

CRUDE OIL: TYPES, QUALITY, AND COMPOSITION

crude oil types, fossil fuel, hydrocarbons, quality, composition



Once removed from the ground, crude oil is refined into useful petroleum products in Cameroon and beyond, such as diesel fuel and gasoline. Crude oil is a mixture of hydrocarbons formed from plant and animal remains that lived in a marine environment millions of years ago. Over the course of those millions of years, the remains were covered by layers of rock, sand, and silt. These remains are later turned into crude oil through a combination of pressure and heat from these layers. Because it dates back millions of years, crude oil is known as a "fossil fuel."

Petroleum products are made from crude oil, coal, natural gas, or biomass. Examples of petroleum products are gasoline, jet fuel, waxes, asphalt, and lubricating oil.

Interestingly, a 42-gallon barrel of crude oil produces about 45 gallons of petroleum products because of a refining phenomenon called refinery processing gain.

Types of Crude Oil

Crude oil forms differently due to the geographical makeup of the locations. Oil prices are based on geopolitics, natural events, and organizational influences, which, in turn, dictate production, supply, and demand.

There are six different crude oil classifications, but more than 160 types can be traded. However, there are even more different investment types to choose from.

The oil industry and regulators use crude oil's density and sulfur content to classify it into several categories. Oil can be grouped by sulfur content as either sweet or sour or by density as either heavy or light. Using these two groups—and by creating a group in between—oil is classified into six classes by the industry and investors:

- Heavy/Sweet
- Heavy/Sour
- Medium/Sweet
- Medium Sour
- Light/Sweet
- Light/Sour

Heavy oils are used to make industrial products like asphalt and plastics. Medium oils have sulfur content that falls somewhere between heavy and light. Light oils are generally used in diesel, gasoline, and aviation fuel because they take less processing. Sour crude has more sulfur and carbon than light crude and requires more refining; thus, it incurs more costs. The easiest and cheapest oil to refine is light and sweet crude.

The Environmental Protection Agency Classifications for Crude Oil

The EPA categorizes crude oil into four main types of crude oil based on quality: Class A, Class B, Class C, and Class D. These are important for learning more about general toxicity and physical state changes:

- **Class A:** Most refined products and many high-quality, light crude oils are included in Class A. Class A oils can be highly toxic to humans, animals, and other organisms despite their value.
- **Class B:** These are waxy and oily in feel and are less toxic than Class A oils. They stick more firmly to surfaces than Class A oils. They are more likely to penetrate porous layers or surfaces as temperatures rise.
- **Class C:** These are usually brown or black, have a similar density to water, and tend to sink. This type of oil doesn't penetrate porous surfaces as quickly as other types of crude oil. In the event of evaporation or weathering of volatiles in a Class C oil, it may produce solid or tarry Class D oil. Even though Class C crude oil is less toxic, it can still harm wildlife.
- **Class D:** These are residual oils, heavy crude oils, select high paraffin-based oils, and certain weathered oils. Class D oils are typically dark black or brown, and if they melt, they can coat surfaces, making cleaning up a spill very difficult. Class D crude oil is relatively nontoxic.

Crude oil composition

Crude oil is a mixture of hydrocarbons. It comprises 85% C, 13% H, and 2 % N, S, and O (all weight %).

The main components of natural hydrocarbons belong to three groups. These include;

- Paraffins (n-alkanes) with the general formula C_nH_{2n+2} . For $n = 1$ to 4, these are gases, from $n = 5$ to 15 liquids above this solid (paraffin waxes). The gases methane, ethane, propane, and butane form natural gas.
- Naphthenes, with the general formula C_nH_{2n} , form saturated ring compounds in which n is 5, 6, or 7. Cyclopentane and cyclohexane are standard components of crude oils, often in the methyl- form (with 2% or more of an average crude oil).
- Aromatics, generally a minor group of hydrocarbons that contain at least one benzene ring (C_6H_6) in which all carbons share the fourth bond. They are under-saturated because they will react to add hydrogen or other elements to their rings.

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