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Continuing Education Course #472  
What Every Engineer Should Know About  
Hardness Testing

1. Which of the following is not an intrinsic material property?

- a. Tensile Strength
- b. Wear Resistance
- c. Ductility
- d. Hardness
- e. Density

2. Hardness may be affected by all of these except...

- a. Plating
- b. Flame Cutting
- c. Cold Forming
- d. Shot Peening
- e. Painting

3. Knoop hardness falls under which category of testing?

- a. Rebound
- b. Abrasion
- c. Indentation
- d. Electromagnetic
- e. Scratch

4. True or false: Quartz can scratch nitrided steel.

- a. False
- b. True

5. The indenter specified for Rockwell A, C, and D scales is:

- a. 10 mm steel ball
- b. 120-degree spheroconical diamond
- c. 120 mm diamond ball
- d. 1/16" diameter steel ball
- e. 1/2" tungsten carbide ball

6. What is the total test force for a Rockwell H scale test?

- a. 100 kgf
- b. 60 N
- c. 150 kgf
- d. 100 lb
- e. 60 kgf

7. Which statement is false regarding Rockwell hardness testing:

- a. HRV scale uses a 150 kgf total test force
- b. A ball indenter or diamond spheroconical indenter may be used, depending on the scale
- c. Rockwell H scale is commonly used for aluminum, zinc, and lead.
- d. Multiple indentations should be spaced at least 3 diameters away from each other.
- e. Rockwell C scale uses a 1/16" ball indenter.

8. The recommended range for Rockwell C scale is...

- a. 20 to 70
- b. 40 to 100
- c. 20 to 100
- d. 42 to 86
- e. 1 to 72

9. The Brinell indenter ball is made of...

- a. Tungsten carbide
- b. Tungsten nitride
- c. Carbon steel
- d. Diamond
- e. Iron Oxide

10. Knoop hardness is determined by measuring...

- a. Indentation depth
- b. Indenter offset
- c. Diamond edge angles
- d. Specimen tensile strength
- e. Area of indentation

11. The difference between Knoop and Vickers tests is...

- a. Indenter shape
- b. Indenter material
- c. Test force
- d. Specimen size
- e. Dwell time

12. True or false: the test force for HV 0.2 and HK 0.2 is 1.961 N.

- a. True
- b. False

13. Shore hardness is most commonly used to test which of the following materials:

- a. Aluminum alloys
- b. Polymers, elastomers, rubbers
- c. Lead and brass
- d. Foam
- e. Copper

14. Depth of indenter penetration of a Shore test does not depend on which of the following?

- a. Material hardness
- b. Duration of the test
- c. Specimen shape

- d. Indenter shape
- e. Viscoelastic properties

15. Which of the following is false?

- a. Multiple specimens should not be stacked during a hardness test.
- b. Conversion charts are very accurate and are advised to be used to compare with other hardness scales.
- c. The anvil must be properly seated for accurate hardness readings.
- d. Specimen thickness must be above recommended minimums to prevent damage and false readings.
- e. Reference blocks should be handled carefully and stored properly.

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