



PCE184

Fundamentals of the Polymers Technology

Course Introduction:

This five-day interactive course provides a detailed overview of:

- Polymer chemistry
- Raw materials used
- Production processes
- Applications and markets
- Prices and markets

It is designed specifically to meet the needs of delegates in commercially focused roles and can be attended either as a stand-alone course or as a follow up to the ICTD In-depth Introduction to Petrochemicals course. Review the content for this course now, and find out how enhancing your understanding of polymers markets with ICTD can help you make more informed decisions and achieve your goals.

A detailed, fast-paced five-day course covering polymer industry fundamentals from production technologies and applications to market dynamics, pricing, key drivers and regional market trends.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ A non-technical overview of polymers production including technologies and applications
- ✓ Understanding of commodity polymer markets including trends and regional differences
- ✓ Insight into pricing, demand and price drivers
- ✓ A view of the current market: global supply and demand and key players

Who Should Attend?

The course is suitable for those with a background in science or technology, ideally including chemistry taken at an Advanced Level or equivalent, who are seeking to acquire a general appreciation of the fundamentals of polymer science and technology. We expect candidates for the course to include recent graduates who are about to undertake projects involving polymers either in industry or academia, more experienced scientists who are seeking to broaden their knowledge and experience in the materials area, and those wishing to acquire a sound understanding of the basics of polymer science and technology as a prelude, perhaps, to taking a more advanced course in aspects of polymers.

This course is intended for operations, productions, chemical and shifts personnel as well as chemist, scientist, lab analyst, R&D and other laboratory staff who are involved in polymer & polymerization.

Course Outline:

Day 1:

Introduction

Understanding petrochemicals and polymers

- What are petrochemicals and where do they come from?
- An overview of polymer chemistry explaining what are monomers/polymers, thermosets vs thermoplastics

Polymer feedstocks explained

- What are the key polymer feedstocks
- The main routes to making ethylene and propylene
- The other raw materials – butadiene, styrene
- The ethylene, propylene and butadiene value chains explained

Day 2:

Introduction to polyethylene

- Brief history and early days of development
- Different types of polyethylene and key applications
- LDPE, LLDPE and HDPE – properties, production process, technologies and grades/applications
- Latest developments
- Overview of global and regional supply/demand, major producers
- Key end-use segments
- Major demand drivers

Introduction to polypropylene

- Brief history and early days of development
- Production process, catalysts, technologies, types of PP, grades/applications
- Latest product developments
- Overview of global and regional supply/demand, major producers
- Key end-use segments
- Major demand drivers

Day 3:

Introduction to PVC

- Brief history and early days of development
- Production process - ethylene and carbide routes to making PVC
- Different grades of PVC and their applications
- Overview of global and regional supply/demand, major producers
- Key end-use segments and demand drivers

Plastics processing fundamentals

- The different polymer properties (MFI, etc) and their role in processing
- Introduction to major processing techniques and their applications (injection moulding, extrusion, blow moulding, thermoforming)
- Role of additives
- Substitution and inter-polymer competition

Day 4:

Pricing and markets

- Key price drivers
- Cost structure, influence of feedstock costs and margin analysis
- How pricing is assessed
- Differences in markets and price mechanisms across Asia, Europe and The Americas
- China and its influence on markets
- The role of futures markets in China and its influence on the physical market

The world of polyethylene terephthalate (PET)

- PET and polyester
- Early days of development
- Production process
- Grades and applications
- Overview of global and regional demand/supply, major producers
- Key end-use segments and demand drivers
- Recycling and its importance in the PET business

Day 5:

Styrenics - polystyrene (PS) and acrylonitrile butadiene styrene (ABS)

- Brief history and early days of development
- Production process and technologies
- Different grades and their applications
- Overview of global and regional demand/supply, major producers
- Key end-use segments and demand drivers
- Major shifts in the PS business

Quiz

- Delegates will work in groups to answer questions. The purpose of this quiz is to reinforce learning from the presentations

Industry trends and company strategies

- Key business drivers
- Major shifts in company strategies

- Investment trends and changes to trade flows
- Growth opportunities and challenges
- Environmental issues

Course Summary

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

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Course Fees:

To be advised as per course location. This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session