

4-Aminobenzene sulphonic acid







Chemicals

- Acetic anhydride
- Sulfuric acid, conc.
- Acetanilide
- Hydrochloric acid, conc.
- Ethyl alcohol
- Activated carbon

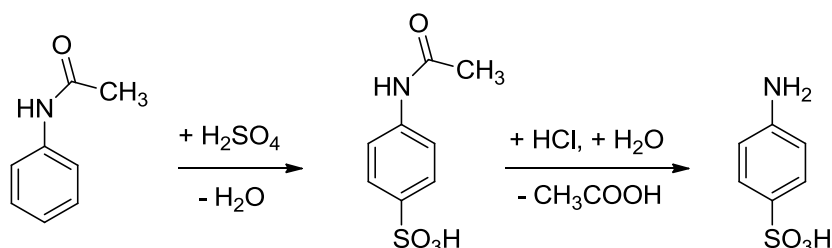
Materials

- 500 mL- multiple neck flask
- Stirring motor
- Stirrer with locking
- Cooler with cooling tubes
- Thermometer with joint
- Beaker glasses
- Dropping funnel
- Cooling bath
- Heating unit
- Measuring cylinder
- Erlenmeyer flask
- Round bottom flask
- Funnel with folded filter
- Powder funnel
- Suction filter with rubber cuff
- Feeding bottle
- Vacuum connection
- Spatula
- Porcelain stick, porcelain bowl
- Drying oven
- Precision balance

Safety tips

<p><u>Acetanilide</u></p> <ul style="list-style-type: none"> • H272 H302 H410 • P210 P280 P273 P301+P312 • HAZARD!! 	<p><u>Hydrochloric acid, conc.</u></p> <ul style="list-style-type: none"> • H314 H335 • P280 P301+P330+P331 P305+P351+P338 P309+P310 • HAZARD!! 
<p><u>Ethyl alcohol:</u></p> <ul style="list-style-type: none"> • H225 • P210 P243 P280 • 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>Sulfuric acid, conc.</u></p> <ul style="list-style-type: none"> • H314, H290 • P280, P301+P330+P331, P305+P351+P338, P309+P310 • HAZARD!! 	<p><u>4-Aminobenzene sulphone acid:</u></p> <ul style="list-style-type: none"> • H319 H315 H317 • P280 P302+P352 P305+P351+P338 • ATTENTION!! 

Reaction equation



Experimental procedure

- Place 83 mL of acetic anhydride in a 500 mL multiple neck flask and add dropwise 14 mL conc. sulfuric acid at 20°C
- After that add 30 g Acetanilide whilst stirring
- Heat the mixture to 85-90°C and hold for 15 minutes
- Then cool to 20°C and suction-filter sharply free from water
- Return the raw 4-Sulfacetanilide into the flask, suspend it in 100 mL water and heat to boiling whilst stirring
- Within 5 minutes add 35 mL conc. hydrochloric acid and boil for another 5 minutes under reflux
- Then cool to 20°C and suction-filter sharply (washing liquid = mother liquor)
- Wash the filter cake two times with 30 mL ethyl alcohol each, then pre-dry in a porcelain bowl for 30 minutes at 80°C
- Recrystallize the raw product with 350 mL of water using activated carbon, then suction-filter at 20°C and dry at 110°C

Waste disposal:

- Dispose of the filtrates in the container for acid wastes

Analysis:

- Calculate the yield of product regarding acetanilide in grammes and percentage of theory

Preparation list

Chemicals:

- Acetic anhydride 83 mL
- Sulfuric acid, conc. 14 mL
- Acetanilide 30 g
- Hydrochloric acid, conc. 35 mL
- Ethyl alcohol 60 mL
- Activated carbon

Tools:

500 mL- multiple neck flask

- Stirring motor
- Stirrer with locking
- Cooler with cooling tubes
- Thermometer with joint
- Beaker glasses
- Dropping funnel
- Cooling bath
- Heating unit
- Measuring cylinder
- Erlenmeyer flask
- Round bottom flask
- Funnel with folded filter
- Powder funnel
- Suction filter with rubber cuff
- Feeding bottle
- Vacuum connection
- Spatula
- Porcelain stick, porcelain bowl
- Drying oven
- Precision balance

