

# **Study Guide**

Advanced Module 506

# Industrial Coatings for Automotive and Packaging Applications

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### Summary

In this Advanced Module, the basic formulations requirements of coatings for use on automotive vehicles, both original equipment manufacturing (OEM) factory finishing and vehicle refinishing and for can coatings are given.

For automotive OEM coatings, a typical automotive paint line is described, and examples of specifications for the paints are given. Formulations of typical paints together with explanations of the components used are then given.

Under automotive vehicle refinishing formulation requirements and resin types used are outlined with comparisons in the performance of different paint systems. Both car and commercial vehicle (lorries and buses) refinishing are considered

Basic requirements of linings for food and beverage containers are given. The formation of cans is described with descriptions of suitable application methods. Performance requirements of can coatings are listed with reference to a range of typical products they are required to resist. Examples of resin types used in can coatings with comparisons of their properties are listed. The module concludes with the testing and evaluation of the coated cans.



#### Structure of the Module

The module consists of 2 sections, 1 set of Self Assessed Questions (SAQ), 1 Computer Marked Assessments Questions (CMA), an Assignment (ASG) and an End Test (TMA)

The module is designed to take about 12 hours of study. This excludes the time to take to write up the report for the ASG.

#### Self-Assessment Questions (SAQ)

Are designed to enable you to check your own progress. Questions are asked as you progress through the module. You should write down your answers and then check them against the answers given in the Appendices. No marks are awarded for SAQs.

#### Computer Marked Assessment Questions (CMA)

Are a multi-choice question set that tests your understanding of the module. Please carry out this test before you submit any other work for marking by your tutor. These are completed online, you will need to log onto your study portal and then follow the CMA link/ instructions.

## Assignment (ASG)

The ASG are an exercise in which the student research into and reports on certain objectives. You can discuss your proposed assignment with your tutor and mentor before commencing work. You will need to write a report on the assignment, which is then sent to your tutor for marking. Please see further instructions included in the Appendix on ASG Guidance Notes. Please note that there are 2 ASG's in this module

#### Tutor Marked Assessment (TMA)



Is a mandatory end test question paper taken under 'closed books', fully invigilated exam conditions. These are normally held on-site with an invigilator in attendance, which is normally your workplace mentor. The student or mentor will contact Lorraine Beard, and she will arrange for the TMA and instructions to be sent, by email to the chosen invigilator, and then this is then given to the student on the day and time that has been chosen. **Note** that the TMA will require questions to be answered on both Automotive Coatings and Can Coatings

#### Marks for the module

СМА	20%
ASG	35%
ТМА	45%
	100%

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. In addition, an overall mark of 50% - 64% must be achieved for a PASS to be awarded, an overall mark of 65% - 84% must be achieved for a Merit and over 85% for a Distinction.

#### **Module Pre-requisites**

The main prerequisite for persons taking Modules at Advanced level, is an interest in surface coatings.. Persons taking these modules should be employed or have recently been employed in the coatings, paint manufacture, a raw material supplier or a related industry.

It is advisable for students tackling this advanced module to have already studied selected modules at Intermediate level, in particular modules **408 and 409**.



These modules include references to scientific concepts relating to coatings technology. For example, those identified with an asterisk contain many references to chemical formulae and reactions. Therefore, it is a requirement that you have a scientific education, with Chemistry and Physics to at least UK Advanced Level or higher, of which you can provide evidence.

#### Overview of qualification levels

Successful completion of six modules, including at least four at level 5, entitles a student to a full, Level 5 International Certificate in Coatings Technology (ICCT), awarded by The Coatings Training Institute. However, individual certificates are also presented if the student chooses to take less than six modules.



#### **Module Objectives**

When you have completed this module, you should be able to understand the following:

#### Section 1. Automotive Coatings

- 1.1 Discuss the basic requirements of coatings for use in original automotive vehicle bodies giving preferred application methods and their performance properties
- 1.2 As above for vehicle refinishes

#### **Section 2. Can Coatings**

- 2.1 Discuss the basic requirements of coatings for use as high performance can coating finishes
- 2.2 State and justify the preferred application methods for the above coatings.
- 2.3 State the performance properties of the above coatings
- 2.4 Media used for can linings
- 2.5 Testing and evaluation