

Study Guide

Advanced Module 508

Application and Special Properties

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Summary

Module 508 is one of three advanced level modules dealing with additives used in surface coatings. Additives can be considered to be materials which, when added to another substance, improve the overall properties or reduces undesirable properties.

This module discusses the reasons for controlling the viscosity of a coating to aid its application properties and the types of additives used for this purpose. It then goes on to explain the types of additive used to control or promote flow.

After this, the need to control the conductivity of paints to be applied by electrostatic methods is considered and the special problems associated with the addition and stability of conductivity controllers discussed. Types of conductivity controller are then listed.

The module then explains why reodorants are sometimes used in coatings and examples of commercially available products of this type are given.

A discussion on flash point modifiers is followed by a list of typical classes of these products and a discussion of their merits provided.

Finally, the nature and use of fire-retardant and intumescent coatings are discussed with regard to their special properties.

In studying this Level 5 module it is assumed that you already have a thorough understanding of all the material covered in relevant modules at Level 2 and 3 Paint and Ink Manufacture Rheology 204

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In answering questions in assessments at Level 5 it is expected that a higher level of knowledge and understanding be demonstrated than for assessments at lower levels.



Structure of the module

The module training material consists of 4 sections, 1 set of self-assessment questions (SAQ), 1 Computer Marked Assessment Questions (CMA), 1 Practical Exercise (PAX), 1 Assignment (ASG) and an End Test (TMA).

The module is designed to take between 10 to 12 hours of study. This time excludes the time taken to write up your reports for the PAX and 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.

Practical Attendance Exercises (PAX)

Only a few modules contain PAX. However, we recommend that when starting any module, you look at the requirements for a PAX, to see if you anticipate any problems in carrying this out. For example, apparatus, materials, laboratory space and time. This PAX is concerned with assessing colour difference between pairs of coloured chips and is fully described in Appendix 2 of the Module. If you have any problems, please contact your tutor or workplace mentor for alternatives.

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 3 on ASG Guidance Notes. In this module, the assignment is designed to show that the knowledge of the student can be utilised in practice, to produce a viable coating formulation.

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.

Marks for this module

СМА	20%	
PAX	15%	
ASG		20%
ТМА	<u>45%</u>	
TOTAL	<u>100%</u>	

Module Pre-requisites

The main prerequisite for persons taking Modules at Advanced level, is an interest in surface coatings. Preferably, they will be employed in the coatings or a related industry. They may also be employed by a user of paints, lacquers, inks or powder coatings. In addition, they should preferably have a basic education in chemistry and physics. It would be useful if only for reference, that relevant foundation and intermediate modules had already been studied

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

Persons taking these modules should be employed or have recently been employed in the coatings or a related industry.

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

Section 1. Viscosity controllers & flow promoters

- 1.1 Discuss the need for control of viscosity to aid application
- 1.2 Name types of additives used under the heading "viscosity controllers"
- 1.3 Explain, with examples, types of additives used to control or promote flow

Section 2. Conductivity and the need for Anti-Static Agents

- 2.1 Understand the terms conductivity and resistivity
- 2.2 Consider the need to control conductivity of paint applied by electrostatic methods
- 2.3 Discuss the special problems of the addition and stability of conductivity controllers
- 2.4 List types of conductivity controllers
- 2.5 Explain the need for anti-static agents in certain application methods

Section 3. Reodorants and Flashpoint modifiers

- 3.1 Explain the need for reoderants in surface coatings
- 3.2 Explain the need for flash point modifiers
- 3.3 List a typical class of flash point modifier
- 3.4 Discuss the theory of flash point modification

Section 4. Fire retardant and Intumescent Coatings

- 4.1 Discuss the nature of fire/flame retardant coatings
- 4.2 Discuss the formulation, application & mechanism of fire retardant coatings
- 4.3 Discuss the nature of intumescent coatings
- 4.4 Discuss the formulation, application & mechanism of intumescent coatings