ATPT-2819: SPECIAL TOPICS IN COATINGS INSPECTOR

Cuyahoga Community College

Viewing: ATPT-2819 : Special Topics in Coatings Inspector

Board of Trustees:
JUNE 2026

Academic Term:
Fall 2026

Subject Code
ATPT - Appld Indus Tech - Painting

Course Number:
2819

Title:
Special Topics in Coatings Inspector

Catalog Description:
Certification course for coatings inspectors covering roles, application standards, thickness measurements and required coatings application conditions. Coatings defects per industry standards and application safety during operations will also be addressed.

Credit Hour(s):
4

Lecture Hour(s):
4

Requisites

Prerequisite and Corequisite
Departmental approval: admission to apprenticeship program.

Outcomes

Course Outcome(s):
Discuss the role of the coatings inspector, including duties, ethics, and common practices, and recognize team building skills necessary for prevention and remediation of corrosion.

Objective(s):
1. Identify and define the terms related to materials coatings.
2. Describe the roles of the coatings inspector with respect to job specifications, preparations, and coatings.
3. List the duties of the inspector with respect to adherence to job requirements, verification of environmental conditions, and recordkeeping.
4. Discuss the ethics required of the inspector and justify the respective need for each.
5. Describe the skills required for team building relationships needed for the prevention and remediation of corrosion.

Course Outcome(s):
Discuss the fundamentals of coatings applications, including application standards, surface preparation, affecting factors, and inspection and documentation procedures.

Objective(s):
1. List the procedural steps followed in surface preparation.
2. Identify the factors that affect surface preparation
3. Discuss the properties of coating preparations and causes of failure.
4. Classify coatings with respect to various binders, compositions, and solids.
5. Discuss the specifications with respect to industry standards and job-specific interpretation.

Course Outcome(s):

Determine the pre-job conference goals for coatings application, including thickness measurements and product data sheets.

Objective(s):

1. List and define the terms related to the pre-job conference, including documentation and product application.
2. Identify the health, environment, and safety requirements, emergency procedures, and scope of work goals that are covered at the pre-conference meeting.
3. Review the logical support and critical hazards of the project and identify the critical points of hazards.
4. Discuss and establish lines of communication, methods of conflict resolution, and procedural change orders between project parties.
5. Identify areas of concern within the project regarding specifications, omissions, clarifications, and testing, including critical points for inspections.
6. Identify and establish the chain of command of the project and define the authority of the inspector.
7. Establish good recordkeeping procedures and reporting formats, including inspection documentation and reporting principles.
8. Describe how weather conditions, mixing procedures, and coatings applications affect the overall job outcomes.
9. Demonstrate the ability to measure dry and wet film thicknesses in accordance with job specifications.

Course Outcome(s):

Discuss the process coatings applications, including weather conditions, mixing procedures, and application methods, including film measurement and verification.

Objective(s):

1. Describe the proper weather conditions required for applying coatings.
2. Interpret the manufacturer's specifications needed to employ the required equipment for mixing and reducing coatings.
3. Assess the job specifications and manufacturers' requirements to calculate mixing and reduction ratios.
4. Identify different reduction agents that may be used with coatings.
5. Discuss various coating application methods.
6. Comply with the manufacturer’s specifications and job requirements to measure wet and dry film thicknesses.
7. Employ proper testing equipment for film thickness verification.

Course Outcome(s):

Compare the various coating defects and assess respective causes, and interpret industry standards to manage coatings applications to be in accordance with job and industry standards.

Objective(s):

1. List and explain different types of coating application defects.
2. Describe coating defects with respect to design flaws.
3. Identify certifying agencies responsible for establishing industry standards.
4. List the different standards related to coating applications with respect to industry compliance.

Course Outcome(s):

Explain the safety procedures to be followed during surface preparation, coatings application, and general work scope operations of coatings projects, and describe the duties of the coatings inspector.

Objective(s):

1. Identify the safety precautions related to surface preparations, including hand and power tool usage, abrasive blasting, and chemical stripping.
2. List and explain the hazards related to coating applications with respect to ventilation, spray equipment, and coatings flash points.
3. State the general safety regulations as prescribed by the Occupational Safety and Health Administration (OSHA), including respiratory, fall protection, and confined space hazards.
4. Explain the duties of the coatings inspector with respect to application standards and specifications.
5. List the different documented tests performed with documented results during coatings applications.

6. Describe and compile test results and documentation for recordkeeping and generate comprehensive reports for submittal to respective owners.

Methods of Evaluation:

1. Attendance
2. Participation
3. Assignments
4. Exams/quizzes

Course Content Outline:

1. Coatings inspector
    a. Terms
        i. Quality control technician
        ii. Corrosion
        iii. Coating
        iv. Coating specifications
        v. Standard
        vi. Remediation
        vii. Instrument calibration
        viii. Team building
        ix. Inspector report
        x. Quality assurance
        xi. Profile
        xii. Anchor pattern
1.
    a. Roles
        i. Documentation
            1. Environmental
            2. Surface preparation
            3. Coating application
        ii. Specifications
            1. Interpretation
            2. Adherence
1. Duties
    a. Recordkeeping
        i. Environmental
        ii. Daily reports
        iii. Material
        iv. Personnel
        v. Time
    b. Owner representative
    c. Enforcement
    d.
1. Ethics
    a. Integrity
    b. Professionalism
    c. Honesty
    d. Objectivity
1. Team building
    a. Purpose
        i. Working relationship
        ii. Communication
        iii. Productivity
1. Characteristics
    a. Common vision
    b. Trust

c. Decision making
d. Motivation

2. Process
   a. Expectations
   b. Fears
   c. Accomplishments
3. Corrosion
   a. Prevention
   b. Remediation

1. Coatings, fundamentals, application
   a. Surface preparation
      i. Assessment
      ii. Inspection
         1. Cleanliness
         2. Profile
         3. Documentation
      iii. Pre-cleaning
         1. Solvent
         2. Oil/grease removal

1. Affecting factors
   a. Residue
      i. Oil
      ii. Chemical salt
      iii. Rust scale
      iv. Old coatings
   b. Non-visible
   c. Condensation
   d. Mechanical cleaning equipment
   e. Incompatibility of coatings
2. Blasting
   a. Abrasive
   b. Non-abrasive
3. Design and fabrication flows
   a. Hard to reach
   b. Rivets, bolts and connectors
   c. Structural design
   d. Welds and skip welds
   e. Overlapping surfaces
   f. Gaps
   g. Complex arrangements
   h. Sharp edges
4. Coating classification
   a. Binding
   b. Composition
   c. Solids
5. Types
   a. Epoxy
   b. Latex
   c. Polyurethane
   d. Organic zinc
   e. Alkyd
6. Specifications
   a. Standards
      i. Blasting
      ii. Painting
   b. Job specific
      i. White metal
      ii. Near white
      iii. Commercial

1. Pre-conference, recordkeeping and measurements
    a. Terminology
        i. Scope of work
        ii. Inspectors role
        iii. Points of contact
        iv. Change order
        v. Inspection log
        vi. Daily report
        vii. Ambient weather
        viii. Pot life
        ix. Wet film thickness
        x. Type I/Type II gauges
        xi. Pa-2
        xii. Nonmagnetic shim
        xiii. Gauge calibration
        xiv. Hold points
    b. Pre-conference goals
        i. HES
        ii. Scope of work
        iii. Responsibilities
        iv. Chain of command
        v. Clarifications
        vi. Hold points
        vii. Conflict resolution
    c. Critical hazards
        i. Pre-existing
        ii. Working environment
        iii. Chemical reactions
    d. Lines of communication
        i. Chain of command
        ii. Conflict resolution
        iii. Change orders
        iv. Owner
        v. Contractor
        vi. Inspector
1. Areas of concern
    a. Specifications
        i. Language
        ii. Work scope
        iii. Time
    b. Omissions
        i. Coatings manufacturer
        ii. Manufacturer specifications
    c. Clarifications
        i. Chain of command
        ii. Industry standards
        iii. Equipment mobilization
    d. Critical points
        i. Production start up
        ii. Surface preparations
        iii. Coatings application
        iv. Completion
2. Chain of command
    a. Owner
    b. Inspector
    c. Contractor

1. Inspector authority
    a. Work stoppage
    b. Standards enforcement
    c. Documentation
2. Recordkeeping procedures
    a. Inspection logs
    b. Daily logs
    c. Calibration
    d. Format
        i. Submittal time frame
        ii. Paper documents
        iii. Electronic
3. Job outcomes
    a. Weather
        i. Delays
        ii. Work stoppages
        iii. Heat/cold

1. Mixing
    a. Reduced life
    b. Curing
    c. Application issues
2. Coatings application
    a. Application error
    b. Equipment
    c. Job appearance/esthetics

1. Coatings applications
    a. Weather conditions
        i. Temperature
        ii. Humidity
        iii. Dew point
        iv. Surface temperature
    b. Mixing
        i. Equipment
            1. High shear mixer
            2. Agitator
            3. Specialty equipment
            4.
        ii. Manufacturer specification specifications
            1. Recommendations
            2. Specifications with recommendations
    c. Reduction
    d. Ratios
        i. Coatings/reducers
        ii. Manufacturer specifications
        iii. Calculations
            1. Thicknesses
            2. Coverage
    e. Reduction agents
        i. Methyl ethyl ketone
        ii. R7K15
        iii. Xylene
        iv. Water

1. Application methods
    a. Brush
    b. Roller
    c. Spray
    d. Power equipment

        i. Air less sprayer
        ii. Conventional
        iii. Plural component
    e. Hand tools
        i. Brush
        ii. Roller
        iii. Scrapers
2. Film thickness measurement
    a. Coating system
        i. Epoxy epoxy urethane EEU
        ii. Organic zinc epoxy urethane OZEU
        iii. Epoxy urethane EU
    b. Manufacturer specifications
    c. Job requirements
        i. Manufacturer compliance
        ii. Site specific
    d. Wet film
        i. Application test
        ii. Gage

1. Dry film
    a. Post application
    b. Type I Dry Film Thickness DFT gage
    c. Type II DFT
2. Verification
    a. Accuracy
        i. Before
        ii. After
    b. Coated plates
    c. Measure coated thickness standards
    d. Base metal readings

1. Safety and inspections
    a. Safety precautions
        i. Surface prep
        ii. Application
        iii. General
    b. Surface prep safety
        i. Hand tools
        ii. Power tools
        iii. Abrasive blasting
            1. Dead man controls
            2. Operator safety
            3. Hearing
        iv. Chemical stripping
            1. PPE
            2. Chemical burns
            3. Disposal
    c. Application safety
        i. Ventilation
            1. Lower explosive limit LEL
            2. Static ignition/electrical discharge
            3. Quality air
        ii. Spray equipment
            1. Grounding
            2. Pressure buil up
            3. Operator safety
        iii. Flash point
            1. Coatings
            2. Solvents
            3. Temperature control

    d. General safety
        i. Respirator
            1. Selection
            2. Standard
        ii. Fall protection
            1. Guardrail
            2. Scaffolding
            3. Harness
            4. Lanyard

1. Confined space
    a. Structural steel
    b. Oxygen deficiency
    c. Flammable atmosphere
    d. Lock out/ tag out
2. Coatings inspector duties
    a. Documentation
    b. Observations
    c. Reporting
3. Documented tests
    a. Surface profile
    b. Dry film thickness DFT
    c. Ambien air
    d. Surface temperature
4. Reports
    a. Test results
    b. Inspection log
    c. Calibration log

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: https://portal2.tri-c.edu/ReligiousAccommodation/ Religious Accommodation Form. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf

Weekly Schedule

	Topics
Week 1	INTRODUCTION AND TEAM FORMATION
Week 2	CORROSION
Week 3	TEAM BUILDING EXERCISE THE ROLE OF THE INSPECTOR
Week 4	ENVIROMENTAL TESTING ENVIROMENTAL TESTING - PRACTICAL LAB
Week 5	COATING FUNDAMENTAL AND CHARACTERISTICS
Week 6	COATINGS TYPES AND MECHANISMS OF CURING
Week 7	PROJECT SPECIFICATIONS IN THE COATINGS INDUSTRY SURFACE PREPARATION FUNDAMENTALS
Week 8	INSTRUMENTS OF SURFACE PREPARATION

Week 9	PRACTICAL LAB - SURFACE PREPARATION INSTRUMENTATION REVIEW OF LAB AND ASSIGNMENT OF HOMEWORK
Week 10	PRE-PROJECT CONFERENCE DOCUMENTATION OF PROJECT INSPECTION
Week 11	APPLICATION OF COATINGS DRY FILM THICKNESS MEASUREMENT AND INSTRUMENTS PRACTICAL LAB - MEASURING FILM THICKNESS
Week 12	REVIEW OF LAB PRODUCT DATA SHEETS AND SAFETY DATA SHEETS LAB DAY SPECIFICATION
Week 13	REVIEW OF HOMEWORK DEFECTS IN COATINGS CASE STUDY
Week 14	HIGH AND LOW VOLTAGE HOLIDAY TESTING INSTRUMENTS INDUSTRY STANDARDS SAFETY ON COATING PROJECTS
Week 15	ROLE AND RESPONSIBILITIES OF THE INSPECTOR INSPECTION OF LAB PANEL REVIEW OF INSTRUMENTS
Week 16	REVIEW OF COURSE MATERIAL Exams

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Instructor-provided materials

Resources for the Instructor

American Society of Testing and Materials (ASTM). *ASTM Standards* . Washington, DC: American Society of Testing and Materials , www.astm.org

---

International Organization for Standardization (ISO). *ISO Standards Handbook*. Geneva, Switzerland: International Organization for Standardization , www.iso.org

---

Additional Resources for the Instructor

www.sspc.org (https://catalog.tri-c.eduwww.sspc.org)

www.kta.com (https://catalog.tri-c.eduwww.kta.com)

Top of page

Key: 669