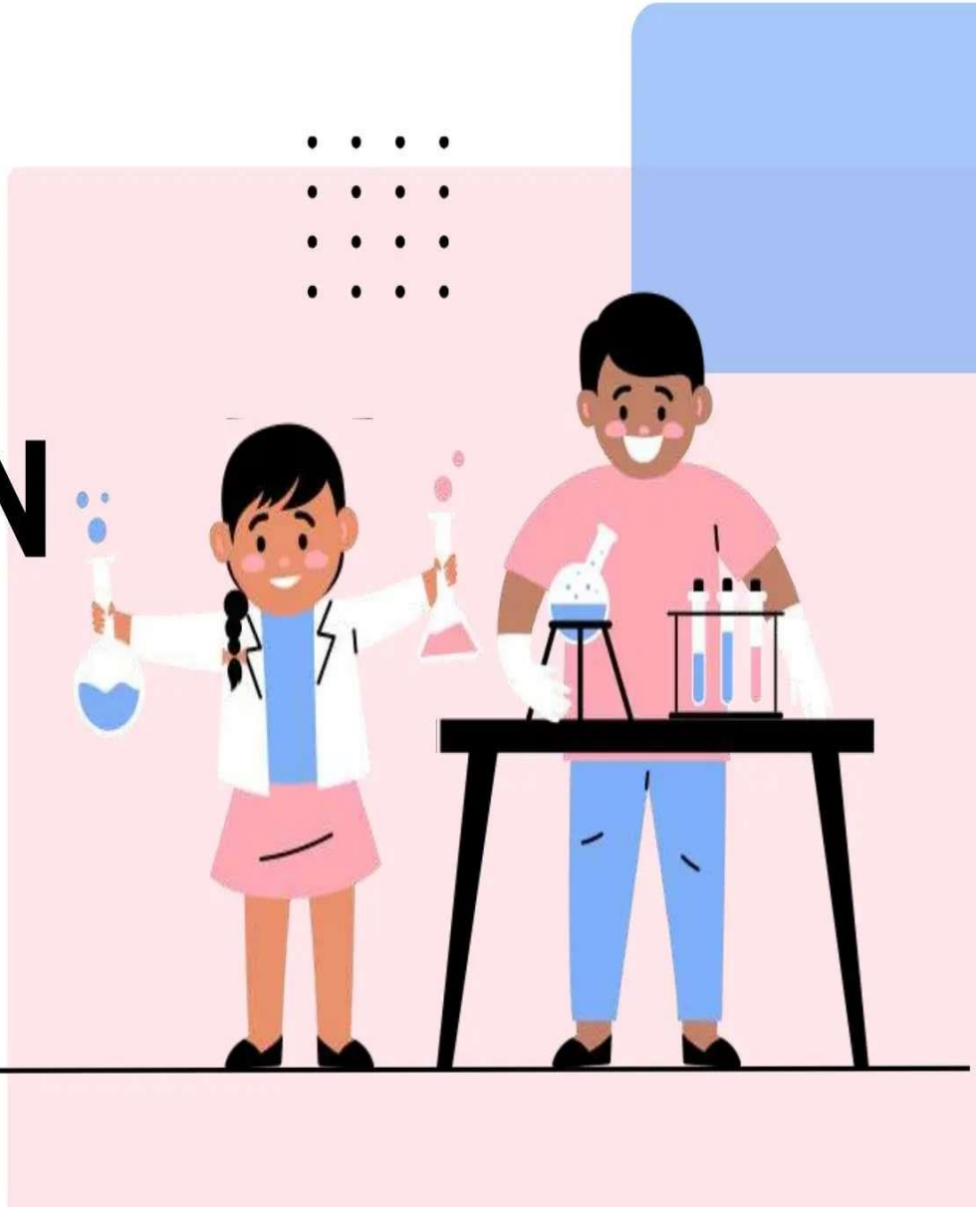
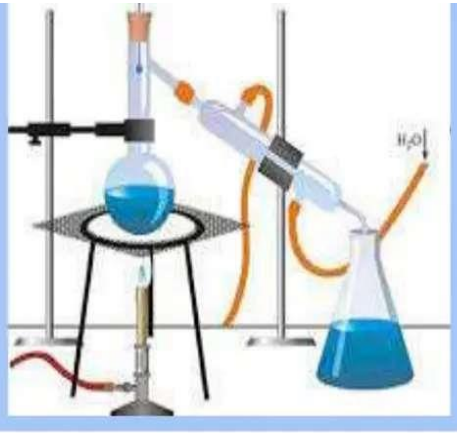
CHEMISTRY PRACTICAL PPT.

METHODS OF PURIFICATION



DISTILLATION →



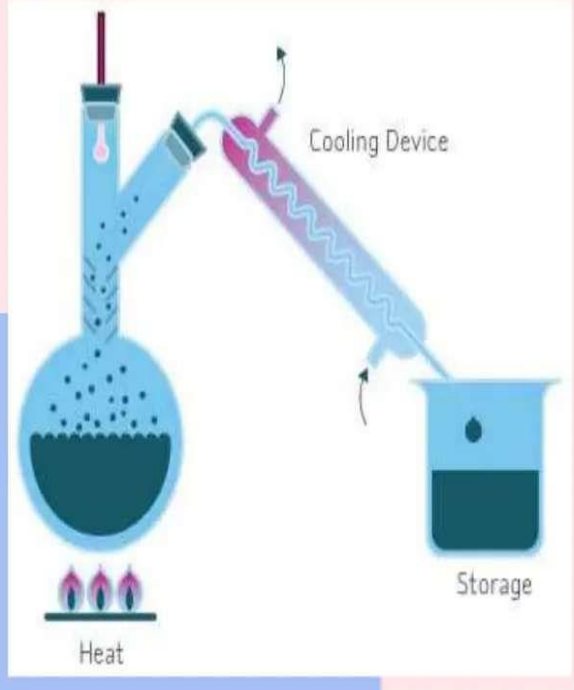
DEFINITION

THE PROCESS OF HEATING OF LIQUID INTO VAPOUR AND THEN COOLING THE VAPOURS BACK INTO THE LIQUID STATE IS CALLED AS DISTILLATION.

IT CAN BE CLASSIFIED INTO 4 CATEGORIES:

- SIMPLE
  - C6H6, C6H5CH3, C2H5OH, ETC.
- FRACTIONAL
  - CH3OH, CH3COCH3, CRUDE OIL, ETC.
- UNDER REDUCED PRESSURE
  - GLYCEROL (CONC. OF SUGAR)
- STEAM
  - MIX OF ORTHO NITROPHENOL & PARA NITROPHENOL

TYPES OF DISTILLATION PURIFICATION METHODS:



01 FRACTIONAL DISTILLATION

02 DISTILLATION UNDER REDUCED PRESSURE

03 STEAM DISTILLATION

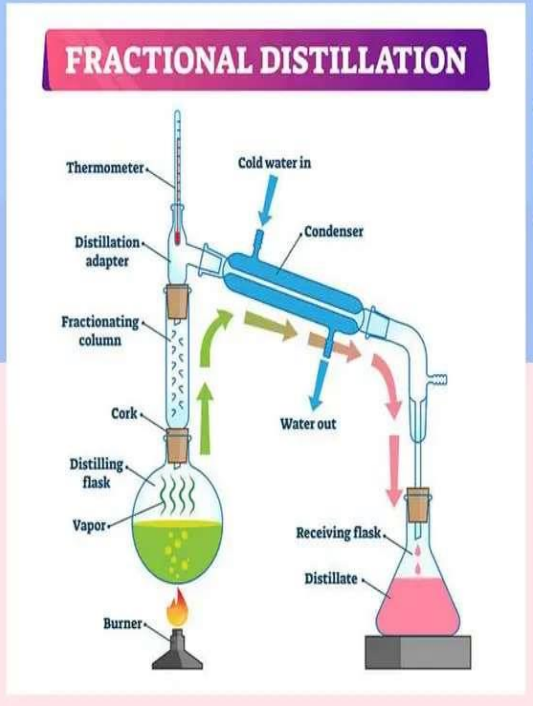
FRACTIONAL DISTILLATION

Fractional distillation is a process that separates a mixture into its component parts, or fractions. The process uses distillation to fractionate.

Fractional distillation is used in petroleum refineries, petrochemical and chemical plants, and natural gas processing plants. A common example of fractional distillation in industries is the separation of various components of crude oil. The order of separation is determined by the boiling points of each component in the mixture.

the steps of fractional distillation:

- Evaporation: Heat the crude oil until it evaporates.
- Condensation: The temperature is highest at the bottom of the column.
- Collection: Collect the fractions.

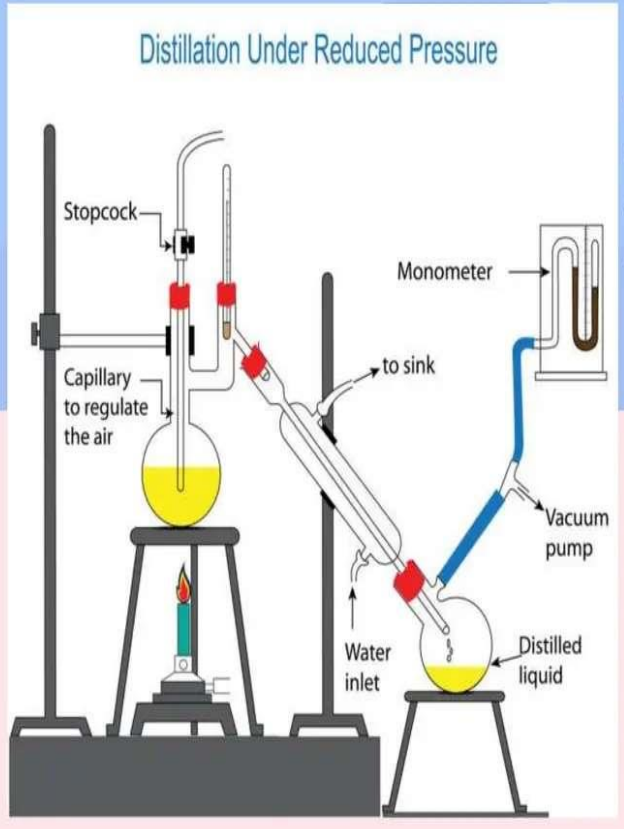


DISTILLATION UNDER REDUCED PRESSURE

Distillation under reduced pressure, also known as vacuum distillation, is a technique that separates compounds based on their boiling points. It's used to purify compounds that are difficult to distill at normal pressures, or to save time and energy.

Distillation under reduced pressure works:

- A water aspirator or mechanical pump reduces the pressure.
- The boiling points of liquids decrease at reduced pressure.
- Organic compounds can be distilled at lower temperatures.
- The liquid boils at a temperature lower than its boiling point.
- The liquid doesn't degrade as it would otherwise.

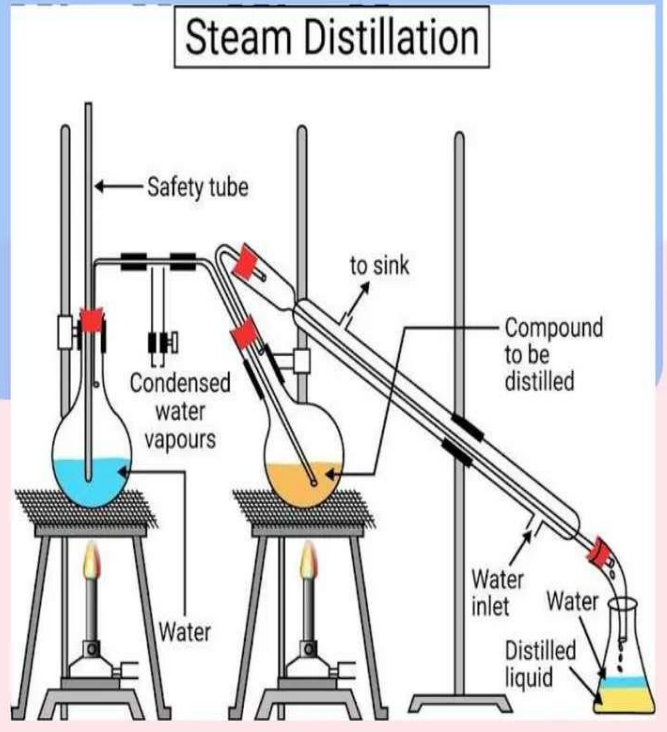


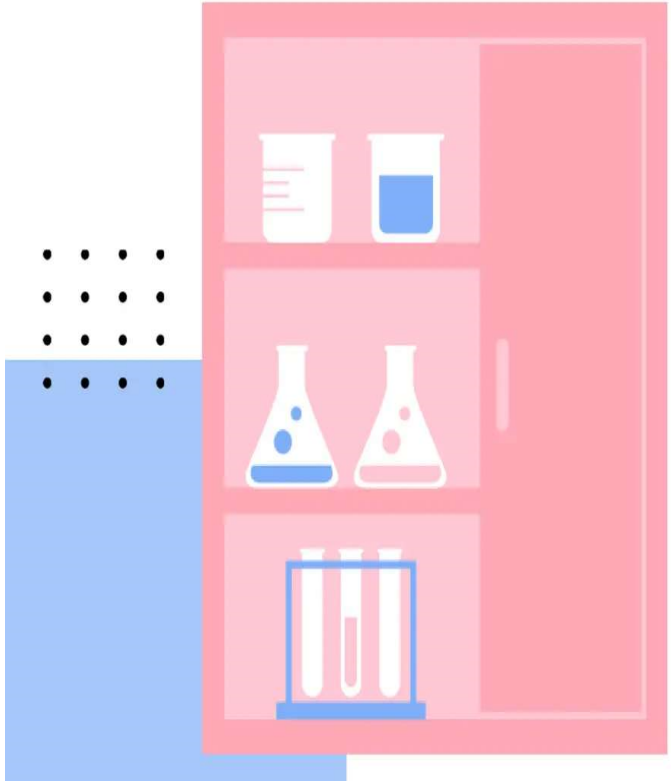
STEAM DISTILLATION METHOD

Steam distillation is a process that separates water from other volatile and non-volatile components. It's a continuous distillation process that's useful for removing temperature-sensitive solutes, like natural aromatic compounds. Steam distillation involves passing dry steam through plant material. The volatile compounds in the steam are then volatilized, condensed, and collected in receivers.

Steam distillation is a traditional technology for extracting essential oils. It's also a method for separating miscible liquid bases based on their volatilities.

Steam distillation is an alternative method for achieving distillation at temperatures lower than the normal boiling point.





THANK YOU!