

Petroleum (literally rock oil, from the Greek *petra*– for rock and Latin *–oleum* for oil) is a general term used to refer to all forms of oil and natural gas that is mined from the earth. Something needs to block or trap the petroleum so it will accumulate into a large enough deposit for geologists to be able to locate it.

Petroleum traps come in several varieties, in various sizes and can be made through structural processes (like folds and faults), or by sedimentary processes. Long chains of hydrocarbon are oil; shorter chains are gas, generally methane (CH_4) and condensates such as ethane, propane and butane. If these sediments are porous enough (have microscopic holes) and permeable enough (allowing for the flow of liquids), then the petroleum will migrate through the rock. Hydrocarbons are complex molecules that are formed from long strings of hydrogen and carbon, such as propane (C_3H_8) or butane (C_4H_{10}). Despite the apparent abundance of dead organisms raining down on the ocean bottoms, there are specific conditions that must be met for these organisms to be transformed into petroleum. First, the area that the kerogen collects must be a restricted basin, a depression where sediment can accumulate and where there is poor water circulation. Compaction of the sediment and the expansion of the kerogen as it is transformed into petroleum cause it to be forced out of the rock it was created in (the source rock) and into nearby sediments. There must be a reservoir rock, usually sandstone or limestone that is porous and permeable where the oil can be stored and transported. Petroleum begins as living animals, microscopic organisms (like diatoms or plankton) that live in the oceans. What most people concern themselves with is crude oil, the liquid mixture of naturally occurring hydrocarbons and natural gas, which is a gaseous mixture of naturally occurring hydrocarbons. The kerogen must be buried under sediment where it will be altered through high temperatures and high pressures. There needs to be a trap, something that is non-porous and non-permeable that will hold the petroleum in the reservoir and prevent it from migrating further. When the organic matter becomes buried and begin to decompose, they are referred to as kerogen. As the heat and pressure breaks down the kerogen, the hydrocarbon chains are freed. First, there needs to be a source rock that contains the organic matter to be converted into petroleum.