

## Testing acids and bases on a microscale – student sheet

In this experiment, you will be testing various substances with indicator solution and looking for colour changes.

### Instructions

1. Place a clear plastic sheet over the table on your worksheet.
2. Put two drops of each solution in the appropriate box on the plastic sheet.
3. Add one drop of full-range indicator to each solution.
4. What conclusions can you draw from your observations?

### Table

|                   |  |
|-------------------|--|
| Hydrochloric acid |  |
| Sodium hydroxide  |  |
| Vinegar           |  |
| Sodium carbonate  |  |
| Ammonia           |  |
| Nitric acid       |  |
| Bleach            |  |
| Lemon juice       |  |
| Sulfuric acid     |  |
| Soap solution     |  |

## Health, safety and technical notes

1. [Read our standard health and safety guidance.](#)
2. Wear eye protection throughout (splash-resistant goggles to BS EN166 3).
3. Hydrochloric acid,  $\text{HCl}(\text{aq})$ ,  $1 \text{ mol dm}^{-3}$  is low hazard.
4. Nitric acid,  $\text{HNO}_3(\text{aq})$ , dilute  $1 \text{ mol dm}^{-3}$  is CORROSIVE.
5. Sulfuric acid,  $\text{H}_2\text{SO}_4(\text{aq})$ ,  $1 \text{ mol dm}^{-3}$  is an IRRITANT.
6. Sodium hydroxide solution,  $\text{NaOH}(\text{aq})$ ,  $1 \text{ mol dm}^{-3}$  is CORROSIVE.
7. Sodium carbonate,  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ ,  $0.5 \text{ mol dm}^{-3}$  is low hazard.
8. Vinegar, lemon juice and soap solution are all of low hazard.
9. Ammonia solution,  $\text{NH}_3(\text{aq})$ ,  $1 \text{ mol dm}^{-3}$  is an IRRITANT.
10. A 1:1 dilution of bleach is an irritant and if mixed with acid can release toxic chlorine.
11. A 1:1 solution of universal indicator is (probably) flammable (depending on the formulation). Keep away from sources of ignition.
12. Full-range indicator is a solution in propanol (or methylated spirits) which has a low surface tension and spreads out if used neat. Adding water increases the surface tension while still keeping the indicator in solution.