

# Coatings and Corrosion Control Technologies Materials and Application

CP-6605

## OBJECTIVES:

The objective of this applied workshop is to offer a sound assessment of the latest developments in materials, application methods, and process selection. The course will focus on material properties, both coatings and substrates, their application, and design of a high performance and environmentally compliant coating operations. In addition, it will discuss corrosion fundamentals and methods of preventing corrosion by protective coatings and many case histories and troubleshooting approaches. The informal atmosphere with emphasis on problem solving discussions, while the "Learner Controlled Instruction" style, will make it easy for you to obtain answers to specific questions.

## WHO SHOULD ATTEND?

All manufacturing personnel dealing with decorative and protective coatings and corrosion prevention technology; process, design, design and specification engineers, quality control, technical service, chemists and technical sales personnel. The course is appropriate for current users with limited to very good knowledge of coatings operations, which need or want to learn fundamentals, current trends, and new technologies.

## BENEFITS OF ATTENDING:

- Develop an overall understanding of coatings and corrosion prevention methods and processes.
- Learn how to select coatings and become familiar with their properties, application methods and cost.
- Gain valuable understanding of durability of coatings and how to improve long term performance.
- Learn how to save costs by implementing more efficient processes and judicious selection of materials.
- Receive unbiased technical opinions on what works, what does not and why.
- Reinforce your mastery of troubleshooting and problem solving capabilities.

## Course Outline

### Adhesion of Coatings

- Adhesion of Coatings
- Requirement for a Good Adhesion
- Methods of Promoting and Maintaining Adhesion
- Effect of Adhesion on Durability and Corrosion Resistance of Coatings

### Surface Pretreatment

- Surface Nature and Characteristics
- Reasons and Benefits of Surface Pretreatment
- How to Select a Proper Surface Treatment Process
- Selection and Application of Primers, Adhesion Promoters and Corrosion Inhibitors

- Mechanical and Physical Treatments
- Conversion Coatings-zinc and iron phosphate
- Most recent surface treatment technologies and methods
- Anodizing Treatment of Aluminum

#### **Electrocoating and Plating**

- Corrosion Protection via Electrocoating
- Electrodeposition Types, Processes and Applications
- Performance Properties and Economics
- Corrosion Protection via Plating

#### **How to Design for Corrosion Control**

- Material Selection
- Process Variables
- Intact and Non-intact Protection Methods

#### **Corrosion and Corrosion Prevention**

- Fundamentals of Corrosion
- Corrosion Types and Mechanisms
- Methods of Preventing Corrosion
- The Effect of Coatings Variables on Corrosion

#### **Corrosion Protection by Coatings**

- How Coatings Protect and Why They Fail?
- Factors Affecting Corrosion Protection of Coatings
- Selecting Coatings for Corrosion Protection
- Approaches for Preventing Corrosion
- Methods of Evaluating Corrosion Protection of Coatings

#### **Selection, Properties and Application of Liquid Organic Coatings**

- Performance Rating of Conventional and Compliant Coatings
- Selecting Compliant Liquid Coatings
- Coating Types and Properties
- Possible Service Life Prediction
- Recent Developments and Future Trends

#### **Waterborne Coatings**

- Performance and Durability of Waterborne Coatings
- Understanding of Waterborne Coatings
- Special Consideration for Waterborne Coatings Application
- Selection, Merits, Application and Process Variables
- How to Convert to Waterborne Coatings

#### **Powder Coating**

- Current Status of Powder Coatings
- When and Where to Use Powder Coatings
- Advantages and Limitations
- Powder Types and Properties
- Selecting Powder Coating and Application Methods
- What does it take to Convert to Powder Coating
- Performance and Troubleshooting

**Surface Defect Characterization and Prevention**

- Sources and Examples of Defects
- Types and Causes of Defects
- Methods of Preventing Defects

**Durability and Testing of Coatings**

- Why Do Coatings Fail?
- Factors Affecting the Performance of Coatings
- Mechanisms of Paint Failure
- Possible Methods of Coating's Life Prediction
- How to Extend the Life of a Coating?
- How to Test Coatings for Specific Applications?
- Evaluation of Coatings

**Coatings Case Histories**