06052
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Steam Distillation

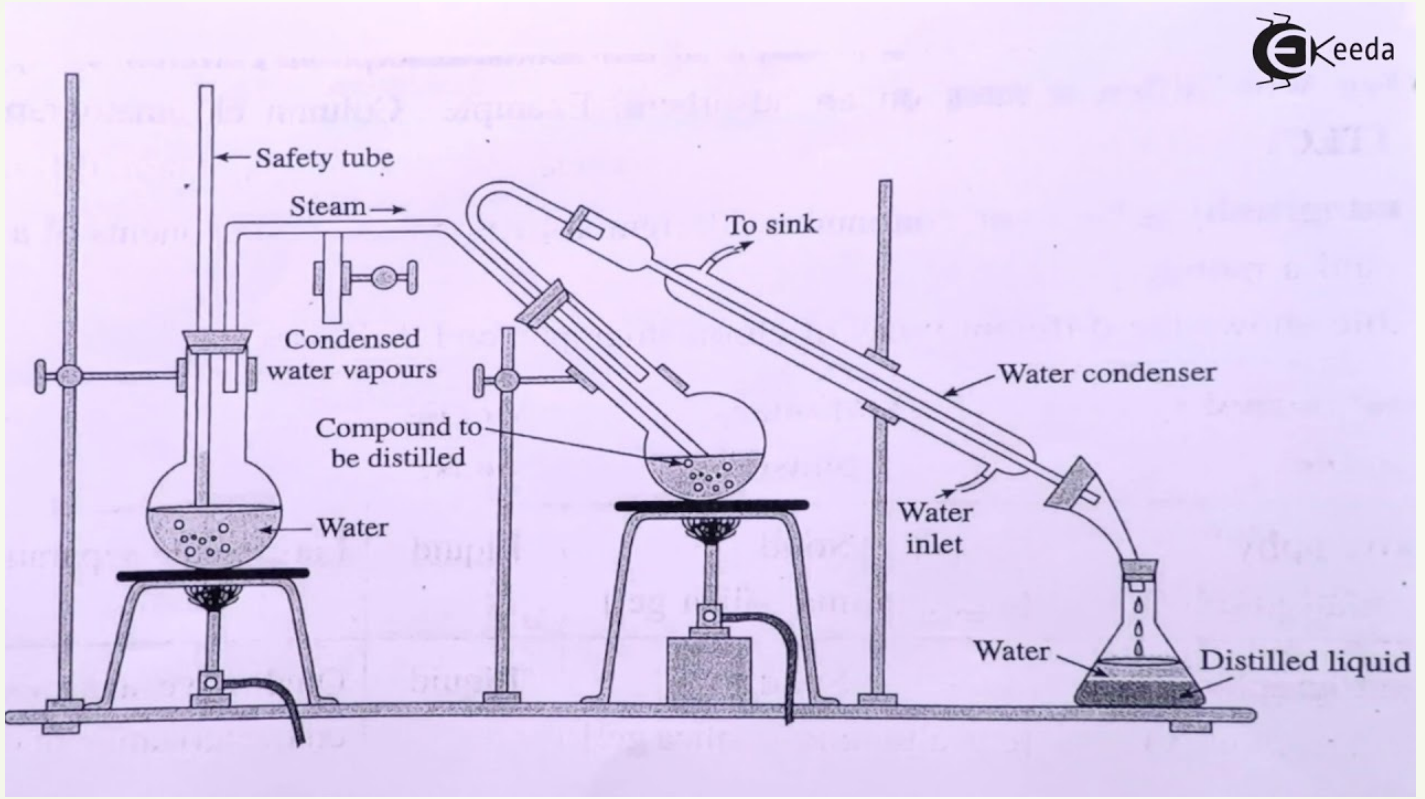
Basics

- Distillation
  - Extracting a specific substance from a liquid compound
- Benefits
  - Quality control
    - Control temperature and steam
  - Wide application
    - Works for most substances immiscible with water, but mostly used for extracting essential oils

Goal of Steam distillation

- Utilize low boiling point property of immiscible mixtures
  - Damage is minimized because boiling temperature is reduced
  - Vapor pressure contributes independently
  - Total vapor pressure is sum of the two immiscible liquid's vapor pressures
- Used to separate oils that are immiscible to water from compounds

Equipment


Safety tube
Steam
To sink
Condensed
water vapours
Water condenser
Compound to
be distilled
Water
Water
inlet
Water
Distilled liquid

Inputs

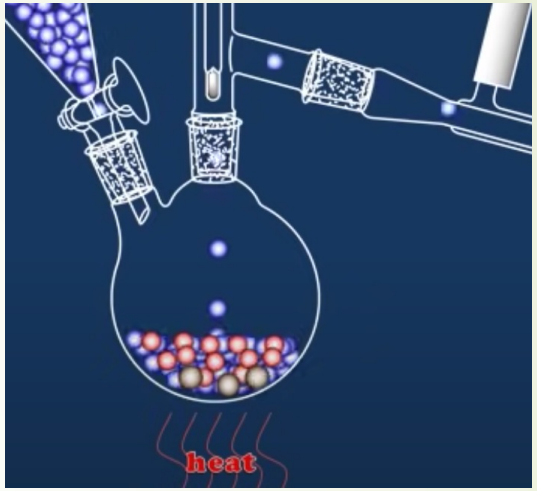
- Heat to boil the water
- Heat to boil the mixture
- Water to create steam
- Compound to distill

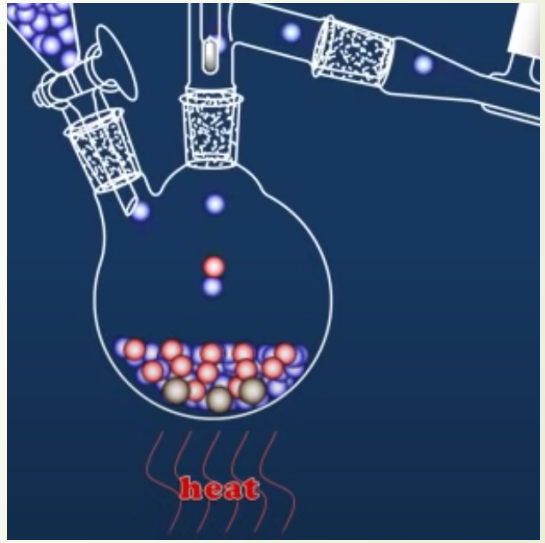
Outputs

- Mixture of water and immiscible oil
- Nonvolatile remainder of compound

Process

- Steam enters compound, increasing pressure
- Steam is distilled first because it is the most volatile
- Immiscible oil distills next with steam as its boiling point has been decreased as the overall vapor pressure has increased

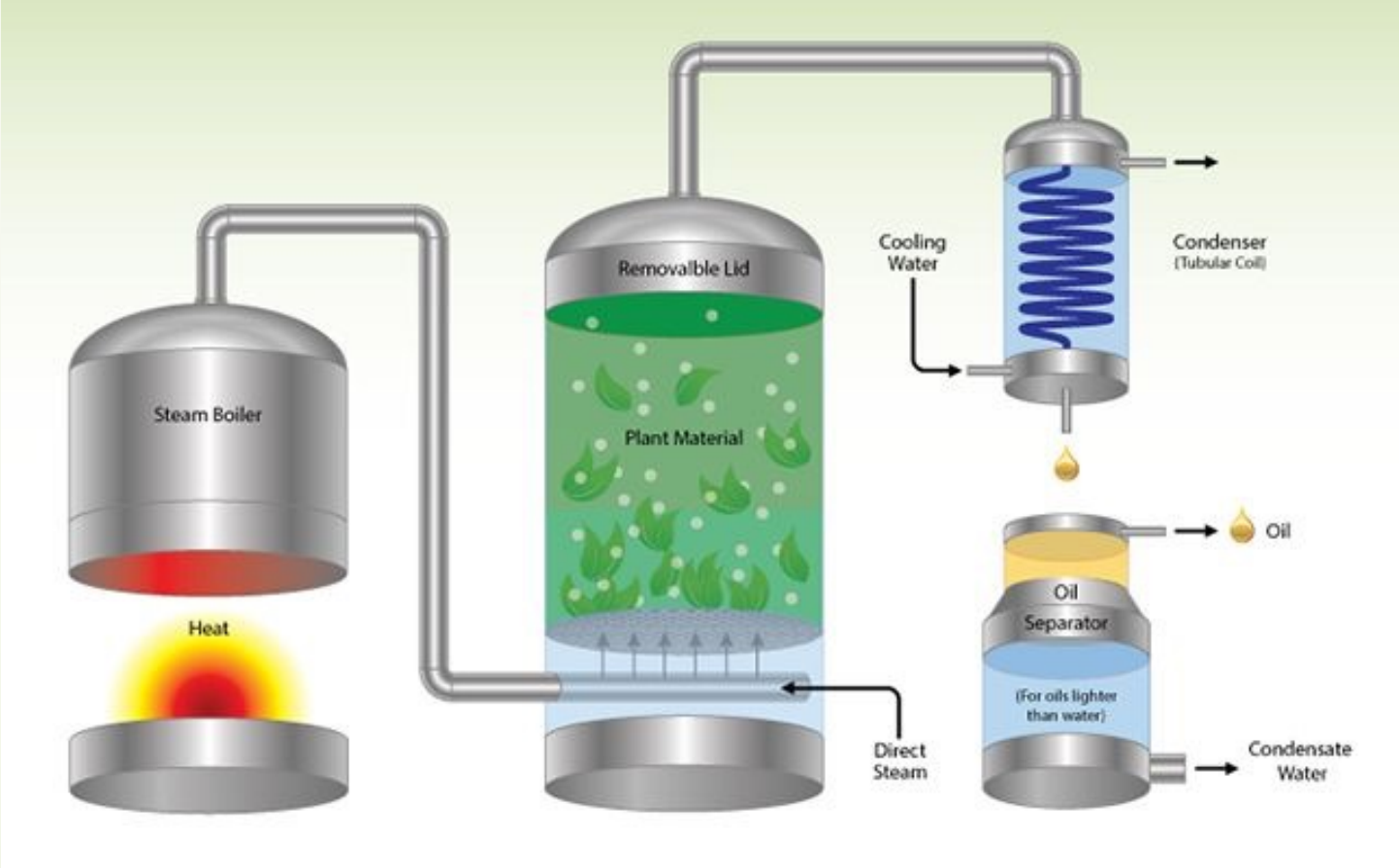




Process cont.

- Immiscible oil is condensed
- Result is mixture of water and immiscible oil which can be easily separated

Essential Oils Example



Sources

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