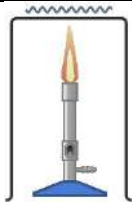
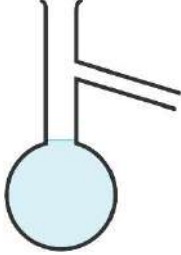




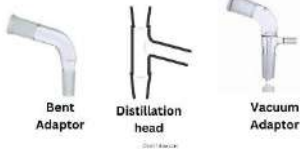




# Apparatus for Fractional Distillation

One apparatus that gives fractional distillation efficiency advantage is the fractionating column, which is often placed above the distillation flask. It is usually packed with glass beads to provide a large surface area over which some of the vapor condenses before passing into the Liebig condenser.

Apart from the fractionating column, what other apparatuses are used in fractional distillation? Here are the main apparatuses that make up a fractional distillation setup:

Apparatus	Name	Role
	<b>Heating Setup</b>	Supplies heat to the distillation flask so that the mixture can vaporize.
	<b>Distillation Flask</b>	Used to hold the mixture being distilled.
	<b>Fractionating Column</b>	Enhances separation efficiency by facilitating multiple vaporization-condensation cycles. It is packed with glass beads to provide a large surface area over which vapor condenses before passing into the Liebig condenser.

	<p><b>Liebig Condenser</b></p>	<p>Condenses the vaporized components back into liquid form.</p>
	<p><b>Thermometer</b></p>	<p>Monitors and regulates the temperature during distillation.</p>
	<p><b>Distillation Head or Adapter</b></p>	<p>2 or 3-way glass connectors used to connect the distillation flask to the fractionating column and the condenser.</p>
<p><b>Distillation Adaptors</b></p>  <p>Bent Adaptor      Distillation head      Vacuum Adaptor</p>	<p><b>Vacuum Adaptor and Bent Adaptor</b></p>	<p>The vacuum adaptor is used to connect the lower end of the Liebig condenser and its role is to direct the distillate into the receiving flask. As you can see in the picture, it has a sidearm, which can be connected to the vacuum source (which is very handy in vacuum distillation setups). Bent adaptor can be used in place of a vacuum adaptor, especially in labs that lack the latter.</p>

	<b>Vigreux Column</b>	The fractionating column can either be: <ul style="list-style-type: none"><li>• A straight column packed with glass beads or pieces of metals such as Raschig rings</li><li>• <b>Vigreux column</b> designed with <i>ground glass joints</i> or indentations that run its entire length to provide additional surface area for vapor-liquid contact.</li></ul>
	<b>Boiling Chip/Boiling stones/Anti-bumping Granules</b>	Tiny, unevenly shaped anti-bumping granules which may be added to the liquid mixture to ensure smooth boiling without bumping or splashing.

While these are the major apparatus specific to fractional distillation processes, other common lab apparatuses may also be used in conjunction with these, depending on laboratory specifications and the type of fractional distillation being carried out.

## Further Reading:

[50+ More Laboratory Apparatus \(Names and Uses\)](#)