

Hardness and Toughness Tests:

KEY POINTS / QUESTIONS:

DETAILS / ANSWERS:

BRINELL HARDNESS TEST:

- **Indenter:** A ball shaped indenter
- **How is hardness measured:** By dividing force used by the surface area of the indentation
- **Used on:** Relatively soft materials as the ball is prone to deformation

VICKERS HARDNESS TEST:

- **Indenter:** A square based pyramid indenter with an angle of 136 degrees at its tip
- **How is hardness measured:** By measuring the diagonal of the indentation for different loads
- **Used on:** Harder materials as the indenter is less likely to deform

IZOD TOUGHNESS TEST:

The piece being tested is clamped vertically (**THINK "I" FOR IZOD**) in the vice with the notch facing the striker. The striker is then raised and released, it strikes the test specimen with an energy of 167 Joules. The toughness is determined by how far the striker swings up on the other side of the piece, and can be read from a dial on the machine.

CHARPY TOUGHNESS TEST:

The piece being tested is clamped horizontally in the vice with the notch facing away from the striker. The striker is then raised and released, it strikes the test specimen with an energy of 300 Joules. The toughness is determined by how far the striker swings up on the other side of the piece, and can be read from a dial on the machine.

Summary: