

# Post Emulsifiable Penetrant System

## Introduction

The Post emulsifiable penetrant system is suitable for examination of critical components where greater sensitivity and reproducibility of test results is desired along with higher productivity, however more procedural controls and processing steps are required in this examination than other penetrant processes. This process is found to be quite suitable for welded, rolled, cast or forged components including non porous ceramics. This system is less suitable for rougher surfaces.

**Procedure :** The steps involved in the testing procedure are:

1. **Pre cleaning :** Surface is cleaned thoroughly using various cleaning techniques as per requirement.
2. **Drying:** Component is dried prior to penetrant application.
3. **Penetrant Application :** Done by dipping, brushing, spraying or flooding methods with the recommended drain/dwell time being 5-10 mins. depending on the type of component.
4. **Prerinsing :** Recommended prior to emulsification in order to increase the life of emulsifying bath. This is to be carried out at a temp. between 10 to 38°C.
5. **Application of Emulsifier :** May be done by two techniques:
  - Spraying the emulsifier (5% conc.): spray pressure= 10-30 psi.  
Temperature = 10-38 °C  
Contact time = not exceeding 120 secs.
  - Dipping in emulsifier (20% conc.): gentle air agitation required throughout contact cycle  
Temperature = 10-38 °C  
Contact time = not exceeding 120 secs.  
Drain time = not exceeding 90 secs.
6. **Post Rinsing :** This can be done by manual or semi automatic water spray rinsing at pressure not exceeding 40 psi and temp range of 10 to 38°C.

## Special Conditions:

As per ASTM E-1210, the temperature of penetrant material and the surface part to be processed should be between 50 to 100 °F (10 to 38 °C). Wherever it is not possible to comply with this requirement, one must qualify the procedure at the temperature of intended use.

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