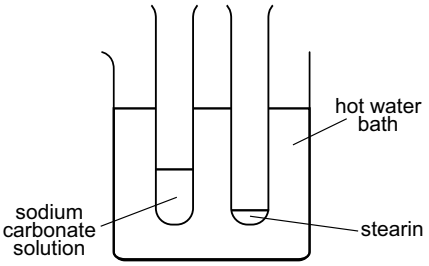
STUFF AND SUBSTANCE: WHAT KIND OF CHANGE?

You have seen substances change state and you have seen substances mix with each other. These are not the only things that can happen with substances. Substances can also change into other substances.

Be aware that hot water can cause scalds. Sodium carbonate is an irritant, wear eye protection.

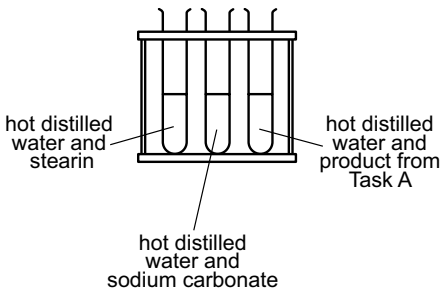
Task A Mixing stearin and sodium carbonate

1. Half fill a 250 cm^3 beaker with hot water from the kettle (above 80 °C) to make a hot water bath. Use a thermometer to monitor the temperature of the water bath. You may need to use a hot plate to make sure it remains above 80 °C.
2. Add 0.5 g of anhydrous sodium carbonate to 5 cm^3 of distilled water in a boiling tube. Put a bung in the top of the boiling tube and shake to dissolve the powder. Once the solution has been made, remove the bung and put the boiling tube into the hot water bath.
3. Add 0.4 g of stearin to a second boiling tube and put into the hot water bath. Watch the stearin melt.
4. Leave for five more minutes (to make sure the sodium carbonate solution is above 80 °C), remove both boiling tubes from the hot water bath and place in a test tube rack. Carefully add the hot sodium carbonate solution to the liquid stearin. What do you observe straight away?
5. What happens on cooling? Why can't the white stuff be stearin? Why can't the white stuff be sodium carbonate?



Task B Comparing the different substances

6. Half fill three test tubes with hot distilled water (between 50 °C and 60 °C).
7. In the first test tube add about a quarter of a spatula of stearin, in the second put about a quarter of a spatula of sodium carbonate and in the final test tube add about a quarter of a spatula of the white solid made in Task A.
8. Place bungs in the top of each test tube and shake. What do you observe?



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