



P2210

LIQUID PENETRANT INSPECTION

LEVEL I & II

16-Hours (2 days)

ASNT SNT-TC-1A Recommended Qualification Hours for Initial Training and Experience			
Training	Level I: 4-hrs	Level II: 8-hrs	Total: 12-hrs
Time in Method	Level I: 70-hrs	Level II: 140-hrs	Total: 210-hrs

PREREQUISITES

This course requires no prior training or experience by the candidate in this method of NDT. The material is presented in a manner that promotes understanding and the ability to make immediate application. This is an excellent course for NDT trainees who must have Level I and II training in order to qualify for certification as well as facility personnel who are responsible for or oversee the application of Liquid Penetrant Testing.

COURSE CONTENT

Level I and II material is presented, starting with the history of this oldest method of Nondestructive Testing and continues on through topics such as safety, scope of application, proper use of available media and equipment plus ample hands-on lab exercises. Lesson-by-lesson quizzes monitor progress and complete Level II Assessment Examinations (General, Specific and Practical tests) are administered by a qualified ASNT ACCP Level III. A Visual Acuity Test is included if required. P2210 provides accurate, current and thorough training that lays a solid foundation for the student to perform valid Magnetic Particle Testing.

ALTERNATIVE COURSE OPTIONS

Besides a classroom only venue, a web-based distance-learning course is also available, P2211-WB. This course is ideally suited for Level II technicians that are in need of refresher training. Distance learning courses include recommended "body of knowledge" course content plus the General Test. An additional four hours classroom training and evaluation is required that concludes with the Specific and Practical Tests as well as a Vision Acuity Test. All tests are administered by a certified ACCP Level III. Ask for "on-site" options if travel to our facility presents a problem.

COST

Classroom Venue - P2210.....	\$ 800.00
Web Based Class - P2211-WB.....	\$ 495.00
Qualification Examinations: General.....	\$ 100.00
Specific.....	\$ 100.00
Practical.....	\$ 200.00



P2210

LIQUID PENETRANT INSPECTION

COURSE OUTLINE

Day One

LESSON 1 – Overview of the Method

- Course Objectives
- Capabilities and Limitations of the Method
- Objectives of Testing
- Materials and Classification of Liquid Penetrant Techniques
- Section Quiz

LESSON 2 – The Liquid Penetrant Process

- Overview of the Process
- Test Piece Preparation and Pre-cleaning
- Section Quiz
- Penetrant Application and Dwell Times
- Techniques of Penetrant Removal
- Section Quiz
- Developers and their Application
- Inspection of Indications: Interpretation/Evaluation
- Post-Cleaning
- Section Quiz

Day Two

LESSON 3 – Equipment and Materials

- Physical Properties of Penetrant Materials and the Factors Affecting their Operation
- General Considerations: Calibration and Contamination
- Stationary Equipment - a Modular Approach to Liquid Penetrant Processing
- Auxilliary Equipment
- Portable Equipment - Don't Tie Me Down
- Section Quiz

LESSON 4 – PT Material Properties and Parameters

- Penetrant Material Performance Characteristics
- Penetrant Sensitivity
- Detection, Perception and the Human Eye
- The Physical Properties of the "Ideal" Penetrant
 - Flash Point and Volatility
 - Capillary Action: Wetting Capability, Surface Tension, Cohesion and Adhesion, Viscosity, Specific Gravity, Removability
 - Sensitivity, Dyes, Brightness
 - Dimensional Threshold of Fluorescence
 - Ultraviolet and Thermal Stability
- Physical Properties of Emulsifiers
- Developers and Sensitivity
- Special Purpose Materials and their Application
- Section Quiz

LESSON 5 – Discontinuities and Classifying Indications

- Origin and Nature of Discontinuities
 - Inherent Discontinuities
 - Processing Discontinuities
 - In-service Discontinuities
- The Inspection Process: Interpretation and Evaluation

- Penetrant Indications
 - False Indications
 - Nonrelevant Indications
 - Relevant Indications
- Examples of Indications
- Section Quiz

ASSESSMENT EXAMINATIONS:

- **General Exam** – covers the basic principles (Body of Knowledge) of Liquid Penetrant Testing.
- **Specific Exam** – tests ability to read, interpret and apply specific procedure material for the method.
- **Practical Exam** – hands-on demonstration of the ability to operate test equipment, perform specific calibrations and tests in order to find and report flaws of sample materials according to appropriate specifications.

