

4-Acetamidophenole/ Paracetamol




Chemicals

- 4-Aminophenole
- Acetic anhydride
- Activated carbon
- Water, dest.

Material

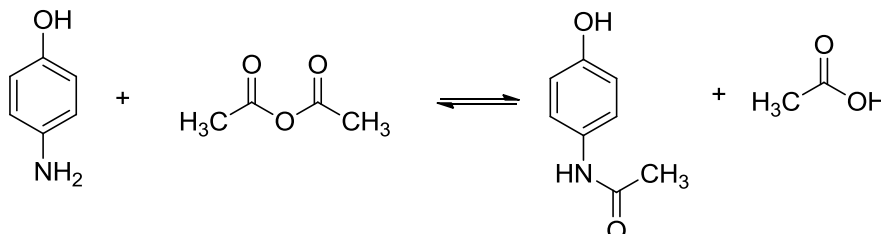
- 500 mL-multiple neck flask
- Lifting platform
- Beaker glasses
- Liquid funnel
- Measuring cyclinder (2x 50 mL)
- Dropping funnel
- Glass stirrer
- Solid matter funnel
- Thermometer with ground-glass joint
- Clamps and screwing sockets
- Heating basket
- Stirring motor with stirrer and – guidance
- Drying oven
- Analysis balance
- Reflux condenser

Safety instructions

<p><u>4-Aminophenole</u></p> <ul style="list-style-type: none">• H341 H302+H332 H410• P201 P281 P273 P304+P340 P309+P31• ATTENTION!! 	<p><u>Acetic anhydride</u></p> <ul style="list-style-type: none">• H226, H302+H332, H314, H335• P210, P243, P280, P301+P330+P331, P304+P340, P309+P310• HAZARD!! 
<p><u>4-Acetamidophenole</u></p> <ul style="list-style-type: none">• 302 315 319 335• 261 305+351+338• ATTENTION!! 	

Reaction equation

Esterification with acid anhydride



4-Aminophenol
M=109,13 g/mol

4-Acetamidophenol
M=151,16 g/mol

Experimental procedure

- Using a fume hood suspend 33.0 g 4-aminophenole in 100 mL water in a 500 mL-multiple neck flask stirring apparatus
- Whilst stirring add drop wise within 15 min (no cooling) 37 mL acetic anhydride
- Stir and heat up to 90°C, then cool to 5°C and stir at this temperature for 20 min
- Suck off the crystallized product and wash 2 times with 50 mL ice water each
- Recrystallize the raw product from 200 mL water at 90°C, using activated carbon
- Then cool to 5°C, suck off the crystallized product sharply, wash with 100 mL ice water and dry to mass consistency at 120°C in the drying oven

Waste disposal:

- Dispose of the mother liquor in the container for acid solutions

Analysis:

- Calculation of the yield of product regarding 4-aminophenole in grams and percentage of theory

Preparation list

Chemicals:

- 4-Aminophenole 33.0 g
- Acetic anhydride 37 mL
- Activated carbon
- Water, dest.

Tools:

- Funnel
- Beaker glasses
- Weighing glasses
- Stirring motor
- Stirrer
- Stirrer guidance
- Multiple neck ground-glass flask 500 mL
- Thermometer with ground-glass joint
- Reflux condenser with water tubes
- Dropping funnel
- Heating device
- Powder funnel
- Nutsch filter with round filter
- Evacuation bottle with rubber collar
- Evacuation device
- Measuring cylinder
- Cooling bath
- Glass funnel with matching folded filter
- Porcelain bowl
- Glass stirrer
- Drying oven
- Precision balance

