POLYMERUPDATE ACADEMY
EDUCATIONEM RESPONSUM EST

Polymer Additives & Compounding

DIGITAL TRAINING CONDUCTED BY
DR. PRASHANT GUPTA
B TECH. M. E. PGD. - CTM. PH.D.

INDEX

SUMMARY

The course provides an insight into the broad topic of polymer additives use, their need, and the way they are incorporated into the polymer compound formulations. Introduction to additives and compounding; fillers; stabilizers, colorants and process aids; speciality functional additives; technology for compounding of polymers; and recipe, manufacturing, and quality control in a systematic form are discussed in detail.

LECTURE 1: INTRODUCTION TO POLYMER ADDITIVES AND COMPOUNDING

This lecture includes an introduction, classification of additives, and technical requirements for usage of additives in polymer compounding, mixing & its mechanisms.

LECTURE 2: FILLERS & ITS CLASSIFICATION

Classification of fillers, fibrous fillers (Natural and synthetic) such as jute, coir, hemp, aramid, polypropylene, carbon, and glass fibers along with other fillers such as wood, calcium carbonate, talc, wollastonite, clay, and silicates are discussed briefly in this lecture.

LECTURE 3: STABILIZERS, COLORANTS AND PROCESS AIDS

This lecture describes the photodegradation of polymers, antioxidants, antiozonants, heat stabilizers, pigments and dyes, types of pigments and their role in coloration, masterbatches, color matching, Plasticizers and lubricants

LECTURE 4: SPECIALTY FUNCTIONAL ADDITIVES

Additives such as impact modifiers, blowing agents, flame retardants, nucleating agents, coupling agents, anti-microbial agents, anti-fogging agents, anti-static agents, metal deactivators, crosslinking agents, and biodegradable additives and briefly explained.

LECTURE 5: TECHNOLOGY FOR COMPOUNDING OF POLYMERS

This lecture includes process, machinery, and devices, internal batch mixers, continuous mixers, two roll mill, single screw extruder, modular twin-screw extruder, rotation mechanisms, screw elements, kneaders, vent and vacuum ports, feeding types, feeders and screws, feed enhancement technology (FET).

LECTURE 6: FORMULATION, PRODUCTION AND QUALITY CONTROL

Formulating a compounding recipe, material movement in manufacturing, formulations based on PC/ABS blend and Polyamide 6 for engineering product compound manufacturing, the role of in-line quality control, Safety, and health hazards are described in detail.

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Dr. Prashant Gupta

B Tech. M. E. PGD. - CTM. Ph. D

Born on June 6th, 1987, Dr. Gupta is a Polymer Technologist and has obtained his Masters, Post Graduate Diploma and Ph. D. from Institute of Chemical Technology, Mumbai. With virtue of his excellence in PGD-CTM course, Dr. Gupta has been awarded with a Gold Medal for securing top merit in the course. Dr. Gupta has 5.5 years of academic experience (teaching/research) along with Industrial Research & Development experience in managerial positions for around 3.5 years in polymer compounding, testing, processing, and composites. Dr. Gupta has more than 20 publications to his credit in peer reviewed journals and books with high impact international (Elsevier, Wiley, Springer, Taylor & Francis etc.) publishers.

His areas of expertise and teaching include testing and quality control, polymer additives and compounding, polymer processing technology, polymer recycling and waste management, biodegradable and oxo-degradable plastics for packaging, use of information and communication technology for effective teaching learning, pedagogy related to teaching-learning, artificial intelligence in teaching learning, content creation for virtual laboratory, its development and applications.

Dr. Gupta has offered his expertise in the form of technical presentations at more than 20 international and prestigious nationalconferences/events across the globe some of which include EUROTEC-France, ANTEC-Mumbai, ICERP-Hyderabad, PPS-Mumbai, APM-Lucknow, APA-Chandigarh, Rangotsav-Mumbai, AMAI-Ahmedabad, etc. and won several awards for best paper, poster, project etc. Dr. Gupta has also been recognized as a certified developer, mentor, and reviewer for Virtual Labs, Mumbai an initiative of IIT M, IIT D and IIT K under MHRD, India.

WORK EXPERIENCE:

Organization Name: Maharashtra Institute of Technology

Tenure: 19th Sep 2016 onwards

Assistant Professor-Plastics and Polymer Engineering Dept. (UGC Approved)

Junior Scientist, MIT-Center for Advanced Materials Research and Technology

Organization Name: Loxim Industries Ltd.

Tenure: 1st Sep 2015 – 16th Sep 2016

HOD and Manager: R & D/Quality Control

Management and Customer Representative-ISO-TS 16949

Organization Name : Crest Composites and Plastics Pvt. Ltd,Ahmedabad

Tenure: 21st Apr 14 –31st Aug 15

Assistant Manager, (R & D) Application Development

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THANK YOU

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