

What is refining?

The refining process begins with crude oil.

Crude oil is unrefined liquid petroleum. Crude oil is composed of thousands of different chemical compounds called hydrocarbons, all with different boiling points. Science—combined with an infrastructure of pipelines, refineries, and transportation systems—enables crude oil to be transformed into useful and affordable products.

Refining turns crude oil into usable products.

Petroleum refining separates crude oil into components used for a variety of purposes. The crude oil is heated, and the hot gases are passed into the bottom of a distillation column. As the gases move up the height of the column, the gases cool below their boiling point and condense into a liquid. The liquids are then drawn off the column at specific heights to obtain fuels like gasoline, jet fuel, and diesel fuel.

The liquids are processed further to make more gasoline or other finished products.

Some of the liquids undergo additional processing after the distillation process to create other products. These processes include cracking, which is breaking down large molecules of heavy oils; reforming, which is changing molecular structures of low-quality gasoline molecules; and isomerization, which is rearranging the atoms in a molecule so that the product has the same chemical formula but has a different structure. These processes ensure that every drop of crude oil in a barrel is converted into a usable product.

Did you know?

There are 280 million automobiles in the United States. Currently 279 million of those run on gasoline.¹

¹ <https://www.politico.com/news/2020/09/17/daniel-yergin-oil-sector-doyen-416895>