

# Distillation

Distillation is a method used to purify liquids. The method is based on the different boiling points of each chemical. By heating a solution to a specific temperature and collecting the resulting vapor, the solution can be divided by its components. The steam is cooled down to condensate and the resulting liquid is the purified chemical.

## Materials

Solvent: Ethylenglycoldimethylether (DME)

## Procedure

The DME is added to the distillation flask and connected to the distillation apparatus as seen in figure 1. The boiling point of DME is  $84^{\circ}\text{C}$ <sup>[2]</sup>. The DME is heated with an oil bath at the temperature of  $90^{\circ}\text{C}$ . Distillation starts with the evaporation of the liquid inside the flask. The thermometer displays a temperature of  $85^{\circ}\text{C}$  inside the distillation apparatus, which shows that the desired fraction is currently in the gas phase. The resulting distillate is the purified DME.

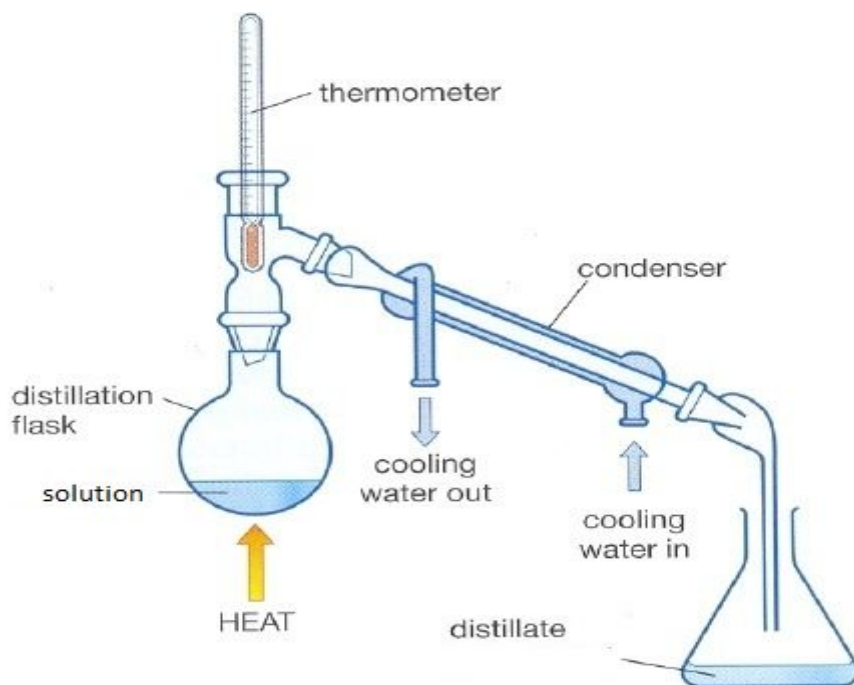


Figure 1: Distillation apparatus after: <https://www.quora.com/Where-is-distillation-used>, 06.10.2018

## Trouble shooting

Since Ethylenglycoldimethylether is a diether the distillation is to be handled with great caution. Distillation removes the stabilizer usually used in ether to prevent the occurrence of peroxides. Therefore the distillation has to be stopped before the residue runs dry, otherwise the peroxides might accumulate in the residue and could cause an explosion when exposed to light or heat.

## References

[1] <https://www.quora.com/Where-is-distillation-used>, 06.10.2018

[2]

[http://gestis.itrust.de/nxt/gateway.dll/gestis\\_de/000000.xml?f=templates&fn=default.htm&vid=gestisdeu:sdbdeu](http://gestis.itrust.de/nxt/gateway.dll/gestis_de/000000.xml?f=templates&fn=default.htm&vid=gestisdeu:sdbdeu)