

3.1 Indicators to test acids and bases (alkalis)



How would you identify acids and bases?



When eating and drinking, we taste food and drinks with our tongues and experience how sour they are. The tongue has acid-sensitive taste buds which send a signal to the brain with information on how acidic the food is.

In the sciences, we use acid-base indicators whose colour tells us whether a substance is acidic, neutral or basic.

So does the colour of dark tea change when we add lemon juice?

We can use natural plant colours or artificial colours as acid-base indicators.



Set up:

- indicators for acids and bases (red cabbage solution as indicator)
- diluted vinegar
- diluted sodium carbonate solution
- 5 cups 200 ml
- 3 pipettes 3 ml
- acidic and basic samples from the household
- laminated template

1. Using the pipette, place one drop of indicator in blocks 1.1/1.2/1.3 on the laminated template.
2. Then add one drop of acid to block 1.1, one drop of tap water to block 1.2 and one drop of base/alkali to block 1.3.
3. Now place one drop of the different samples in blocks 2.1/3.1/4.1 etc. and one drop of indicator to each sample.
4. Use the colours in blocks 1.1/1.2/1.3 to describe the samples as acidic, neutral or alkaline.

	1	2	3	1	2	3
1						
2						
3						
4						

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Observing and documenting:



Analysing and reflecting:



1. What acidic foods are you aware of?
2. Why are acids used in food?



Technical application and vocational orientation:

Research question:

Search on the Siemens Stiftung Media Portal: indicator or red cabbage as interactive media.

Media Portal SIEMENS Stiftung

What is the pH value of red cabbage juice? What was added?

← acidic	neutral	basic →
Vinegar	Tap water	Soft drink
	Bar soap	Washing soda

Solution

Detection of acids and bases using red cabbage juice