The Development, Manufacture & Application of Powder Coatings

Description

This two-day course will introduce participants to the types of equipment, raw materials, formulation, testing procedures and equipment used in the process. It will explain both the underlying principles and practical aspects of the process and the important control measures required to provide the applicator with a quality finish. A session on practical application is included, in our laboratory.

Who Should Attend

This course is designed for production engineers and chemists with responsibility for efficiently controlling the various stages of the development and manufacture of thermoplastic or thermosetting powder coatings. It is also suited for those currently using powder finishes, who wish to widen their understanding of the process. It will also assist those suppliers wishing to better understand the processes, in order to evaluate and promote alternative equipment or raw materials.

Contents

Introduction
- History & development of powder coating techniques
- Types of powder coatings
- Advantages & disadvantages of powder coating
- End use; Coating selection; Specification

The Substrate
- Principles of adhesion
- The pre-treatment of ferrous & non-ferrous metals, wood & MDF, glass plastics
- Degreasing & Mechanical cleaning
- Chemical cleaning & conversion coatings
- Handling components, jigging & masking
- Primer coats for improved performance

Formulation
- Specification
- Substrate issues; Adhesion theory
- Raw materials
- Special effects

Manufacture
- Production equipment & techniques
- Processing problems. Master batching
- Future developments in processing
- Problems

Practical Industrial Application
- Setting up application equipment,
- QC Testing; Right first time quality
- Defects

Testing of Powder Coatings
- Quality control
- Particle size distribution
- Fluidisation & dry flow characteristics
- Electrostatic charging; Transfer efficiency
- Colour, gloss, adhesion, melt/cure, hardness & abrasion
- Long term durability - Weathering & corrosion resistance

Fluidised Bed Coating
- Pre heating & the relationship of time & temperature
- Manual & automatic application
- Post curing & cooling or quenching

Electrostatic Application
- Application systems
- Charging systems
- Transfer efficiency & coating thickness

Curing
- The importance of melt/cure & oven profiling
- Convection ovens
- Radiation ovens: infrared, ultra violet

Working Safely
- Health, safety & environmental risks
- Legislation & guidance
- Good housekeeping & working safely
- Dust, fire, explosion & other hazards

End Use
- End-user specification & expectation
- Premature failure in service

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