POLYMERUPDATE ACADEMY

EDUCATIONEM RESPONSUM EST

Gramaudyogik Shikshan Mandal's MIT A Group of Academic & Research Institutions AURANGABAD

MIT Quest for Excellence

SURFACE COATING: PROPERTIES, APPLICATIONS AND TESTING

Prepared & Conducted by

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SUMMARY

The lecture aims to provide an introduction to surface coating, highlighting its importance in enhancing the durability, aesthetics, and marketability of various materials. It will begin by exploring different categories of coatings, offering a comprehensive understanding of their diverse applications. Subsequently, the lecture will delve into the essential properties required for achieving high-quality coatings.

This aspect involves a discussion of the properties of the base material and the coating material. We will briefly explore the important properties that both materials need to possess in order to fulfil their respective roles. Examples of these properties include adhesion, cohesion, surface energy, and wetting angle, which will be explained using everyday scenarios. The world we live in today is heavily influenced by coatings in every industry and sector. In the second session, we will delve into the role of coating materials across various sectors, after gaining an understanding of the factors that influence the coating phenomenon and the necessary properties of the bonding surfaces.

SUMMARY

During the initial part of this session, we will discuss the classification of paints in order to provide a clear overview of which paint category is used in specific sectors. Following this, we will explore the diverse applications of coatings in various sectors, including construction, marine, automotive, and nuclear science. By gaining insights into the properties and applications of coatings across different fields, we will then delve into the various optical, mechanical, chemical, and physical tests conducted to assess the durability, strength, and longevity of the coating layer. This final session will provide detailed explanations of tests such as Pencil hardness, Glossiness, Adhesion, and Coating thickness.

In summary, this four-hour live virtual Masterclass will offer a comprehensive overview of the world of coatings, covering their classification, industrial applications, and the testing methods employed to evaluate their quality in industries.

WHO THIS COURSE IS FOR?

This course is designed for professionals and students who have an interest in the paint industry and a basic understanding of materials science. Here are some potential attendees who could benefit from this course:

- **Quality Control Executives:** Professionals working in quality control roles within the paint industry or related fields can benefit from gaining a deeper understanding of paint materials and their properties
- **Researchers and Academicians:** Individuals involved in research or academic work in the field of materials science, specifically related to automotive, marine, or civil engineering, can enhance their knowledge of paints by taking this course
- **Students pursuing degrees in engineering or materials science:** Undergraduate or graduate students who are studying engineering or materials science can supplement their studies with this course if they have an interest in the paint industry. It can provide them with a specialized understanding of paint materials and their applications

WHAT WILL YOU LEARN?

The course covers a wide range of topics related to coating materials, properties,applications and testing in the context of various sectors. Some of the key concepts and skills that participants can expect to learn from this course include:

- An overview of thc various coating materials used and their various properties and the factors governing them.
- An overview of the various grades of paints and how are they marked suitable for diversified sectors.
- Gaining the knowledge of the unique properties being shown by various grades of paints and a brief knowledge about their manufacturing.
- An understanding of the mechanical, thermal, optical, chemical and physical tests that are conducted on the coating materials.
- An exposure to some of the testing methods with detailed explaination of each of the testing process.

LECTURE 1: INTRODUCTION TO THE WORLD OF COATINGS

- Discussion on various properties such as adhesion, cohesion, surface energy, wetting angle etc with help of day to day examples.
- Also the factors affecting coating would be discussed here.

LECTURE 2: PROPERTIES OF COATINGS & ITS APPLICATIONS IN DIVERSIFIED SECTORS

- Classification of various grades of coatings
- Unique properties of each type of paint.
- Choice of coating material in the desired sector.

LECTURE 3: TESTING OF COATINGS

- Insight of the various optical, mechanical, chemical, physical tests that are conducted.
- Detailed explaination of some of the tests such as Pencil hardness, Glossiness, Adhesion, Coating thickness.

Ms. Aastha Dutta

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Ms. Aastha Dutta is currently working as an Assistant Professor with Maharashtra Institute of Technology (MIT), Aurangabad. She specializes in teaching varied polymer science topics including Applied Science, Biopolymers, Organic Chemistry, Polymer Recycling and Waste Management, Polymer Reaction Engineering, Physical Chemistry of Polymers, Elastomer Technology, Instrumental Analysis of Polymers, Plastic Technology-II, Process Calculation, Surface Coating Technology at the UG level. She has earlier worked as an R&D Lab Incharge with CTR Industries Pvt Ltd.

Ms.Dutta organized the National Conference on 'Recent Advances in Polymers' in August 2010. She also convened the National Symposium on Biopolymers in March 2011 and Technomillennium 'Smart Materials' in September 2012. Ms.Dutta is the member of Indian Society of Technical Education (ISTE), the leading national professional non-profit making Society for technical education in the country. She has attended key events like the Mahaexpo Engineering Conference in 2017, the Faculty Development Program on Advanced Analytical testing and characterization in 2018, and NAAC and OBE workshops.

Ms.Dutta has authored several research papers which have been published in reputed peer-reviewed journals and publications (Springer, Elsevier, International Journal of Science, Engineering and Management (IJSEM) and Chemistry International Journal).

Ms. Dutta completed her B.Sc Tech (Plastics) from Institute of Chemical Technology (formerly known as U.D.C.T) Mumbai in 2000 and ME (Chemical) from Dr. Babasaheb Ambedkar Marathwada University (B.A.M.U) Aurangabad in 2016.

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