

WebCorr Corrosion Consulting Services Presents

Hot Dip Galvanizing & Mechanical Plating - Processes, Properties and Applications

Date: As published on website Venue: As published on website

Course Overview

This 3-day short course systematically and thoroughly covers every aspect of hot dip galvanizing & mechanical plating from the process to the properties and applications of galvanized coatings and mechanical plating. The course covers design, specification, painting of galvanic steel surfaces, fabrication methods including bolting and welding, inspection, coating life prediction, maintenance and repair of galvanized products. The course will help designers, specifiers, materials engineers, consultants, and fabricators to protect and improve their steel products. This corrosion short course can be taken as in-house training course, online course, and distance learning course worldwide. It can also be customized to meet the specific needs of your organization.

Who Should Attend

- Hot-dip galvanizing operators who are concerned with the operation issues in hot-dip galvanizing.
- Designers, specifiers, materials engineers, consultants, and fabricators who are concerned with corrosion of steel and are interested in hot-dip galvanizing technology for protecting steel products.
- Engineers and technicians who are involved in testing, inspection, analysis of galvanized steel products.
- Users of galvanized steel products who are concerned with the performance and durability of hot-dip galvanized steel.

Course Outline

- 1 Corrosion & The Need for Galvanizing
 - 1.1 The economic, social, political & environmental impacts
 - 1.2 Liabilities due to corrosion
 - 1.3 History of galvanizing
 - 1.4 Basic concepts in corrosion
 - 1.5 Terminologies and conventions
 - 1.6 Why do metals corrode
 - 1.7 How do metals corrode
 - 1.9 Corrosion prevention methods
 - 1.10 Galvanic corrosion and properties of zinc and steel
 - 1.11 Cathodic protection

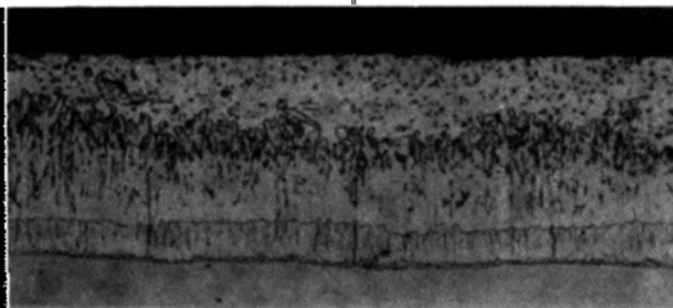
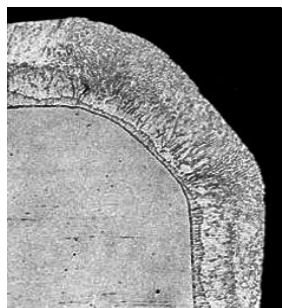


- 1.12 The need for galvanizing
- 2 Process, Properties and Applications
 - 2.1 Galvanizing fundamentals
 - 2.1.1 The different galvanizing processes
 - 2.1.2 Galvanized coating characteristics
 - 2.2 Principles of venting
 - 2.3 Basic venting rules
 - 2.4 Principles of draining
 - 2.5 Basic draining rules
 - 2.6 Principles of avoiding distortion
 - 2.7 Galvanizing rules to avoid distortion
 - 2.8 Basic rules - design for galvanizing
 - 2.9 Metallurgy of the galvanizing process
 - 2.10 Factors affecting galvanizing quality and service
 - 2.10.1 Steel surface condition
 - 2.10.2 Steel metallurgy
 - 2.10.3 Weld quality
 - 2.11 Mechanical properties of galvanized coatings
 - 2.11.1 Strength and ductility
 - 2.11.2 Embrittlement
 - 2.11.3 Fatigue strength
 - 2.12 Other metallic zinc coatings for steel
 - 2.13 Continuous galvanizing processes
 - 2.14 Protective life of zinc coatings
 - 2.14.1 Performance in various environments
 - 2.14.2 Compatibility of galvanized coatings
 - 2.14.3 Transport and storage of galvanized products
 - 2.14.4 Surface (iron) contamination
 - 2.14.5 Protection of cut edges and damaged areas
 - 2.14.6 Corrosion rate of galvanized coatings

Course Outline

- 2.15 Reliability of coatings for steel
- 2.16 Galvanized coatings for buildings and structural steel
- 2.17 Galvanizing of fasteners and small components
- 2.20 Marking for identification
- 2.21 Properties and applications of Zn-Al-Mg-Si alloy hot-dip galvanized coatings
- 3 Design, Specification and Inspection of Galvanized Products
 - 3.1 Size and shape of articles to be galvanized
 - 3.2 Materials suitable for galvanizing
 - 3.3 Design and fabrication of components for galvanizing
 - 3.4 Dimensional stability
 - 3.5 Galvanized coatings on threaded parts
 - 3.6 Galvanized coatings on moving parts
 - 3.7 Design for maximum corrosion protection
 - 3.8 Metallurgical aspect of design
 - 3.9 Inspection of work before dispatch to galvanizer
 - 3.10 Standard specification for hot dip galvanized coatings
 - 3.11 Standards for galvanized products
 - 3.12 Inspection of galvanized products
 - 3.12.1 Hot dip galvanized coating defects: causes and remedies
 - 3.12.2 Steel defects and their effects on galvanized coatings
 - 3.12.3 Defects in paint coatings
 - 3.13 Variations in appearance and their relationship to coating quality
 - 3.14 Non-destructive testing for coating thickness
 - 3.15 Reconditioning damaged galvanized surfaces
- 4 Bolting Galvanized Steel
 - 4.1 Zinc coating for fasteners
 - 4.2 Influence of galvanized coatings on design
 - 4.3 Slip factors
 - 4.4 Structural bolts and bolting technique
 - 4.5 Design for bolted structural joints
 - 4.6 Applications of high strength bolts
 - 4.7 Tightening procedures for high strength bolts
 - 4.8 Inspection of high strength bolted joints
- 5 Welding Galvanized Steel
 - 5.1 GMA welding
 - 5.1.1 Effect of welding position
 - 5.1.2 GMA braze welding
 - 5.1.3 GMA spot welding

- 5.2 Manual metal arc welding
- 5.3 GTA welding
- 5.4 Carbon arc welding
- 5.5 Torch welding
- 5.6 Reconditioning weld-damaged surfaces
- 5.7 Welding fumes
- 6 Painting Galvanized Steel
 - 6.1 Painting galvanized steel - duplex coatings
 - 6.2 Economics of painting galvanized steel
 - 6.3 Synergistic effect of duplex systems
 - 6.4 Painting procedures
 - 6.5 Adhesion
 - 6.6 Preparation of galvanized surfaces for painting
 - 6.7 Pretreatment systems
 - 6.8 Specialized primers
 - 6.9 Finish coats
 - 6.10 Painting recommendations
- 7 Mechanical Plating
 - 7.1 Introduction to Mechanical Plating
 - 7.2 Hydrogen Embrittlement & Mechanical Plating
 - 7.3 Mechanical Plating Process Description
 - 7.4 Typical Process Sequence for Mechanical Plating
 - 7.5 Barrel Loading Capacity for Typical Parts
 - 7.6 Mechanical Plating Typical Cycle
 - 7.7 Parts Suitable for Mechanical Plating
 - 7.8 Typical Mechanical Plating Layout
 - 7.9 Mechanical Plating Equipment
 - 7.10 Budgetary Costs for Mechanical Plating Systems
 - 7.11 Automation for Mechanical Plating
 - 7.12 Post-treatments for Mechanical Plating
- 8 Glossary of Galvanizing Terms
- 9 End-of-Course Examination



- ← Eta (100%Zn)
- ← Zeta (94%Zn 6%Fe)
- ← Delta (90%ZN 10%Fe)
- ← Gamma (75%Zn 25%Fe)
- ← Steel

Course Registration

Please register online at www.corrosionclinic.com
Or use the form below (photocopies of this form may be used for multiple bookings).

Dr/Mr/Ms _____
Organization _____
Contact Person _____
Contact Dept _____
Tel _____ Fax _____
Email _____

Payment should be made by TT or online banking. Currencies in Australian Dollar, Canadian Dollar, US Dollar, Euro and Sterling Pound can be transferred directly without conversion. Our bank details can be found at the link below:

<http://www.corrosionclinic.com/payment.html>

Course Fee and Discount

Standard: \$2,500 **Discount:** \$2,250

The fee includes a hardcopy of course note, certificate, light lunch, coffee breaks each day during the course.

Discount applies to a group of 3 or more persons from the same organization registering at the same time, or early-birds making payment at least 8 weeks before the course commencing date.

Cancellation and Refunds

Cancellation or replacement should be conveyed to WebCorr in writing (email or fax). An administration charge of 50% of the course fee will be levied if the cancellation notice is received from 14 to 7 days before the course commencing date. No refund will be made for cancellation notice received 6 days and less. No refunds will be given for no-shows. Should WebCorr find it necessary to cancel a course, paid registrants will receive full refund. Refund of fees is the full extent of WebCorr's liability in these circumstances.



WebCorr has NACE certified Corrosion Specialist (#5047) providing customized in-house training, online and distance learning corrosion courses, corrosion seminars and workshops on corrosion, materials, metallurgy, paints and metallic coatings. Our corrosion courses are developed and taught by NACE certified Corrosion Specialist with over 30 years of practical experience in the field. Our training success is measured by your learning outcome.

