Study Guide

Module 208 – Level 2

Powder Coatings Application and Cure

Author: R J Stanfield
Updated by C Whitehead, P Collins

Summary

This Foundation Level module provides an understanding of the most important methods used to apply both thermosetting and thermoplastic powder coatings. It begins by introducing these two types of powder, the market areas in which they are used and the two main methods of application.

This is followed by an explanation of the principles of electrostatics and electrostatic spraying and continues with a description of electrostatic spraying equipment, including guns, booths and recovery systems.

Stoving methods and equipment are then described.

Finally, a detailed explanation of the fluidised bed method of powder application and the equipment used completes the module.

Structure of the module.

The module consists of a theory block of 5 sections, 1 CMA and 1 ASG.

The theory block is split into five sections which are not of equal length but should take, on average, a little under 2 hours to go through.

The module is designed to take about 10 hours of study made up of:

- theory block 9.0 hours
- Assignment work 1.0 hours

This time excludes the time taken to write up your report for the Assignment, which is explained in Appendix 2

For full certification, the CMA and the ASG must be completed satisfactorily.

Marks for the module

Computer Marked Assessment (CMA)	**20%**
Tutor Marked Assessment (TMA) *	**45%**
Assignment (ASG)	**35%**

An overall mark of 50% or more is necessary for successful completion of the module, with students achieving at least 40% of the marks available in each element.

***** You may, if you wish, await the completion of three modules before sitting the TMA papers. By 'Stacking' tests in this way, you will only need to attend the test centre once instead of three times.

Module Pre-requisites

The main prerequisite, for persons taking this Foundation Level module, is an interest in surface coatings generally and powder coatings in particular. They will, preferably, be considering employment, be employed or had recent employment in the coatings or a related industry.

Basic knowledge of chemistry and physics is desirable.

Module Objectives - Powder Application and Cure

Section 1.

Introduction to powders, methods of application and end uses.

1.1 Introduction – Nature of Powder Coatings
1.2 Fluidised Bed
1.3 Electrostatic spraying
1.4 End uses of powders.

Section 2.

Electrostatics.

2.1 History and background
2.2 Charged particles
2.3 Principles of electrostatic spraying
2.4 Effect of particle size and shape

Section 3.

Electrostatic application equipment, spray-booths and recovery systems.

3.1 Powder Spray guns and related equipment
3.2 Powder Spray Booths
3.3 Powder Recovery Systems
3.4 Cleaning of Booths and Recovery Systems.

Section 4.

Stoving and Handling

4.1 Objectives of Stoving
4.2 Types of heating
4.3 Types of Oven
4.4 Suspension & jigging of Articles

Section 5.

Fluidised bed application equipment and process.

5.1 Fluidised Bed Application Process
5.2 Preheating
5.3 Dipping Process
5.4 Post heating and Cooling
5.5 Jigging