

Chemistry Investigation

Hardness of water

Equipment:

- Teaspoon
- Four 100 mL beakers
- Magnesium sulfate crystals
- Soap solution
- Spatula
- Three stirring rods
- Dropping pipette
- Filter paper
- Sodium chloride solution
- De-ionising resin

Procedure:

1. Label the four beakers 'hard', 'hard', 'soft', and '?'.
2. Place a small amount (about the same as the size of a rice grain) of magnesium sulfate crystals into each of the 'hard' beakers.
3. Fill the 'hard' and 'soft' beakers to approximately 40 mL with distilled water. Stir the 'hard' beakers to dissolve the magnesium sulfate.
4. Fold a filter paper and place it into a funnel.
5. Place a teaspoon of de-ionising resin into the filter paper.
6. Hold the funnel over the sink and pour sodium chloride solution into the filter paper until the solution level is above the resin level.
7. Allow the salt solution to drain through the funnel, then place it in the '?' beaker.
8. Slowly pour the solution in one of the 'hard' beakers into the de-ionising resin funnel.
9. When all the solution has been transferred, remove the funnel from the beaker.
10. Add a few drops of soap solution to each of the three solutions, and stir for one minute.
11. Allow to settle. Record observations.

Cleanup:

The filter paper and de-ionising resin should be disposed of in the bin (*not* the sink).
The solutions can be poured down the sink.

