



AL049: Crude and Petroleum Product Specification & Analysis



Training Description:

Upon the successful completion of this course, participant will gain enough knowledge in crude & petroleum products specification & analysis nature of crude oil, crude oil assays & analytical methods, crude oil specification & marketing, variability in crude oil quality, ASTM & simulated distillation of crude oil, significance of crude oil distillation to refining processes, crude oil chemistry & contaminants, significance of contaminant on refining processes, product compositions, specification and their significance, product sampling, testing and reporting, in addition actual case studies from around the world will be demonstrated to highlight the topics discussed.

Training Objective:

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

- ✓ Have a complete and up-to-date overview of the crude & petroleum products specification & analysis in modern refineries

Training Designed for:

This course is intended for all Junior and Senior Laboratory Technicians, Supervisors, Chemists and Senior Chemists, as well as production planning, marketing and refinery products quality groups who are involved in day-to-day refinery activity within the refinery organization.

Training Program:

DAY ONE:

- ❖ PRE-TEST
- ❖ Introduction to Nature and Types of Crude Oil
 - Nature of Crude Oils
 - Paraffin-Base Crude Oil
 - Aromatic-Base Crude Oils
 - Naphthenic-Base Crude Oils
 - Asphaltic-Base Crude Oils
 - Mixed-Base Crude Oils
- ❖ Crude Oil Assays & Analytical Methods
 - TBP crude oil distillations by ASTM D 2887
 - Pot still Distillations by ASTM D 5236
 - Calculated Yields
 - Instruments Description
 - Fraction Intervals to Your Choice
 - More Detailed Analyses on Fractions
 - Assay Speed and Cost Advantages

DAY TWO:

- ❖ Variability in Crude Oil Quality
 - Specific Gravity at 15c
 - Sulphur Content
 - Reid Vapor





- Salt Contents
- Viscosity Kinematic
- ❖ **ASTM D-5307 & Simulated Distillation of Crude Oil**
 - Comparison Between SIM DIST and TBP
 - Gas Chromatograph Technique
 - Calibration and Separation
 - Sample Preparation
 - Results
 - Final Report

DAY THREE:

- ❖ **Significance of Crude Oil Distillation to Refining Processes**
 - Distillation (Fractionation)
 - Hydro Treating and Sulphur Plants
 - Removal of Sulphur, Nitrogen and Metal Compounds, And the Production of Light Products
 - Hydro Treating Can Be Used to Improve the Quality of Pyrolysis Gasoline (Pygas), A By-Product from The Manufacture of Ethylene
 - The Quality of Pygas, Which Is High in Diolefin Content, Can Be Satisfactorily Improved by Hydrotreating
 - Hydro Treating Can Be Used to Improve the Burning Characteristics of Distillates Such as Kerosene by Converting Aromatics into Naphthenes, Which Are Cleaner-Burning Compounds
- ❖ **Crude Oil Chemistry & Contaminants**
 - Organic Chlorides
 - Vanadium
 - Iron
 - Basic Nitrogen
 - Naphthenic Acid
 - Phenolic Compounds in Crude Oil
 - Zinc (Used Lubricating Oils)
 - Methanol

DAY FOUR:

- ❖ **Significance of Contaminants on Refining Processes**
 - VOC Emissions
 - Solid Waste and Sludge
 - Salts in The Feedstock (Corrosion and Fouling Problems) And Aromatics (Source Of VOC)
 - Aromatics, Oil, Grease and Organic Removal
 - Phenol and Ammoniacal Nitrogen Removal with A Biological Treatment
 - The Organic and Inorganic Contaminants from Refinery Wastewater
 - Oily Water Separation
 - Process Water
- ❖ **Product Compositions, Specification and Their Significance**
 - LPG



- Gasoline
- Kerosene and Fuel
- Gas Oil
- Atmospheric Residue
- Vacuum Residue
- Petroleum Coke

DAY FIVE:

❖ Summary of Whole Crude Characteristics

- Specific Gravity
- Density
- Reid Vapour Pressure
- Water Contents
- Sulphur Contents
- Salt Contents
- Sulfur Mercaptan and H2S
- Viscosity
- Light Ends

❖ Product Sampling, Testing and Reporting

- ASTM D4177 - 95(2010) Standard Practice for Automatic Sampling of Petroleum and Petroleum Products
- ASTM D4057 - 06 Standard Practice for Manual Sampling of Petroleum and Petroleum Products
- Sampling System Inside and Outside Laboratory

❖ Course Conclusion

❖ POST-TEST and EVALUATION

Training Requirements:

“Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Please note that the above topics can be amended as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.





Training Fees:

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

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 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

For training registrations or in-house enquiries, please contact:

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Training & Career Development Department

