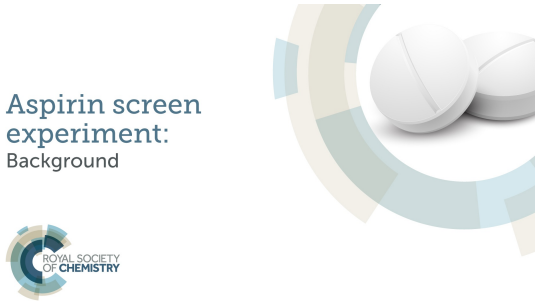
Aspirin level 1

Aims

In level 1, you'll learn how to synthesise aspirin. You'll get to set up and run your own experiment and work out how much aspirin you produced.

In each activity you'll be able to collect points. At the end of the level you can restart to improve your skills or progress to the next challenge.

Video 100 Points



Comprehension 100 Points 1 Attempt

Aspirin is commonly used to provide pain relief but also may be used to treat heart disease.

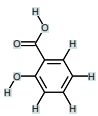
Around 100 billion aspirin tablets are produced every year.

The type of reaction which takes place in the synthesis of aspirin is esterification.

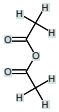
Ethanoic anhydride is a corrosive chemical. The hazard symbol for corrosive is: 

Ethanoic anhydride can also be categorised using the hazard symbol shown which means irritant. 

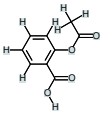
Molar mass 100 Points 1 Attempt



2-Hydroxybenzoic acid has a mass per mole of 138 g mol^{-1}.



Ethanoic anhydride has a mass per mole of 102 g mol^{-1}.



2-Ethanoyloxybenzene carboxylic acid has a mass per mole of 180 g mol^{-1}.

Measuring mass 100 Points

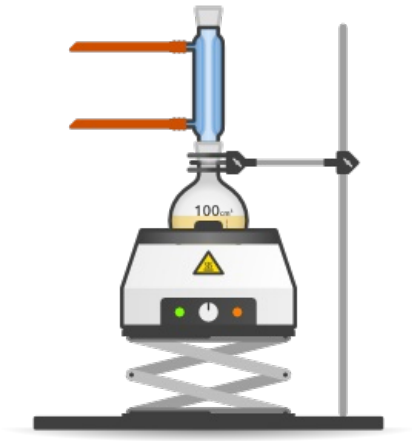
Masses of reactants:

Mass of 2-hydroxybenzoic acid = 4.99 g

Mass of ethanoic anhydride = 18.03 g

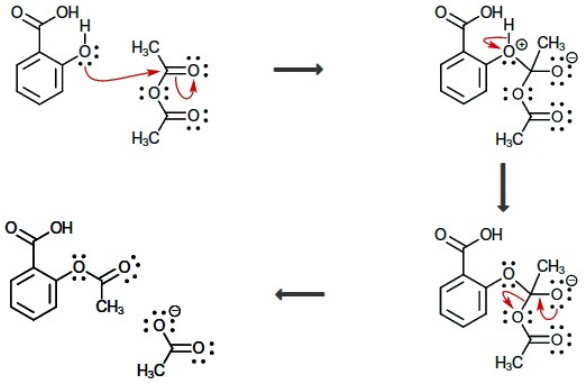
Synthesis 100 Points 1 Attempt

Equipment setup:



Mechanism 100 Points 1 Attempt

The mechanism for the reaction is



Precipitation 100 Points 1 Attempt

Crystals formed after scratching the inside of the flask with a glass rod.

Drying 100 Points 1 Attempt

Dried mass = 4.70 g

Yield 100 Points 1 Attempt

Amount of 2-hydroxybenzoic acid is 0.0362 mol.

Amount of ethanoic anhydride is 0.176 mol.

Limiting reagent is 2-hydroxybenzoic acid.

Theoretical yield of aspirin is 6.52 g.

My weight of crude aspirin is 4.70 g.

Yield of aspirin is 72 %.

Review

Things I did well on:

Things I could improve on:

You got 72% yield. Why do you think you did not get 100% yield?