

Fractional distillation

A [Conical flask](#) is used as a receiving flask. Here the distillation head and fractionating column are combined in one piece.^[1]

Fractional distillation is a process of separating a mixture of [chemical compounds](#). This means that each part (called a "fraction") of the [mixture](#) can be kept apart from the other chemicals. Different chemicals have different [boiling points](#). Fractional distillation is done by heating the mixture so that it [evaporates](#) and then each fraction [condenses](#) in its own separate compartment. The reason we don't use [simple distillation](#) is because for liquids that boil at less than 25 °C from each other, some of the other liquid(s) may [evaporate](#) and so part of the separated liquid may have part of the other liquid(s).

It is a special type of [distillation](#). Generally, the component parts boil at less than 25 °C from each other under a pressure of one atmosphere. If the difference in boiling points is greater than 25 °C, a [simple distillation](#) is used.

Fractionation is done by boiling a mixture in a [fractionating column](#). The mixture evaporates at different times and is caught in a container as a pure compound.

Fractional distillation is the main activity of [oil refineries](#), and is done in a large fractionating column known as a "fractionation tower".

Industrially, [crude oil](#) is heated and sent up along the fractionating column that has decreasing temperatures with height and several platforms at different levels to collect the [condensate](#). Different components of crude oil have different boiling points. High [molecular weight](#) components have higher boiling points and condense at lower portions of the column while fractions with lower boiling points rise to the top of the column to condense.

The main fractions include refinery [gases](#), [gasoline](#) (petrol), [naphtha](#), [kerosene](#), [diesel oil](#), [fuel oil](#), and a [residue](#) that contains [bitumen](#). These fractions are mainly used as fuels, although they do have other uses too. [Hydrocarbons](#) with small molecules make better fuels than those with large molecules because they are volatile, flow easily and are easily ignited

References

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1. [↑] Laurence M. Harwood, Christopher J. Moody (13 Jun 1989). *Experimental organic chemistry: Principles and Practice* (Illustrated ed.). pp. 145–147. [ISBN 978-0-632-02017-1](#).

Other websites

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- [Continuous distillation](#) -Citizendium

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