CORE CONCEPT

Styrenics Plant Operations Course: Styrene Monomer, Polystyrene, ABS and SBR

28 December 2026 – 1 January 2027
Paris - Right Bank business hotel

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Ref: 2126_30779 **Date:** 28 December 2026 – 1 January 2027 **Location:** Paris - Right Bank business hotel **Fees:** 23500 SAR

Introduction:

Styrenics plant operations, from styrene monomer to polystyrene, ABS and SBR, is a 1-week course for operating, process engineering and technical service teams in styrenics units, ending with a Styrenics Unit Reliability and Runaway Prevention Plan for a case plant. Units lose rate and safety margin when alkylator selectivity drifts, dehydrogenation catalyst ages unnoticed, inhibitor levels fall in tankage and popcorn polymer blocks columns and reactors. Nominees already run or support these units at work and learn through inspection walkthroughs of alkylators, dehydrogenation reactors, vacuum columns, polymerisation trains and storage. CoreConcept Training Center delivers this styrenics plant operations course.

Course Objectives:

- Operate zeolite liquid-phase alkylation and transalkylation reactors to hold ethylbenzene selectivity, benzene-to-ethylene ratio and polyethylbenzene recycle on target
- Control ethylbenzene dehydrogenation using steam-to-oil ratio, reactor inlet temperature and vacuum to balance conversion, styrene selectivity and iron oxide catalyst life
- Run styrene monomer distillation, inhibitor dosing and tank storage so that polymer formation, colour and peroxide content stay within product limits
- Adjust GPPS and HIPS mass polymerisation and EPS suspension batches using initiator, temperature profile, rubber phase and bead size data
- Manage ABS graft, SAN and emulsion SBR reactors through conversion, latex stability, shortstop and coagulation checks
- Diagnose runaway polymerisation, popcorn polymer and fouling events and build a reliability and runaway prevention plan for a styrenics unit

Target Audience:

- Console and field operating teams responsible for alkylation, dehydrogenation and styrene distillation sections
- Process engineering teams responsible for yields, catalyst performance and energy use in monomer units
- Polymerisation operating teams responsible for polystyrene, EPS, ABS and SBR reactor trains
- Technical service teams responsible for product grades, latex and resin quality and customer complaints
- Shift supervision teams responsible for start-up, shutdown and abnormal situation response in styrenics plants

Course Outline:

Day 1: Styrenics Chain Mapping and Ethylbenzene Alkylation

- Styrenics Block Flow From Benzene to Finished Polymers
- Zeolite Liquid-Phase Alkylator Bed Temperature and Ethylene Injection
- Benzene-to-Ethylene Molar Ratio Effects on Polyalkylate Make
- Transalkylation Reactor Recovery of Diethylbenzene and Triethylbenzene
- Unit Baseline Review of Yields, Run Length and Losses

Day 2: Ethylbenzene Dehydrogenation and Styrene Monomer Purification

- Iron Oxide Catalyst Activity, Potassium Promoter and Deactivation
- Superheated Steam-to-Oil Ratio and Reactor Inlet Temperature Setting
- Adiabatic Radial Reactor Vacuum and Pressure Drop Monitoring
- Ethylbenzene-Styrene Splitter Vacuum Column Reflux and Bottoms Control
- Toluene, Benzene and Heavy Residue Separation Train Balancing

Day 3: Inhibitor Chemistry and Polystyrene, EPS and ABS Production

- Dinitrophenol Retarder and TBC Inhibitor Dosing With Dissolved Oxygen
- Styrene Tank Temperature, Inhibitor Assay and Polymer Content Testing
- GPPS Continuous Mass Reactor Train and Devolatiliser Operation
- HIPS Polybutadiene Dissolution, Grafting and Phase Inversion Control
- EPS Suspension Batch Bead Size, Pentane Impregnation and Dewatering

Day 4: SAN, ABS and Emulsion SBR With Runaway and Fouling Hazards

- ABS Emulsion Graft Latex and SAN Compounding Line
- Emulsion SBR Redox Initiation, Mercaptan Modifier and Shortstop
- Latex Stripping, Coagulation and Crumb Drying Checks
- Self-Accelerating Polymerisation Heat Release and Short-Stopping Systems
- Popcorn Polymer Seeding, Column Fouling and Decontamination Methods

Day 5: Inspection Walkthrough and Runaway Prevention Plan Build

- Case Plant Walkthrough From Alkylator to Product Silos
- Hazard and Operability Review of Styrene Storage Scenarios
- Layers of Protection Check for Polymerisation Reactors
- Fouling and Catalyst Life Reliability Action Ranking
- Styrenics Unit Reliability and Runaway Prevention Plan Completion

Skills You Will Gain:

- Alkylation Selectivity Control
- Dehydrogenation Catalyst Monitoring
- Vacuum Distillation Troubleshooting
- Polymerisation Inhibitor Management
- Mass and Suspension Reactor Operation
- Emulsion Latex Process Control
- Popcorn Polymer Prevention
- Thermal Runaway Hazard Analysis

Why Attend This Course:

- Deliver a Styrenics Unit Reliability and Runaway Prevention Plan for a case plant to the operations manager and the process safety lead
- Decide when to raise steam ratio, change a catalyst load, add inhibitor or short-stop a reactor from unit data rather than habit
- Avoid tank runaways, plugged columns, off-grade resin and lost run length caused by unchecked inhibitor levels and popcorn polymer seeds
- Coach operating colleagues on inhibitor sampling, tank temperature rounds and fouling inspection points across the styrenics chain

Conclusion:

Back at the plant, the participant hands the Styrenics Unit Reliability and Runaway Prevention Plan to the operations manager, the process safety lead and the shift supervisors, who use it to set inhibitor and temperature limits for monomer storage, rank fouling and catalyst actions and confirm protection layers on each polymerisation reactor. Technical service staff use its grade checks when resin or latex quality drifts. After the first quarter, the unit should review runaway near misses, fouling outages, catalyst performance and off-grade volume against the plan and adjust its limits.

Frequently Asked Questions FAQ:

What should participants know before a styrenics plant operations course?

Participants should already operate, monitor or support an alkylation, dehydrogenation, distillation or polymerisation unit and read process flow diagrams and log sheets. Anonymised trend data, inhibitor assay records or fouling reports help them apply the walkthrough exercises to their own plant.

How does a styrenics plant operations course differ from an olefins or polyolefins operations course?

It follows the aromatic route from benzene and ethylbenzene to styrene, then free-radical mass, suspension and emulsion polymerisation. Olefins and polyolefins courses cover cracking furnaces and catalytic gas-phase or slurry reactors, which carry different hazards, catalysts and quality controls.

Why does styrene monomer need inhibitor and temperature control in styrenics plants?

Styrene polymerises on its own without an initiator, and the reaction releases heat that speeds it further. Inhibitor with dissolved oxygen and low storage temperature slow this, so tanks, columns and transfer lines avoid polymer build-up and thermal runaway.

What do participants take back from the styrenics plant operations course?

Participants take back a Styrenics Unit Reliability and Runaway Prevention Plan for a case plant, with inhibitor and temperature limits, a fouling and catalyst action ranking, polymerisation reactor protection checks and a review routine for near misses and off-grade product.