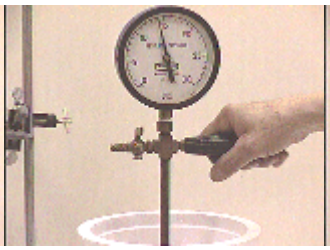
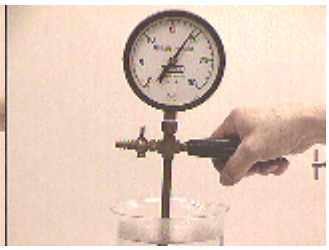
Friday, 27 June 2014 14:53

I3-52: CONSTANT VOLUME GAS THERMOMETER - ABSOLUTE ZERO









Additional Info

ID Code: I3-52

Purpose: Determine the value of absolute zero.

Description: With a constant volume of air in the chamber, measure the pressure P(B) at the boiling point and the pressure P(F) at the freezing point of water. If the pressure P is read at some arbitrary temperature T, then that temperature in degrees celsius is:

T=100 [P-P(F)] / [P(B)-P(F)]

For an ideal gas, the pressure should go to zero at the temperature of absolute zero. Setting P=0, the value of absolute zero in degrees celcius can be calculated.

Another way to do this is to plot a graph of pressure as a function of temperature. Draw the best line through the three points determined at boiling, freezing, and room temperature, and extend it so that it intersects the pressure axis, which is T=0 in celsius degrees.

Above are photographs of the pressure gauge at each of the three points described.

Availability: Available

References: REFERENCES: (PIRA 4E30.20)

Loc codes: I3, I0