

Name:..... Date:.....

## Cleaning chemistry

We use soaps and detergents to keep us clean – our lives would be much more dirty and smelly without them. But what are they made from and how do they work?

### Testing shower gels and soaps

One main use for soaps and detergents is to keep our bodies clean. Many of us use soaps and shower gels for this. Find out more about them by doing these experiments.

#### What you need

- About 200 cm<sup>3</sup> distilled water
- 5–6 test-tubes
- Test-tube rack
- Universal Indicator solution
- pH paper
- Dropping pipettes – one for each liquid tested
- Potato peeler to take shavings from solid soaps
- Petri dish
- Ruler
- About 50 cm<sup>3</sup> vegetable oil
- Eye protection
- Copy of results table
- Shower gels and soaps to test.

#### What you do

1. Write the name of the shower gel or soap in the results table.
2. Put a small sample of the gel or soap in a test-tube. If solid, use the potato peeler to cut 3–4 small shavings. If a liquid, squeeze or pour one drop.
3. Add water to the tube to 3/4 full. Cover the top with a finger and shake to make a solution. Solid soaps may not dissolve completely.
4. Pour oil into the petri dish to just cover the base and make a very thin layer.
5. Add one drop of solution to the centre of the oil layer. Measure the diameter of the spread of solution. Write this down in the 'Oil test' column.
6. Add one drop of Universal Indicator to the solution. Use the chart to find the pH value. Write this in the 'pH' column. For pH paper, dip the paper into the solution then read the value. Use pH paper if the solution is coloured.
7. Make other observations about the solution, eg about the bubbles and how easily the substance dissolves. Put these in the 'Notes' column.
8. Repeat steps 1–7 for other shower gels and soaps. Test about six.

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Testing shower gels and soaps						
Results table						
Shower gel or soap	Cost	Volume (ml) or mass (g)	Cost per 100 ml or per 100 g	pH value	Oil test	Notes

## Questions

1. Are soaps and shower gels acids, alkalis or neutral substances?

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2. Which ingredients give these pH values?

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3. Which solution(s) make the oil spread furthest?

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4. Which soap is the 'best' cleaner?

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5. Which shower gel is the 'best' cleaner?

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6. What experiments could be done to test if these really are 'the best'?

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