

Rheology: Chemistry, Theory, and Application

DIRECTED BY

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3

Hours

ACCREDITED
COURSE

- Definition and the Essential Elements of Rheology
- The Influence of Stress, Temperature, and Time
- Rheological Behavior via Flow and Viscosity Curves
- Interatomic Bonding and Intermolecular Attraction
- Measuring Methods of Flow Behavior

about the course

We must understand how materials are affected, by their flow behavior, as a result of applied stress forces. This knowledge will allow a formulator to develop products with the best possible outcome considering production, storage, packaging, and application.

This intensive, 3-hour, accredited training course on rheology (chemistry, theory, mechanism, and application) reviews the basic principles of rheology including its definition and its influencers - chemical structure, morphology, and environmental conditions. The impact of various deformation forces including compression, tension, torque, and, particularly, shear will be reviewed to demonstrate the resulting flow profiles of viscosity as a function of shear stress and time. The chemistry and ancestry of current rheological agents will help clarify the appropriate selection of these products for various formulation types including waterborne and solvent-borne systems.

Since this training is highly interactive, those attending the live training event must have a webcam on their computer as well as a microphone and speakers/headset to fully participate.

who should attend

This course is designed for research and development as well as business area personnel engaged in a wide array of industries including architectural paints, industrial coatings, printing inks, adhesives, pharmaceuticals, agrochemicals, personal care products, and cosmetics. It is targeted for formulation chemists as well as marketing, sales, and customer service personnel.

Managers and supervisors of the above-listed individuals would also benefit from this training by becoming acquainted with, and better understanding, the challenges involved with this technology.

learning objectives

Upon completion of this course, you will be able to:

- Discuss The Essential Elements of Rheology
- Explain Deformation Forces Affecting Rheology
- Identify Viscosity Flow Profiles
- List the Chemistry, Theory, and Mechanism of Current Rheological Agents
- Describe Real World Application in an Industrial Coating Formulation

course outline

Review of Learning Objectives

Introduction to Rheology

- Introduction and Definition of Rheology
- The essential elements of rheology include chemical structure, morphology, outside forces, and environmental factors. Rheological differences between liquids and solids and the viscoelastic nature of materials. An introduction to viscosity.

Deformation Forces and Impact on Viscosity

- A review of the forces that impact a material's rheology. A deeper understanding of viscosity concerning shear stress, shear rate, and units of measurement.

Viscosity and Rheology Flow Profiles

- A review of the various rheological flow profiles including Newtonian, pseudoplasticity, dilatancy, and thixotropy. Examples and demonstration of each type. The importance of thixotropy; using an industrial coating formulation as an example.

Chemistry

- A review of the various rheological agent types (associative and non-associative), chemistry, mechanism, and function.

Question and Answer Session

Assessment Opportunity

course instructor

Sam Morell is a Chemical Engineering graduate of New York University and founder of samMorell.com. With over 50 years in the Chemicals industry, his experience includes both technical and marketing positions at Rohm and Haas, BASF, and Air Products and Chemicals. Mr. Morell has authored numerous technical articles on additives, pigments, and resins in various publications including PCI Magazine, Modern Paint and Coatings, The American Ink Maker, and Adhesives Age. He has been invited by various domestic and international industry symposiums, as well as Fortune 500 companies, to present both technical papers and educational courses. These include The American Coatings Show, The Waterborne Symposium, The European Coatings Show, and Coatings Trends and Technologies.

Accreditations



International Accreditors for Continuing Education and Training (IACET)

Cobblestone has been approved as a CEU Accreditor by IACET and awards CEUs for participation in qualified courses. Cobblestone has demonstrated that it complies with the ANSI/IACET Standards and is authorized to offer IACET CEUs for its programs. CEUs will be awarded for participation in Cobblestone's courses at the rate of .1 CEU per contact hour upon successful completion of the entire course and 70% accuracy in the required Learners' Assessment. A minimum score of 80% is required for all courses within a Cobblestone Certification Program. This course offers a total of 3 contact hours or .3 CEUs. For further information, visit www.iacet.org

AIC- American Institute of Chemists

Cobblestone is committed to enhancing the ongoing professional development of Cost Engineering professionals and other stakeholders through appropriate learning activities and programs. Many Cobblestone courses offer training that may be helpful in meeting the AACE continuing education requirements for recertification as a Certified Chemist, Certified Chemical Engineer, or Chemical Technician.

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