OCR (A) Physics A-level

PAG 08.1 - Estimating a Value for Absolute Zero

Practical Flashcards

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What safety precautions should be taken when working with mercury?

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What safety precautions should be taken when working with mercury?

Safety goggles must be worn throughout and any spillage of mercury must be reported to your teacher immediately. A mercury spillage kit should be available.

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Describe the relationship between pressure and temperature at a constant volume.

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Describe the relationship between pressure and temperature at a constant volume.

Pressure and absolute temperature are directly proportional when the volume is constant. This means that if the temperature increases, the pressure also increases by the same multiple.

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Describe the relationship between temperature and volume at a constant pressure.

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Describe the relationship between temperature and volume at a constant pressure.

Volume and absolute temperature are directly proportional when the pressure is constant. This means that if the temperature increases, the volume also increases by the same multiple.

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Describe the particles of a substance when it is at absolute zero.

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Describe the particles of a substance when it is at absolute zero.

When a substance is at absolute zero, the particles have zero kinetic energy and so are completely stationary.

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What is the theoretical volume of an ideal gas when at absolute zero?

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What is the theoretical volume of an ideal gas when at absolute zero?

When at absolute zero, the theoretical volume of an ideal gas is zero.

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What is the theoretical pressure of an ideal gas when at absolute zero?

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What is the theoretical pressure of an ideal gas when at absolute zero?

When at absolute zero, the theoretical pressure of an ideal gas is zero.

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What is the accepted value for absolute zero in degrees Celsius?

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What is the accepted value for absolute zero in degrees Celsius?

Absolute Zero = -273.15°C

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How can you obtain a value for absolute zero from a graph of length of air column against temperature?

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How can you obtain a value for absolute zero from a graph of length of air column against temperature?

The theoretical value for volume at absolute zero is zero. This will occur when the length of the air column is zero and so a value for absolute zero can be given by the x-intercept of the graph.

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How can you obtain a value for absolute zero from a graph of pressure against temperature?

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How can you obtain a value for absolute zero from a graph of pressure against temperature?

The theoretical value for pressure at absolute zero is zero. This means that a value for absolute zero can be obtained from the x-intercept of the graph.

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How can the x-intercept of a graph be calculated from a line of best fit?

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How can the x-intercept of a graph be calculated from a line of best fit?

The line of best fit can be written in the form $y = mx + c$, where m is the gradient and c is the y-intercept. The x-intercept is then given by $-c/m$.

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What is the difference between absolute pressure and gauge pressure?

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What is the difference between absolute pressure and gauge pressure?

Absolute pressure uses absolute zero as a base point whereas gauge pressure uses the atmospheric pressure as a base point.

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How can atmospheric pressure be accounted for in your data?

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How can atmospheric pressure be accounted for in your data?

The value of atmospheric pressure can be subtracted from your gauge pressure readings to give absolute pressure values.

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What is the value of atmospheric pressure at sea level?

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What is the value of atmospheric pressure at sea level?

101 kPa

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