

TECHNICAL

WATERPROOFING

CRUDE OIL

“MORE WIDELY USED THEN WE THINK”

Crude oil (petroleum) is a complex mixture of many different chemical compounds called hydrocarbons. The separation of these compounds into useable products is known as fractional distillation. Through distillation, crude oil is heated to separate the hydrocarbons into raw fractions: gasoline, kerosene, fuel oil, gas oil, wax distillate and cylinder stock or bottoms. These raw fractions are then selectively changed through conversion methods (cracking and rearranging the molecules) and treatments to improve the products to meet specific requirements. Here is a simplified look at the different fractions of petroleum and what they are made into.



The gasoline fraction is further refined through a variety of processes that convert it into the different fuels we power our cars with.

The kerosene fraction is used for aviation fuel, and fuel oil fractions are used as diesel for the trucking and construction industry. This fraction is also processed into a variety of specialty solvents used in manufacturing.

The gas oil fraction is a heavy, non-volatile fuel and is used either as a fuel or an oil. If the gas oil fraction is hydroprocessed, it can be made into white oil (sewing machine oil), or a higher processed oil for use in cosmetics and pharmaceuticals.

The wax distillate fraction is a valuable source of lubricating stock and paraffin. When the wax or paraffin is separated out, one of the basic components of lubricants is produced, which is called a neutral. Neutrals are further refined through distillation and hydroprocessing to produce specialized components used in the manufacture of engine oils, gear lubricants and greases.

Paraffins are used in many products, from candles to cosmetics to paper coating, inks, fabrics and even in our foods.

The cylinder stocks or bottoms fraction is what is left over after crude oil has been distilled. It is a heavy, oily wax. The wax portion is separated out to create a product called Micro Wax. This wax has a much higher melting point than paraffins and is used in a variety of products such as plastics and building materials. It's also used as a food additive and even as an ingredient in candies and gums to help them keep their shapes.

The oil portion of the cylinder stock is a heavy lubricant base stock used in heavy duty gear oil and many industrial lubricants. When it is further processed to remove resins, the resins are used to make many different products like high-temperature insulations and undercoatings, as well as fuels for ocean-going barges.

The bottoms fraction is very asphaltic and is used for making road tar and heavy burner fuel.

Crude oil is more a part of our lives than most of us realize. The refining process is a complex operation generating many components that are the building blocks for much of what we use every day. We depend on petroleum to fuel our cars, but it's also a key component in fertilizers and pesticides; products such as plastic, synthetic rubber and synthetic fibers such as nylon, vinyl, acrylic and polyester; building materials; epoxy; paint; insulation; soaps; nail polish; hair spray; dental fillings; and the list goes on and on.