

Making a Cuppa - Diffusion

Name:

Aim: To find out if the tea bag will work (diffuse) better in hot or cold water

Hypothesis: (Read the method and state what you think will happen and why?)

If the tea bag is placed in ____hot____ water it will diffuse____faster____
____ than when placed in ____cold____ water because

_____.

Independent Variable: (what is being changed)

**The temperature of the water (boiling vs room temperature)

Dependent Variable: (what data is being collected)

**observation of colour change in water/tea being diffused

Control Variable: (what is being kept the same)

**the tea bag

** amount of water

**observation techniques

**time intervals

Materials: (What equipment are you using?)

- 2 tea bags
- 2 large beakers (the same size)

- Hot tap water
- Cold water
- Stopwatch/Timer

Method: (Explain what you are doing in point form)

1. Fill one beaker with 250 mL of cold tap water and one beaker with 250mL of hot tap water.
2. Allow the beakers to sit still on the bench for 2 minutes (time this)
3. Place one tea bag in the cold water and one tea bag in the hot water at the same time
4. Start the stopwatch
5. Record what is happening in the cold and hot water at one minute intervals for five minutes (make notes in the table)

Safety:

Risks: (List some safety risks associated with this practical)

- 1.
- 2.
- 3.

Precautions: (List the precautions to reduce above risks)

- 1.
- 2.
- 3.

Fair Test:

1. Why is it important to use the same size beakers?

Amount of water needed to be the same. (50 mls for hot and cold)

2. Would it matter if the tea bags are a different brand? Why?

Yes - because the diffusion rates may change, because the amount of tea in each bag might be different.

3. Does it really matter if the hot and cold water are not recorded at the same time? Why?

Results:

Time 0

Time (min)	Observations	
	Hot Water	Cold Water
1		
2		
3		
4		
5		

Discussion:

1. Which beaker of water did the brown colour diffuse through the fastest?
2. Describe the pattern seen as the colour dispersed in both the cold and hot beakers
3. Why did the brown water spread through one faster than the other? Describe this referring to your knowledge of molecules and the particle model.

Conclusion:

1. Was the hypothesis supported or not supported? Outline the evidence found to come to the conclusion.

