



Edible Oil Refining and Fats Processing

Course: Degumming, Bleaching and Deodorisation



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Introduction:

Edible oil refining and fats processing, covering degumming, bleaching and deodorisation, is a 5-day course for production, quality and process staff in vegetable oil refineries and fats plants that ends with a Refinery Loss and Quality Improvement Plan for a case plant. Refineries lose neutral oil to soapstock, spent earth and deodoriser distillate, and ship off-flavour or high-contaminant oil, when acid dosing, earth rates and stripping temperatures are set by habit. Nominees already operate, sample or adjust refining equipment, and the course is taught through inspection walkthroughs of refinery sections. CoreConcept Training Center delivers this edible oil refining course.

Course Objectives:

- Assess crude oil sources and incoming quality against an acceptance specification before the oil enters the refinery
- Set degumming, neutralisation and bleaching conditions that reach phosphorus, soap and colour targets with the least neutral oil loss
- Operate deodorisation and physical refining to strip free fatty acids and odours while limiting process contaminant formation
- Explain fractionation, interesterification and hydrogenation routes and blend fat bases for margarine and shortening
- Interpret free fatty acid, peroxide value, anisidine value and colour results and protect the oxidative stability of packed oil
- Quantify refining losses, steam, vacuum and power use, plant hygiene and safety gaps and rank them in a Refinery Loss and Quality Improvement Plan

Target Audience:

- Refinery production staff responsible for running degumming, neutralising, bleaching and deodorising sections on shift
 - Process staff responsible for acid and caustic dosing, bleaching earth rates, vacuum and stripping temperature set points
 - Quality control laboratory staff responsible for crude acceptance, in-process testing and release of refined oil
 - Fats plant staff responsible for fractionation, interesterification, blending and margarine or shortening bases
 - Utilities and packing staff responsible for steam and vacuum systems, bulk tanks and bottling lines
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Course Outline:

Day 1: Crude Oil Sources, Composition and Refinery Baseline Assessment

- Crude Oil Sources From Soybean, Palm, Sunflower and Rapeseed
- Triglyceride, Phospholipid and Free Fatty Acid Composition Profile
- Crude Oil Receipt Sampling and Acceptance Specification Sheet
- Codex Bulk Storage and Transport Practice for Crude Tanks
- Refinery Baseline Using Refining Loss and Throughput Records

Day 2: Degumming, Neutralisation, Bleaching and Refining Route Selection

- Water, Acid and Enzymatic Degumming Route Selection
- Phosphorus Removal Targets and Gum Centrifuge Separation
- Caustic Neutralisation Dosing and Soapstock Separation Control
- Acid-Activated Bleaching Earth Dosage, Vacuum and Contact Time
- Physical Versus Chemical Refining Route Comparison by Oil Type

Day 3: Deodorisation, Fractionation and Fat Modification for Margarine and Shortening

- Deodoriser Steam Stripping Under Vacuum and Temperature Profile
- Deodoriser Distillate Recovery and Fatty Acid Stripping Balance
- Winterisation and Dry Fractionation Into Olein and Stearin
- Chemical and Enzymatic Interesterification Versus Partial Hydrogenation
- Margarine and Shortening Base Blends Using Solid Fat Content

Day 4: Quality Control Tests, Process Contaminants, Oxidative Stability and Refining Loss

- Free Fatty Acid, Peroxide Value and Anisidine Value Testing
- Lovibond Colour, Moisture and Soap Content Release Checks
- 3-MCPD Ester and Glycidyl Ester Mitigation at Overview
- Packaging Headspace, Antioxidant and Oxidative Stability Controls
- Refining Loss Balance With Steam and Power per Tonne

Day 5: Inspection Walkthrough and the Refinery Loss and Quality Improvement Plan

- Case Plant Walkthrough of Degumming and Neutraliser Sections
 - Case Bleacher and Deodoriser Log Review Against Targets
 - Plant Hygiene, Hot Oil and Spent Earth Fire Safety Checks
 - Case Plant Loss Ranking From Soapstock to Distillate
 - Refinery Loss and Quality Improvement Plan Completion
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Skills You Will Gain:

- Crude Oil Acceptance Grading
- Degumming Route Selection
- Soapstock Loss Control
- Bleaching Earth Optimisation
- Deodoriser Operation
- Fat Blend Formulation
- Oxidation Test Interpretation
- Refining Loss Accounting

Why Attend This Course:

- Deliver a Refinery Loss and Quality Improvement Plan for a case plant to the refinery manager and the quality lead
- Decide whether to route a crude oil to physical or chemical refining and which dosing, earth or temperature setting to change first
- Avoid excess neutral oil loss, off-flavour batches, rising contaminant results and spent earth fires that cost product and plant time
- Share acceptance sheets, dosing logs, deodoriser checklists and loss balances with shift and laboratory colleagues

Conclusion:

Back at the plant, the participant hands the refinery manager, process lead and quality lead a Refinery Loss and Quality Improvement Plan covering crude acceptance, degumming and neutraliser dosing, earth rates, deodoriser conditions, release tests and loss targets. Management uses it to decide which loss streams and quality risks to address first and where steam, vacuum and laboratory effort go. After the first full month of use, the team should compare refining loss, free fatty acid and peroxide results, colour, contaminant findings and energy per tonne with the plan.

Frequently Asked Questions FAQ:

What should participants know before an edible oil refining and fats processing course?

Participants should already work in an oil refinery or fats plant in production, process or quality roles and read shift logs and laboratory results. No chemistry degree is needed. Bringing anonymised loss figures, deodoriser logs or test results helps apply the walkthroughs to their own plant.

How does edible oil refining and fats processing training differ from a general food processing course?

It concentrates on oils and fats: crude acceptance, degumming, neutralisation, bleaching, deodorisation, fractionation, fat modification and refining loss. General food processing courses cover heat treatment, drying and packing across many products, which appear here only where they touch packed oil.

Why does edible oil refining choose between physical and chemical refining?

The choice depends on the crude. Physical refining strips free fatty acids in the deodoriser and suits well-degummed oils such as palm and coconut, while chemical refining turns them into soapstock with caustic soda, which tolerates more phosphorus but loses more neutral oil.

What do participants take back from the edible oil refining and fats processing course?

Participants take back a Refinery Loss and Quality Improvement Plan for a case plant, with a crude acceptance sheet, dosing and earth rate logs, a deodoriser checklist, a release test form and a loss balance they can adapt to their own refinery.
