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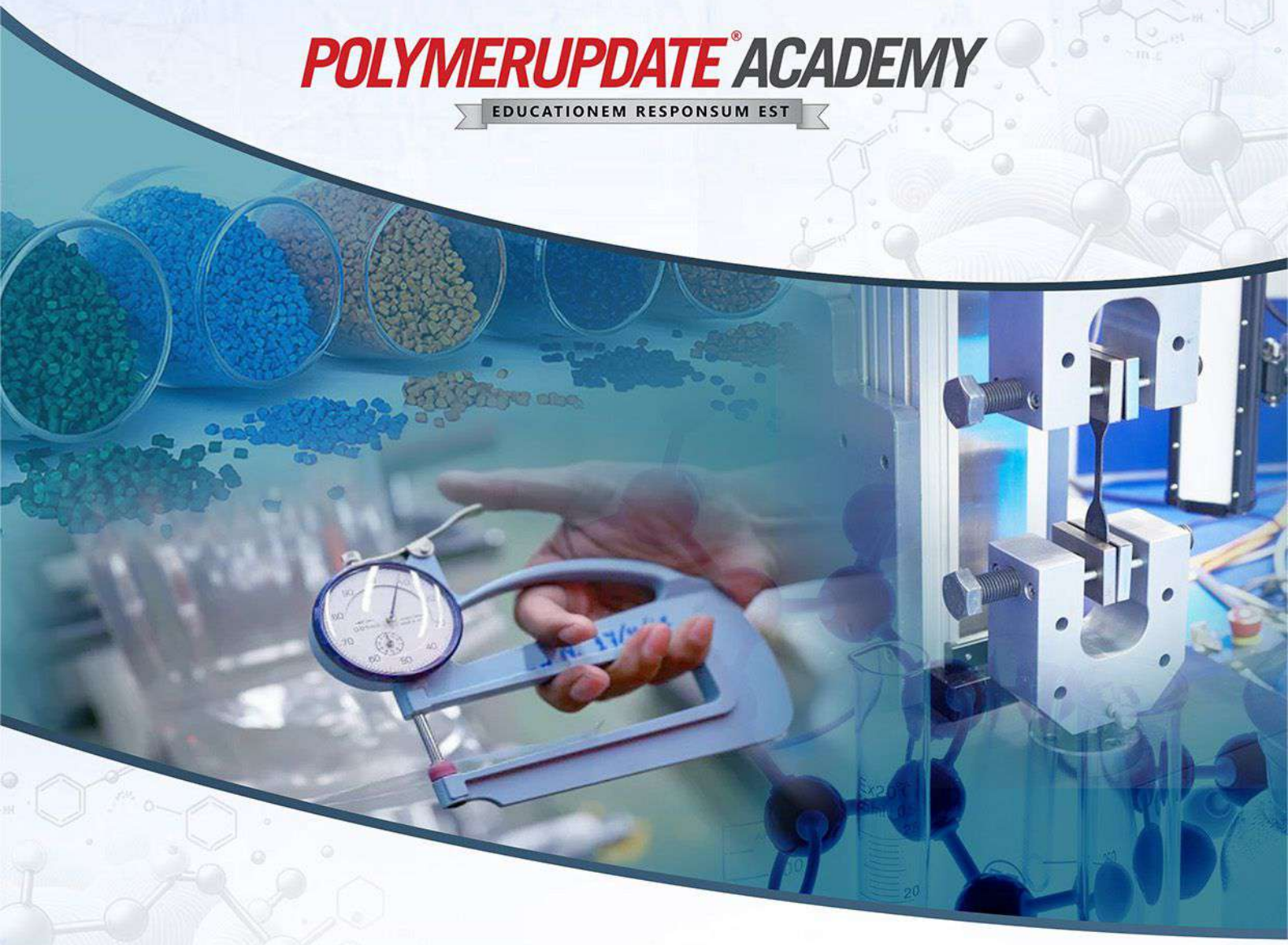
EDUCATIONEM RESPONSUM EST



Live Virtual Training Programme

Advanced Quality Control and Testing of Plastics

Prepared & Conducted By

Mr. Sanjay Saxena

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SCHEDULE

June 5th, 2025

TIMING : 14:00 - 18:00 (IST)

VENUE:

Live Virtual Training Programme

(Platform - Zoom)

SCAN FOR PAYMENT

PARTICIPANT ENTITLEMENTS

ALL ATTENDEES OF THE TRAINING PROGRAM WILL RECEIVE A CERTIFICATE OF PARTICIPATION ALONG WITH THE TRAINING MATERIAL.ADDITIONALLY, A CERTIFICATE OF PARTICIPATION WILL BE PROVIDED ONLY TO THOSE ATTENDEES WHO ATTEND THE ENTIRE TRAINING PROGRAM.

Key Objectives

To provide a comprehensive understanding of polymer quality control through standardized testing methodologies, analytical instrumentation, and international compliance requirements— equipping professionals to ensure product integrity, regulatory conformity, and performance reliability in plastic materials and products.

Lecture 1: Identification and Classification of Polymers

Visual inspection, density gradient, and burn test methodology

Instrumental analysis:

- FTIR Spectroscopy – Functional group identification
- DSC (Differential Scanning Calorimetry) – Thermal transition analysis
- TGA (Thermogravimetric Analysis) – Thermal decomposition and filler content
- Use of solubility parameters and polymer crystallinity assessment

Lecture 2: Standard Test Specimen Preparation Techniques

- Sample conditioning as per ISO 291 / ASTM D618
- Molding Techniques:
  - Injection Molding – for tensile, flexural, impact samples
  - Compression Molding – for sheet, film, and thermoset materials
- Precision machining of samples for micro-mechanical testing
- Influence of moisture content, orientation, and residual stress on test reproducibility

Lecture 3: Quality Control Protocols and International Testing Standards

- Implementation of ISO 9001 and Six Sigma principles in plastics testing
  Overview of key standards:
  - ASTM, ISO, BIS, UL, DIN, guidelines
  - Statistical Process Control (SPC) and Statistical Quality Control (SQC)
  - Calibration and traceability in testing equipment (NABL/ILAC compliance)

Lecture 4: In-Depth Testing of Plastic Properties

A. Physical & Chemical Characterization

- Specific Gravity (ASTM D792), Melt Flow Index (ASTM D1238)
- Molecular weight distribution via GPC (Gel Permeation Chromatography)
- FTIR, DSC, XRD, and Rheological analysis

B. Mechanical Properties Evaluation

- Tensile Strength, Modulus, Elongation (ASTM D638)
- Flexural Strength & Modulus (ASTM D790)
- Impact Resistance (Izod/Charpy), Hardness (Shore A/D, Rockwell M/R)
- Fatigue resistance, Creep, and Stress Relaxation analysis

C. Thermal Properties Analysis

- Heat Deflection Temperature (HDT), Vicat Softening Temperature (VST)
- Coefficient of Linear Thermal Expansion (CLTE), Thermal Conductivity
- DMA (Dynamic Mechanical Analysis), OIT (Oxidative Induction Time)

D. Optical Properties Assessment

- Transparency, Haze, Gloss (ASTM D1003)
- UV transmittance, Refractive Index, Clarity and Visual Appearance

E. Permanence and Environmental Resistance

- Weathering (QUV/Xenon), UV Stability, Ozone Resistance
- Chemical Resistance Testing (ASTM D543), Water Absorption (ASTM D570)
- Environmental Stress Crack Resistance (ESCR) – ASTM D1693
- Aging studies (thermal, oxidative, hydrolytic)

F. Electrical Properties Testing

- Dielectric Strength (ASTM D149), Volume & Surface Resistivity (ASTM D257)
- Arc Resistance, Insulation Resistance, Dissipation Factor
- Conductive and Anti-static material evaluation

Lecture 5: Product-Specific Performance Testing

- **Pipes & Fittings** – Hydrostatic pressure testing , Impact
- **Films & Laminates** – Tensile, COF, WVTR (ASTM F1249), OTR (ASTM D3985)
- **Injection Molded Parts** – Dimensional accuracy, stress-whitening, weld-line strength
- **Automotive Components** – Vibration testing, thermal cycling, fuel/oil resistance
- **Packaging** – Seal strength (ASTM F88), Drop test (ASTM D5276), Peel adhesion

Who should attend?

This comprehensive training program is ideal for professionals and learners across the polymer industry, including:

- Quality Control & Assurance Personnel involved in plastic manufacturing and product validation
- R&D Scientists and Lab Technicians engaged in polymer characterization and performance testing
- Production & Process Engineers seeking to align manufacturing practices with quality and compliance standards
- Regulatory & Compliance Officers aiming to understand and implement global testing frameworks (ASTM, ISO, BIS)
- Technical Sales & Application Engineers supporting clients with technically validated solutions
- Entrepreneurs & Consultants working in polymer product development, testing, and certification
- Academicians & Students aspiring to bridge academic knowledge with industrial testing applications
- Whether your focus is routine QC, product innovation, or certification readiness, this course provides valuable knowledge and practical tools tailored to your role.

What will you learn?

By the end of the training, participants will be equipped to:

- Identify and classify polymers using techniques such as FTIR, DSC, and TGA
- Prepare standardized test specimens following ISO/ASTM methods, with insights into how processing and environmental conditions affect test results
- Understand and implement global standards (ASTM, ISO, BIS) in quality control systems
- Analyze test results across mechanical, thermal, optical, electrical, and environmental parameters for various plastic products
- Evaluate product suitability for key application sectors like packaging, automotive, piping, and films
- Achieve regulatory readiness, including documentation for NABL accreditation and certification audits

MR. SANJAY SAXENA

EX. CIPET
(Central Institute of Petrochemicals Engineering & Technology)

Mr. Sanjay Saxena is an accomplished polymer industry professional with over 4 decades of leadership roles at CIPET (Central Institute of Petrochemicals Engineering & Technology), a premier Academic institution under the Government of India. Sanjay's area of specialization includes plastics, rubber testing, quality assurance, and standardization of materials. His expertise also extends globally in providing tailored technical advice and problem-solving strategies to a global clientele spread across India, Thailand, Nepal, Bhutan, Egypt, China, Austria, Dubai and Germany.

Mr. Sanjay has been instrumental in setting up India's first NABL-accredited and BIS-accredited plastics test centers at CIPET Chennai (1978) and Ahmedabad (1988) .

Mr. Sanjay holds a Diploma in Plastics Engineering from IERT, Allahabad U.P. Technical Board and LPRI from The Plastics & Rubber Institute, London

DISCLAIMER

Introduction

Welcome to our Training Program.

In our continuous effort to create a conducive learning environment and to protect the privacy and intellectual property rights of our participants and facilitators, we kindly ask all attendees to observe the following policy. This disclaimer governs your participation in the program. By participating, you accept this disclaimer in full; accordingly, if you disagree with this disclaimer or any part of this disclaimer, you must not engage in the program.

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Amendments

The organization reserves the right to modify this disclaimer at any time by publishing a new version on our website. Your continued participation in the program after such changes will constitute your consent to such changes.

No Photography or Recording

Attendees are not permitted to take photographs, videos, or audio recordings of any part of the training materials, the training environment, or the participants without prior written consent from the organizers. This includes, but is not limited to, presentations, workshops, discussions, and any training-related materials.

Special Circumstances

If there is a specific need or requirement for photography or recording for educational or promotional purposes, participants must obtain explicit permission from the training organizers. Such requests should be made in advance of the training session, and permission will be granted at the discretion of the organizers.

Compliance: Failure to comply with this policy may result in removal from the training session and possible exclusion from future events.

Contact Information

If you have any questions about this disclaimer, please contact us at Polymerupdate Academy on +91 93219 75884

Refund Policy: Course fees will not be refunded in case a registered participant is unable to attend the session.

In the event that training programme offered by Polymerupdate Academy needs to be rescheduled due to unforeseen circumstances, the course fees paid by the participants will be adjusted and applied to the next available course of the same type. Participants will be notified of the rescheduled dates as soon as possible, and all efforts will be made to ensure that the new course dates are convenient for the majority of participants. This adjustment policy ensures that participants receive the full value of their course fees despite any disruptions.

Replacement Policy: However, participants have the option to send a replacement attendee by informing the organizers in advance by email.

Individual photographs or testimonial videos are not automatically provided; requests for such materials must be emailed to the organizing committee and are subject to approval.

Acknowledgment

By participating in the Training Program, you acknowledge that you have read this disclaimer, understand it, and agree to be bound by its terms and conditions.

We thank you for your understanding and cooperation in ensuring that our training program remains a productive and respectful environment for all involved.

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