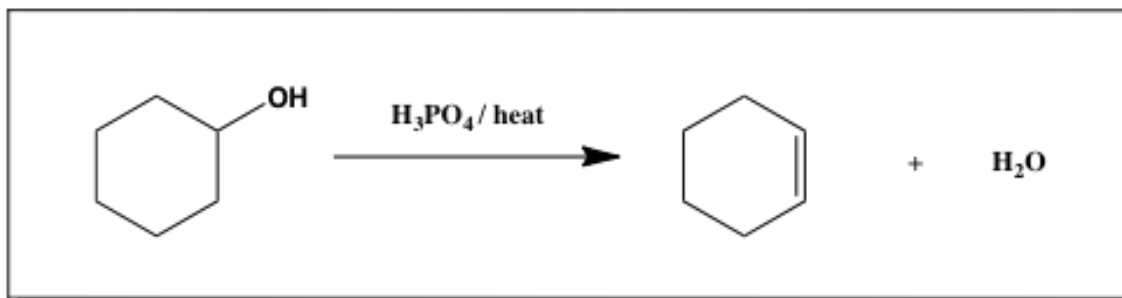


## Cyclohexene from Cyclohexanol



### *Techniques*

Heating with magnetic stirring, azeotropic distillation, ice-bath, phase separation, drying, simple distillation, boiling point and refraction index determination.

### *Equipment*

Simple distillation set-up, separatory funnel

### *Chemicals*

Cyclohexanol, phosphoric acid (85 %), anhydrous sodium sulfate

### *Safety*

Avoid any contact with your skin and clothing. Wash spills thoroughly with water!

### *Procedure:*

- Place 40 mL of cyclohexanol into 100 mL round-bottom flask containing a magnetic stirbar and add 20 mL of 85% phosphoric acid.
- Mix the liquids thoroughly by gently swirling and set-up an apparatus for simple distillation.

- Heat the oil bath up to around 150°C, than stepwise up to 170°C and collect all distillates.
- When no more distillate appears transfer the collected liquids into the separatory funnel and separate the two phases. Remove the water as accurate as possible mechanically.
- Place the organic layer into a conical flask and add several spatula-tips of anhydrous sodium sulfate.
- Filter the liquid into a dry 100 ml round-bottom flask and redistill it with the simple distillation set-up. Take care that all the equipment is dry! If the distillate remains cloudy, the drying was not sufficient.
- The product is filled into the bottle and labeled with name and formula.

### Tasks

1. Determine the boiling point, the weight and the refractive index of the product, compare it with the literature values and calculate the yield.
2. How could you perform a proof for the double bond?

Density of cyclohexanol = 0.948 g/ml

Boiling point of cyclohexene = 83°C

Refractive index of cyclohexene = 1.446