

Iodine in Different Milieu

Equipment:

separatory funnel (250 mL)
ring stand with bosshead and iron ring
2 graduated cylinders (100 mL)

Chemicals:

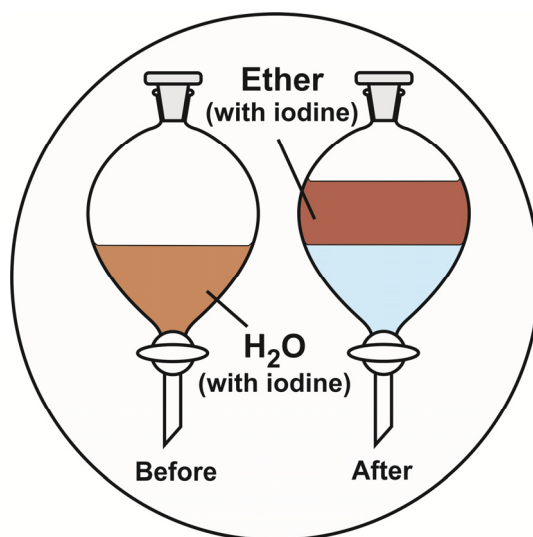
diethyl ether
deionized water
iodine

Safety:

diethylether ((C₂H₅)₂O):



H224-302-336, EUH019-066
P210-240-403 + 235



Exposure to light in the presence of atmospheric oxygen may result in the formation of explosive organic peroxides. Therefore, the ether should be stored in a dark bottle.

Diethyl ether is highly volatile and may form explosive vapor-air mixtures. Ether vapors cause drowsiness and dizziness when inhaled. Therefore, the experiment obligatorily has to be carried out in a fume hood. It is also necessary to wear safety glasses and protective gloves.

Procedure:

Preparation: A few iodine crystals are added to 100 mL of water, so that the water has a slightly brown color. The separatory funnel is placed in the iron ring on the ring stand.

Procedure: The brownish colored water is filled into the separatory funnel. Subsequently, 100 mL of ether are measured out using the graduated cylinder and carefully added to the water in the separatory funnel. The separatory funnel is shaken for a while by hand and vented occasionally in order to relieve excess vapor pressure. Eventually, it is placed back in the iron ring.

Observation:

After settling, a colorless layer of water is obtained, while the specifically lighter ether layer floating on top is colored brown.

Explanation:

Due to the brown color of the dissolved iodine, it is easy to see where it is. Obviously, iodine prefers ether as milieu compared to water; the tendency to transform and thereby the chemical potential of iodine is higher in the water than in the ether—under otherwise identical conditions.

Disposal:

The ether-water mixture has to be disposed of as hazardous waste in accordance with the guidelines of the particular institution.