

Acids and bases, two important types of chemicals

Acids and bases [*Säuren und Basen*] are two important types of chemicals in our everyday lives and in our environment, often in watery solutions. Both strong acids and strong bases are very aggressive and corrosive chemicals. When acids and bases mix they become salts. Bases which can dissolve in water are also called “alkalis”.

You can test how acidic [*sauer*] or alkaline [*basisch*] various dissolved substances are by adding them to the juice of red cabbage [*Blaukraut-Saft*] *. The chemical “cyanidin” that gives red cabbage (and some fruits and flowers) its colour is also a natural indicator for the “acidity” [*Säuregrad*] of a solution. Cyanidin’s structure changes depending on the acidity; each structure has a different colour: from red (acid) to blue (neutral) to green & yellow (base). This change is reversible. See: <https://de.wikipedia.org/wiki/Cyanidin>

*The cabbage is cut into small pieces, boiled in water for a few minutes and cooled off, then poured through a sieve for the juice. It keeps for several days.

Experiment

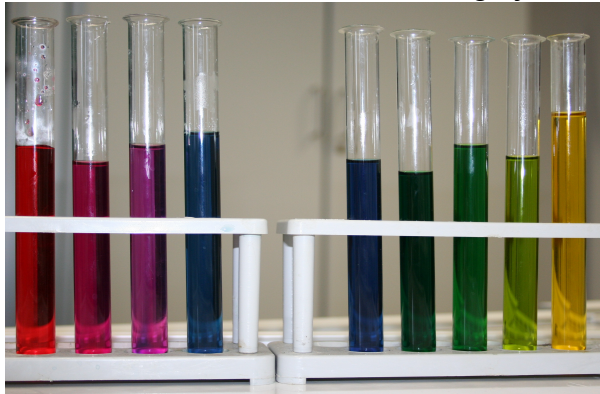


Test the following substances on the cabbage juice:

vinegar [*Essig*], lemon juice, baking soda [*Natron*], lye powder (Laugenpulver).

Now test whether the change is reversible!

The row of colours shows red cabbage juice in solutions with different acidity:



acid (red) neutral solution (blue) base (green - yellow)

The so-called “*pH scale*” shows how acidic or alkaline a substance is. The scale shows the pH of some common substances.

The scale goes from 0 to 14.

An acidic solution [*saure Lösung*] has a pH number < 7,

an alkaline solution > 7,

a neutral solution is exactly 7.

Voc.

gastric fluid: Magensäure

carbonated beverages: CO₂-Getränke

vinegar: Essig

distilled: destilliert (ohne Ionen, ohne Salz)

baking soda: Bikarbonat- (Back-) pulver

ammonia solution: Ammoniak

lye: Lauge

