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# LIQUID PENETRANT TESTING – SYLLABUS

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## **Introduction**

- Overview of the Study Guide,
- Acknowledgments
- Recommended References
- Resource Materials

## **Overview of Liquid Penetrant Testing.**

- History of Liquid Penetrant Testing
- Principles of Liquid Penetrant Testing
- Advantages of the Penetrant Process
- Disadvantages of the Penetrant Process

## **Basics of the Penetrant Process**

- Steps of Liquid Penetrant Testing
- Preparation of Parts for Liquid Penetrant Testing
- Surface Condition
- Surface Contamination
- Different types of pre-cleaning

## **Penetrant Characteristics and Properties**

- Surface Tension
- Wetting Ability
- Capillary Action
- Viscosity
- Volatility
- Specific Gravity
- Flash Point
- Thermal Stability
- Temperature

## **Penetrant System**

- System Sensitivity
- Type of Penetrant
  - Visible Penetrant
  - Fluorescent Penetrant

## **Penetrant System Monitor**

- PSM Panel
- Crack sensitivity Panel

## **Penetrant Application**

- Brushing
- Spraying
- Flowing
- Dipping/Immersing

## **Penetrant Dwell Time**

- Dwell time chart
- Importance of dwell time

## **Penetrant Removal Process**

- Water-washable (Method A)
- Lipophilic Emulsifier (Method B)
- Solvent-removable (Method C)
- Hydrophilic Emulsifier (Method D)

## **Developer**

### **Types of Developer**

- Dry Powder
- Water-soluble
- Water-suspended
- Nonaqueous
- Specific Application

### **Developer application & time**

## **Inspection and Interpretation**

- Types of inspection
  - Visual Inspection
  - Fluorescent Inspection
- Penetrant Inspection Documents
- Identifying Indications
- Indication Appearance

## **Material and process control Test**

- Ultraviolet Light Intensity
- Emulsifier Concentration
- Ambient White Light Intensity
- Penetrant Inspection Area Cleanliness

## **Equipment**

- Ultraviolet Lighting
- Stationary Processing Equipment
- Portable Processing Equipment
- Automated Equipment

## **Post-cleaning**