

The heterogeneous grain structure results from:

- ☐ a. variations result from segregation due to impurities in the metal or from surface treatments such as carbonizing
- ☐ b. different solidification rates, crystal growth, gas evolution, or thermal processing
- ☐ c. plastic deformation in forged or rolled parts. Such properties greatly affect structure and performance
- ☐ d. the ability to predict the performance of a materials in service

Which order is right for dye penetration inspection method?

- ☐ a. Development, surface preparation, penetrant apply, inspection
- ☐ b. Penetrant apply, development, inspection, surface preparation
- ☐ c. Surface preparation, penetrant apply, development, inspection
- ☐ d. Penetrant apply, development, surface preparation, inspection

Flow lines of material after forging can be examined by

- ☐ a. Sulphur printing
- ☐ b. Cross section through a carburized bar with a case depth of 1mm
- ☐ c. Macro etching examination
- ☐ d. A and C



The magnetic particle method of inspections is a procedure used to:

- ☐ a. determine the presence of defects at or near the surface of ferromagnetic objects
- ☐ b. determine the presence of defects at the surface of ferromagnetic objects only
- ☐ c. determine the presence of defects near the surface of non ferromagnetic objects
- ☐ d. determine the presence of defects at or near the surface of ceramic objects

Steels containing ----- carbon are used for carburizing.

☐ a. 0.2-0.35%

☐ b. B and C

☐ c. 0.4-0.6%

☒ d. 0.1-0.2%



What is the disadvantage of the Knoop hardness test?

- ☐ a. High load required
- ☒ b. Cannot use thin specimen
- ☐ c. Elastic recovery
- ☐ d. Soft indenter



The grain size number (ASTM method) can be determined by the following formula:

(N - grain size number is, n - the number of grains per square inch area and magnification 100x)

☐ a. $n-1=2^{(N)}$

☒ b. $N=2^{(n-1)}$

☐ c. $n=2^{(N)}$

☐ d. $N=1 + (\log n)/(\log 2)$



The following tests are not used for micro-hardness testing:

- ☐ a. Brinell only
- ☐ b. Knoop only
- ☐ c. Vickers only
- ☐ d. B and C



The grinding direction of successive steps should be:

- ☐ a. Parallel to each other
- ☐ b. perpendicular to each other
- ☐ c. no matter whatever the direction
- ☐ d. opposite to each other



The grain size number (ASTM method) can be determined by the following formula:

(N - grain size number is, n - the number of grains per square inch area and magnification 100x)

☐ a. $N = 1 + (\log n) / (\log 2)$

☐ b. $N = 2^{(n-1)}$

☐ c. $n-1 = 2^N$

☐ d. $n = 2^N$



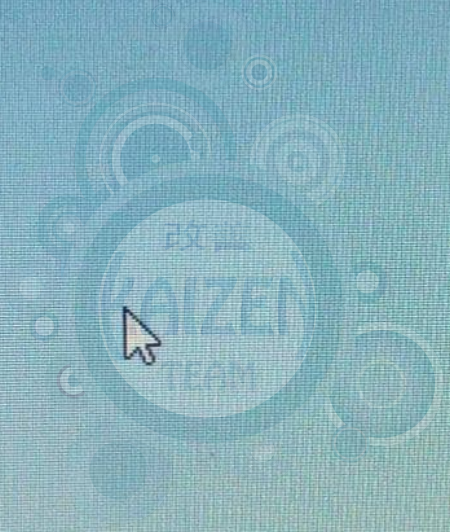
It is recommended to use silicon carbide wheels to cut:

☐ a. Sintered carbide materials

☒ b. Ferrous alloys

☐ c. Ceramic materials

☐ d. non-ferrous alloys



Rockwell test utilizes _____ as a measure of hardness.

- ☐ a. Depth of indentation
- ☐ b. Load
- ☐ c. Diameter of indentation
- ☐ d. Time of loading



Removal of hard sample material is done by

- ☐ a. Manual hacksawing
- ☒ b. Abrasive cutoff wheel
- ☐ c. Piercing
- ☐ d. Oxy-fuel burning

Clear my choice



Defects are revealed, in the radiographic testing, through:

- ☒ a. Shadows on the radiograph
- ☐ b. waves that are introduced to the component under the test and the time which elapses between the transmission signal and the return of the reflected echo from the back wall of the component
- ☐ c. The indication of the transmitted pulses and reflected echoes, and the measurement of the time interval between them
- ☐ d. B and C

Eddy current testing is the most widely used non-destructive testing technique:

- a. in the non-ferrous wrought metal industries
- b. the ferrous wrought metal industries
- c. for the detection of surface and near surface defects in products of uniform section such as bars, rods, tubes and wire

Prevention of carburizing of components can be done by

- ☐ a. Cold working
- ☐ b. Adding water
- ☐ c. Electroplating
- ☐ d. Adding filler



In Sulphur printing, the paper will darken due to formation of:

☐ a. MnSO_4

☒ b. HBr

☐ c. Ag_2S

☐ d. AgBr



[Clear my choice](#)

The method that you used to construct the phase diagram in the lab is:

- ☐ a. The grain size calculation technique
- ☐ b. The mechanical properties technique
- ☐ c. The thermal analysis technique
- ☐ d. The casting technique



What is a limitation of the Rockwell test?

- ☐ a. Bigger size of indentation
- ☐ b. Different indenters
- ☒ c. Personal error
- ☐ d. Slow speed

Clear my choice



When calculating the case depth for the carburized specimen, the formula in question 8 is used. This means that:

- ☐ a. The temperature is implicitly included in t
- ☐ b. A part is included in t and another part is included in D
- ☐ c. The temperature is implicitly included in D
- ☐ d. the temperature is not a factor

The degree of segregation is determined by:

a. Corbuling

b. Mechanical testing

c. Microetching

d. Macroetching

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KAIZEN
TEAM