

CBIP Examination Paper - Liquid Penetrant Inspection

Level 2 General

- 1 Which of the following is NOT a basic inspection principle that applies to all penetrant procedures?
- A. The penetrant must enter the discontinuity in order to form an indication
 - B. All indications glow when illuminated with a black (UV) light
 - C. A longer penetration time is generally required for smaller discontinuities
 - D. If the penetrant is washed out of the discontinuity, an indication will not be formed by that discontinuity
- 2 Subsurface discontinuities can be best detected by:
- A. The post-emulsification penetrant method
 - B. The visible dye penetrant method
 - C. The fluorescent penetrant method
 - D. None of the above will detect subsurface discontinuities
- 3 There are two reasons why a penetrant indication is generally considered superior to a visual indication of the same defect. These are:
- A. The indication is generally larger (wider) and has a higher contrast
 - B. The indication is larger and has a lower probability of detection (POD)
 - C. The indication has a higher POD and lower contrast
 - D. The indication is brighter and does not require as much light intensity
- 4 When using a post-emulsifiable penetrant, the length of time the emulsifier remains on the part is critical when detecting shallow discontinuities. The length of time should be:
- A. Half the penetrant dwell time
 - B. 30 seconds
 - C. 2 to 3 seconds
 - D. Determined by experimentation
- 5 Which of the following statements do not apply to developers used during penetrant testing?
- A. Developers are normally highly fluorescent
 - B. Developers can supply a contrasting background during inspection
 - C. Developers assist in drawing out the penetrant that remains in discontinuities to produce an indication
 - D. Developers may be either wet or dry

- 6 When using a PE penetrant with a hydrophilic emulsifier, it is recommended to apply the emulsifier:
- A. Before applying the penetrant
 - B. After the pre rinse water wash
 - C. After the post rinse water wash
 - D. After the development time has elapsed
- 7 The inability to detect small weld toe cracks using the visible solvent removable procedure could be a result of:
- A. Cleaning fluid trapped in the defects
 - B. Developer coating too thick
 - C. Over application of the solvent during the removal stage
 - D. All of the above
- 8 Which of the following Developer forms is considered to have the highest sensitivity?
- A. Dry developer
 - B. Non-Aqueous developer
 - C. Water Soluble developer
 - D. Water Suspensible developer
- 9 When conducting a fluorescent penetrant test, a commonly used technique for assuring that the excess penetrant has been removed during the washing/removal stage is to:
- A. Blow compressed air over the surface
 - B. Visually inspect the surface
 - C. Wipe the surface with a solvent damped cloth
 - D. View the surface with the aid of a black light
- 10 The detectability of a discontinuity depends on:
- A. The type of penetrant used
 - B. The type of developer used
 - C. The size and characteristics of the discontinuity
 - D. All of the above
- 11 It is not recommended that a water based soluble developer be used with which of the following penetrants?
- A. Water washable fluorescent penetrants
 - B. Water washable visible penetrants
 - C. Both A and B
 - D. PE penetrants

- 12 The problem with re testing a test specimen which has been previously tested using liquid penetrant is that:
- A. The penetrant may form beads on the surface
 - B. The dried penetrant residue left in discontinuities may not readily dissolve and the retest may be misleading
 - C. The penetrant will lose a great deal of colour brilliance
 - D. None of the above are correct statements
- 13 Method "A" red dye penetrants:
- A. Are Post Emulsifiable penetrants
 - B. Are classified as fluorescent penetrants
 - C. Contain a visible dye
 - D. None of the above
- 14 When removing excess penetrant from the surface of a test specimen during the removal stage, which of the following is true?
- A. Solvent removable penetrants should be removed using a solvent damped cloth
 - B. The penetrant removal operation must be carried out so that little or no penetrant is removed from the discontinuities
 - C. Spraying the surface directly with solvent is not an acceptable practice
 - D. All of the above are correct
- 15 When using a solvent removable penetrant, the developer is applied:
- A. By immersion
 - B. Before the penetrant dwell time has elapsed
 - C. By spraying
 - D. Prior to removing the penetrant
- 16 Which of the following discontinuities might be found in rolled plate?
- A. Seams
 - B. Shrinkage
 - C. Lack of fusion
 - D. Laminations
- 17 Which of the following is the correct way to apply dry developers?
- A. Dust chamber
 - B. Electrostatic spray
 - C. Spraying
 - D. All of the above

18 The purpose of the emulsifier when used with a post-emulsifiable penetrant is to:

- A. Drive the penetrant into tight cracks more rapidly
- B. Add fluorescent dye or pigment to the penetrant
- C. Provide a coating to which dry powder developer can adhere
- D. Mix with the surface penetrant to make it water washable

19 The speed with which a penetrant penetrates a surface flaw is influenced to the greatest extent by which of the following properties?

- A. Density
- B. Surface tension and wetting ability
- C. Viscosity
- D. Relative weight

20 Shallow wide defects on a casting would best be detected by using a?

- A. Water-washable visible penetrant
- B. Solvent removable penetrant
- C. Post-emulsifiable penetrant
- D. All of the above would have the same sensitivity