Study Guide

Module 205 – Level 2

Evaluation

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This foundation level module provides a general overview of the reasons for and consequences of testing coatings - mostly at the manufacturers, but also at times by the user. The control of variables such as climatic conditions, substrate preparation, film thickness and timing are considered. Some methods of testing both the liquid coating and the applied film are described, and the student will have an opportunity to carry out some of these.

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1. Module Prerequisites

The main prerequisite for persons taking this Foundation Level is an interest in surface coatings. Preferably, they will be considering employment, be employed or had recent employment in the coatings or a related industry. The student needs to have an interest in science, preferably completing GCSE or GNVQ studies in a suitable subject.

2. Introduction to Module 205

This foundation level module provides a general overview of the reasons for and consequences of testing coatings - mostly at the manufacturers, but also at times by the user. The control of variables such as climatic conditions, substrate preparation, film thickness and timing are considered. Some methods of testing both the liquid coating and the applied film are described, and the student will have an opportunity to carry out some of these.

Module 205 is one of a series of 9 modules at foundation level. Following successful completion of this module, you may proceed to study further modules, selected on the basis of your needs.

3. Structure of the module.

The module is designed to take approximately 12 hours of study made up of:

- theory block - 9 hours
- Assignment work - 3 hours

The theory block is split into four sections which are not of equal length but should take, on average, up to 2 to 2½ hours to go through.

A number of Self-Assessed Questions (SAQs) are included for you to answer as you work through the text. The answers to these are given at the end of the module in Appendix 1.

A Computer-Marked Assessment (CMA) consisting of 10 multi-choice questions.

The Assignment (ASG) can be found in Appendix 2.

4. Assessment

The following assessment elements of the module are mandatory for those wishing to receive a Certificate on completion of the course but are optional for candidates wishing to simply study the material.

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- The CMA must be attempted online.
- The ASG must be submitted to your Tutor for marking
- The TMA is a written test of 30 minutes duration, taken under examination conditions and marked by your Tutor.

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

For Students completing the assessment elements of the module, the maximum possible mark is 100% - made up from:

CMA	20%
TMA	45%
ASGs	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.

5. Objectives

Section 1 Purpose of testing, influence of variables and control of application.

After studying Section 1, you should be able to:

1.1 Explain that one reason for testing is to ensure that a manufactured product complies with an agreed performance standard.

1.2 Explain the influence of temperature and relative humidity on the rate of drying and dried film properties, on a coating, and hence justify the control of these variables to close limits during testing

1.3 Explain the importance of uniformity in preparing test specimens for a series of tests.

1.4 Explain the effect of variable film thickness (wet & dry) on the properties of a coating and hence justify the use of a film applicator.

Section 2. Methods of preparing test panels.

When you have finished Section 2, you should be able to do the following:

2.1 Discuss the importance of the correct preparation and careful handling of test specimens after cleaning and pre-treatment

2.2 Describe the principles of operation of film applicators for coating (a) a glass panel (b) a metal panel and (c) a plastic foil.

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2.3. Discuss the various methods and drawbacks of preparing coated panels for carrying out the following tests. (See also ASG)

BS EN ISO 9117-3 Surface drying test using ballotini

BS EN ISO 9117-1 Through dry state and through-dry time

BS EN ISO 2813 Gloss (specular gloss of non-metallic paint films)

BS EN ISO 2814 Comparison of contrast ratio (hiding power)

BS EN ISO 6272 Part 1 & 2 Impact (falling weight)

BS EN ISO 1520 Cupping Test

BS EN ISO 2409 Cross cut test

2.4 Discuss methods of measuring wet and dry film thicknesses of coated articles by methods selected from BS EN ISO 2808 Determination of film thickness (See also ASG).

Section 3. Tests on liquid coatings – purpose and methods

In Section 3, you should be able to:

3.1 Discuss the accepted method for examining a liquid paint or ink sample and the problems that may occur.

3.2 Viscosity, Density, Non-volatile content and Flash Point

3.3 Measure the surface and hard drying times of selected coatings (ASG).

3.4 Discuss terms and test methods relating to the drying of inks.

Section 4. Tests on applied coatings – purpose and methods

After studying Section 4, you should be able to:

4.1 List the requirements of coatings.

4.2 Physical properties: Hardness, Adhesion and Extensibility

4.3 Describe examples of methods used to evaluate coating films

4.3 Gloss and sheen.

4.4 Contrast ratio.

4.5 Physical Properties: Adhesion, extensibility & hardness.

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