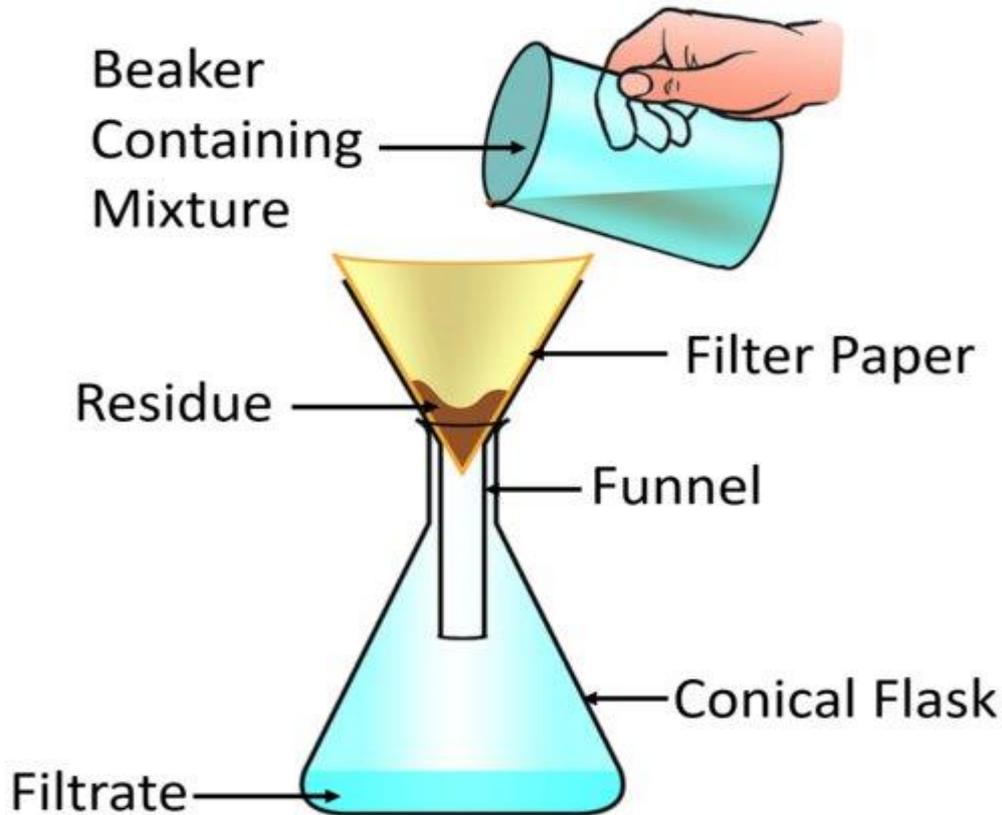


Filtration

Filtration is a process used to separate solids from liquids or gases using a filter medium that allows the fluid to pass, but not the solid. The term "filtration" applies whether the filter is mechanical, biological, or physical. The fluid that passes through the filter is called the **filtrate**. The filter medium may be a **surface filter**, which is a solid that traps solid particles, or a **depth filter**, which is a bed of material that traps the solid.



Filtration is typically an imperfect process. Some fluid remains on the feed side of the filter or embedded in the filter media and some small solid particulates find their way through the filter. As a chemistry and engineering technique, there is always some lost product, whether it's the liquid or solid being collected.

Examples of Filtration

While filtration is an important separation technique in a laboratory, it's also common in everyday life.

- Brewing coffee involves passing hot water through ground coffee and a filter. The liquid coffee is the filtrate. Steeping tea is much the same, whether you use a tea bag (paper filter) or tea ball (usually a metal filter).
- The kidneys are an example of a biological filter. Blood is filtered by the glomerulus. Essential molecules are reabsorbed back into the blood.
- Air conditioners and many vacuum cleaners use HEPA filters to remove dust and pollen from the air.
- Many aquariums use filters that contain fibers that capture particulates.
- Belt filters recover precious metals during mining.
- Water in an aquifer is relatively pure because it has been filtered through sand and permeable rock in the ground.

