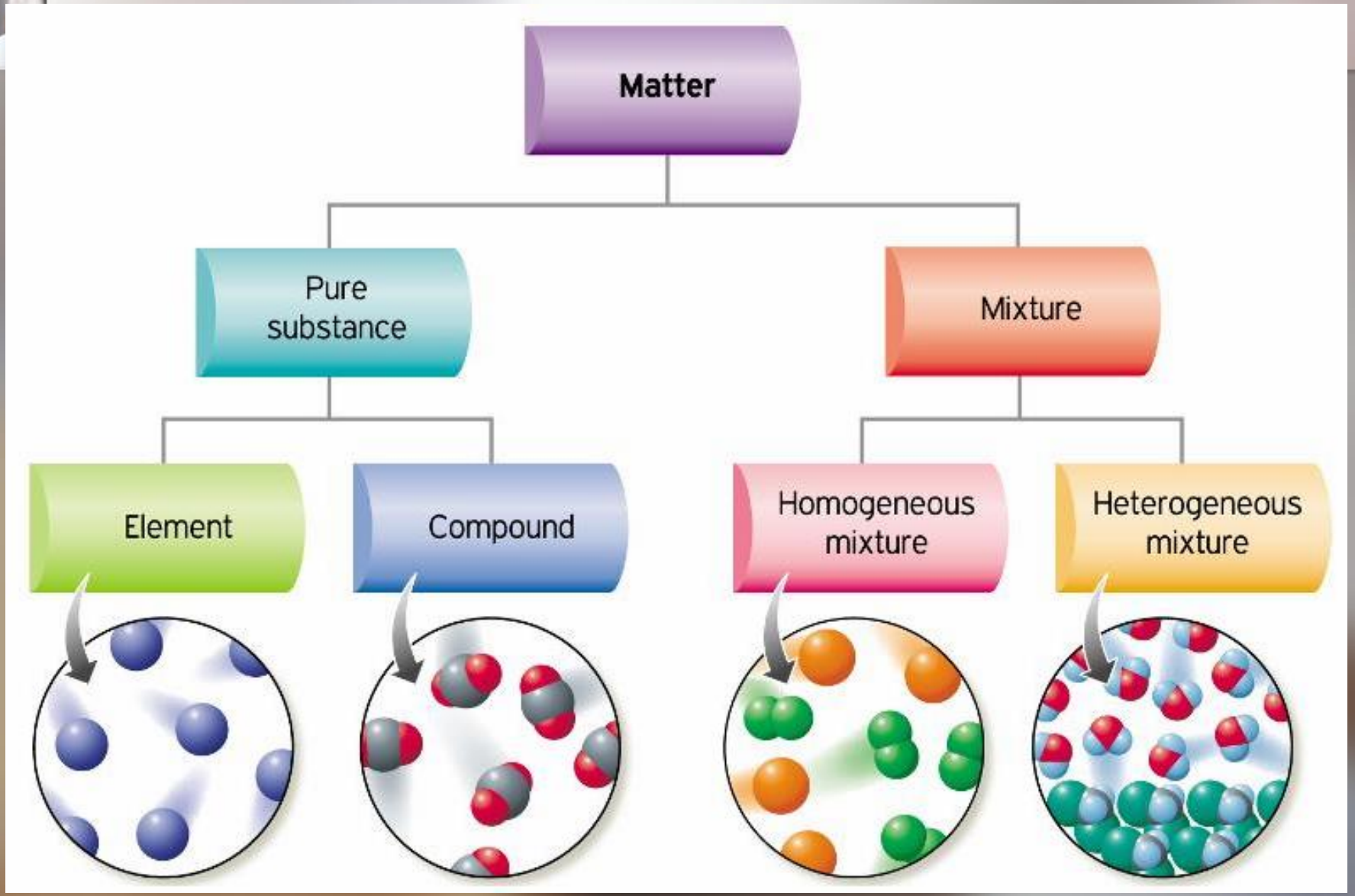
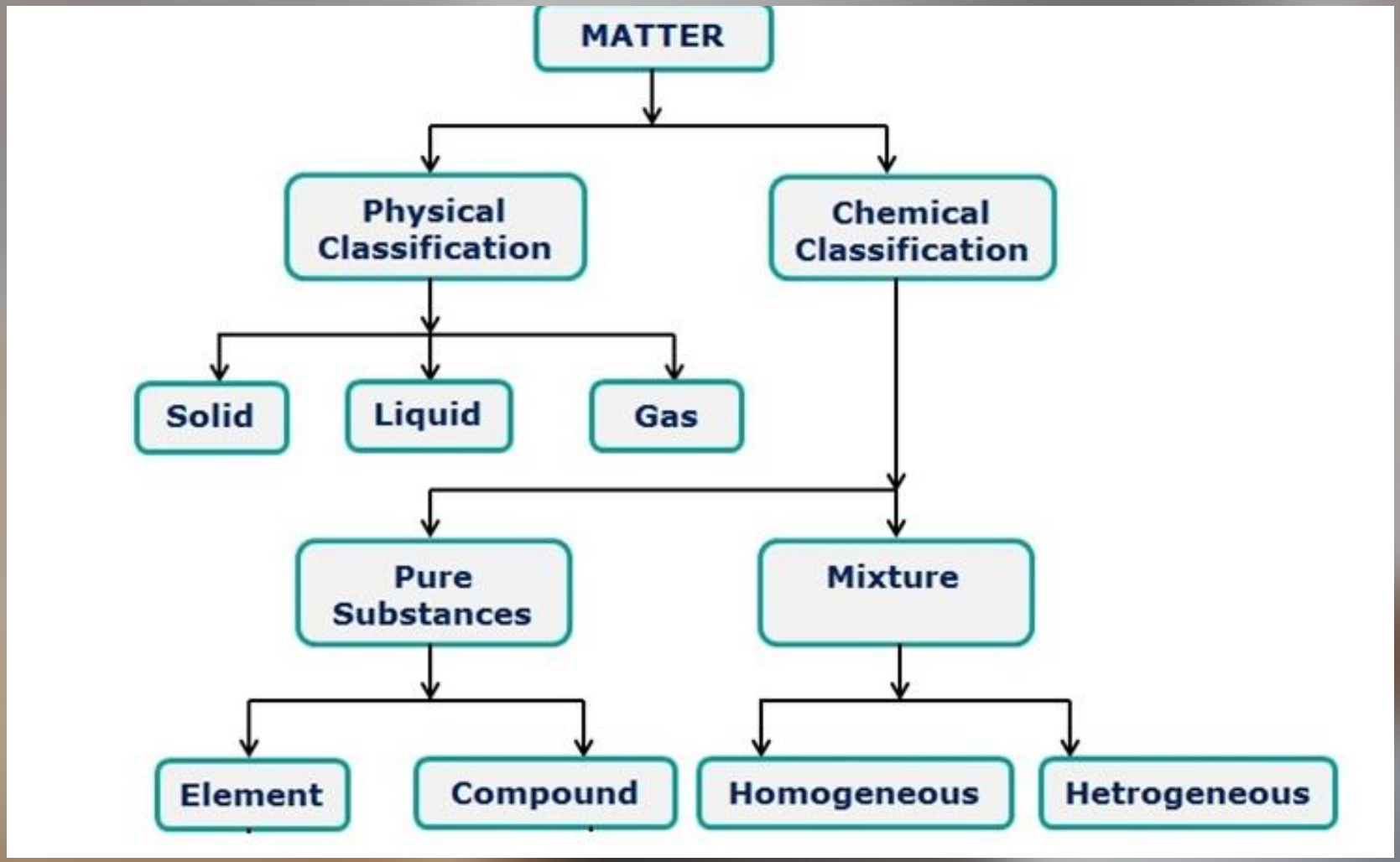
The National Orthodox School Shmaisani

Chapter4:
Acids, Bases, and pH

Pages 126 - 133


Matter
Pure substance
Mixture
Element
Compound
Homogeneous mixture
Heterogeneous mixture

Revision

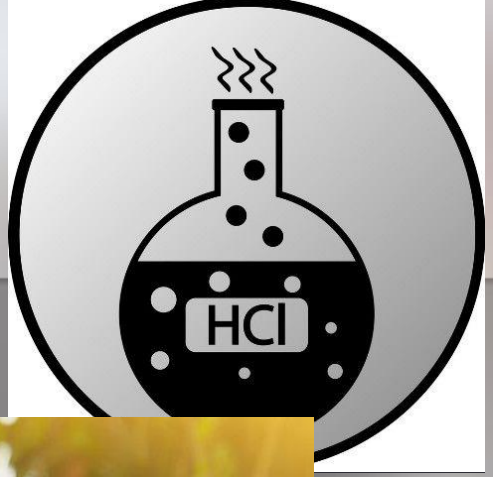

MATTER
Physical Classification
Chemical Classification
Solid
Liquid
Gas
Pure Substances
Mixture
Element
Compound
Homogeneous
Hetrogeneous

introduction

- Chemicals are classified into :
- A- Acids
- B- Bases
- C- neutrals

Acids


HEINZ
APPLE CIDER
VINEGAR
HEINZ
APPLE CIDER
VINEGAR
HEINZ
APPLE CIDER
VINEGAR


HCl

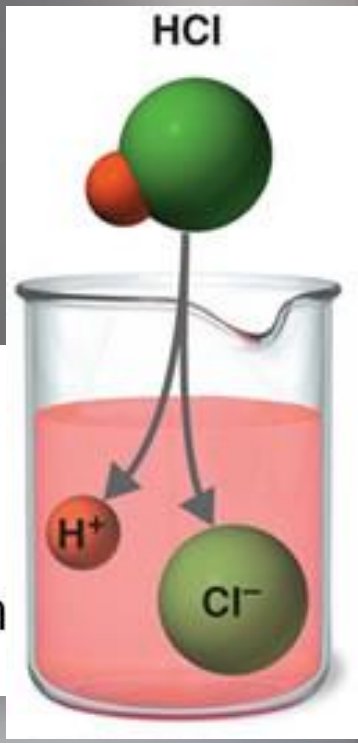

UPPER LEVEL
LOWER LEVEL
12V 4AH

4.2:What are acids?

Pages126- 127

- Solutions that have a sour taste and

Give hydrogen ions, H^{+1} in water.



$$HCl_{(g)} \xrightarrow{\text{water}} H^+_{(aq)} + Cl^-_{(aq)}$$

hydrochloric acid — hydrogen ion — chloride ion

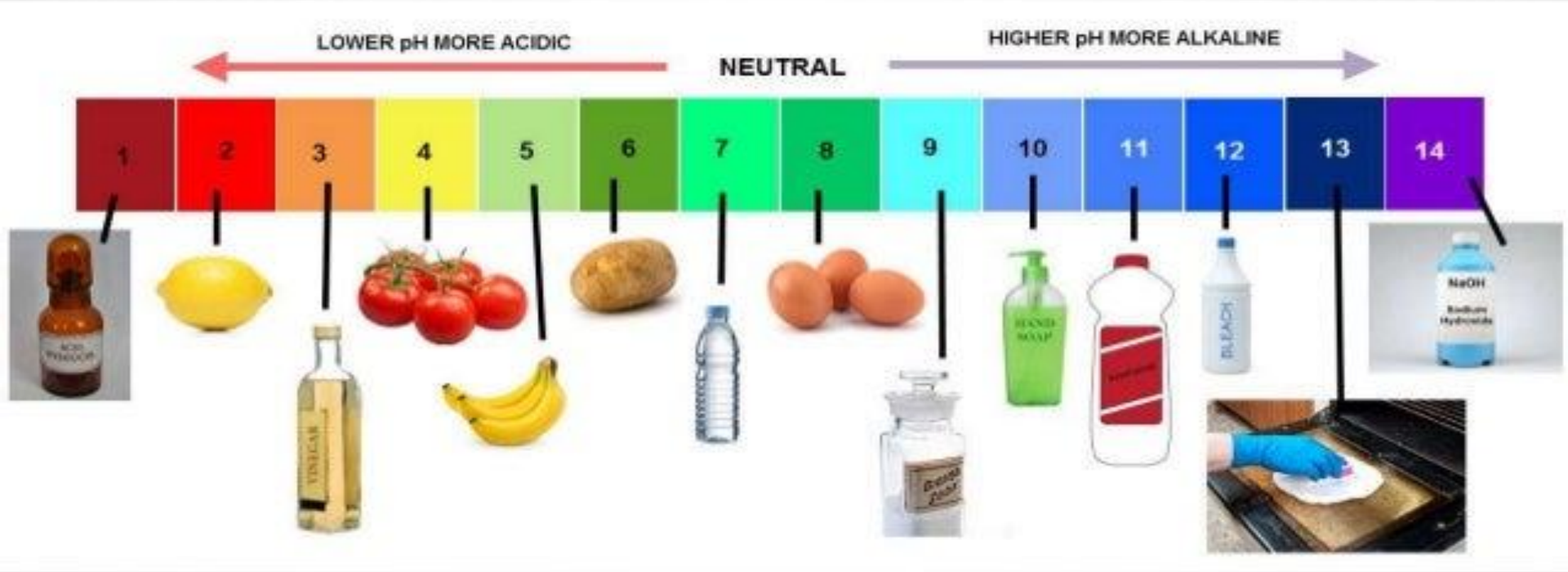
Characteristics of acids

1. All acids are solutions.
2. Acids taste sour.
3. Acids conduct electricity well, as they have positive and negative ions in the solution.

4. Acids turn blue litmus paper into red
(Litmus paper is an indicator)

5. Corrosive: Can burn skin and react with metals.
(stored in glass containers)
6. All acids contain the element <u>Hydrogen.</u>
7. Acids have a pH ranging from 0-6

Acids, alkalis and neutrals



Acid Examples

Sulfuric Acid	H_2SO_4	Battery acid
Nitric Acid	HNO_3	Used to make fertilizers and explosives
Phosphoric Acid	H_3PO_4	Food flavoring
Hydrochloric Acid	HCl	Stomach acid
Acetic Acid	CH_3COOH	Vinegar
Carbonic Acid	H_2CO_3	Carbonated water

According to concentration acids are classified into :

- A- Concentrated acids: more number of acid particles dissolved in water, so more H ions present. (corrosive – can destroy skin and attack metals)
- B- Diluted acids: low number of acid particles dissolved in water, so less H ions present. (irritant/ harmful – skin may become red and blistered)

4.3. What are alkalis?

Pages 128- 129


good
coconut
SOAP
FARMHOUSE FRESH


Baking Soda

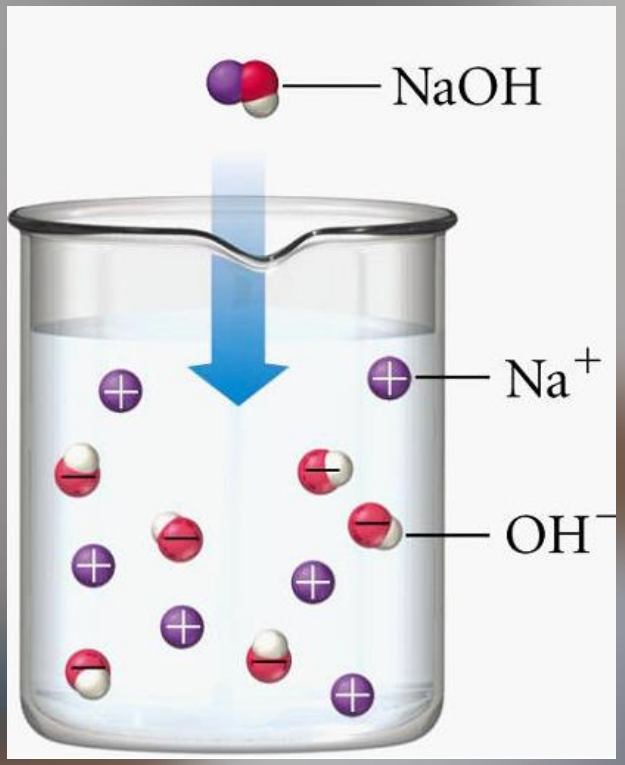

Austin's
Clear
Ammonia
NET 64 FL. OZ.


NEW
DIGENE
gel
Quick relief from acidity and gas
Strawberry
200ml

4.3. What are alkalis?

Pages 128- 129

-Substances that form hydroxide ions (OH^{-1}) ions when dissolved in water.



Examples of alkalis

What is a weak alkali?

- Alkalis are found in soaps and other materials used for cleaning.

It is safe to handle these alkalis, which can feel soapy. These alkalis are known as **weak alkalis**.

Common Alkalis:

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a. KOH – potassium hydroxide

b. NaOH – sodium hydroxide

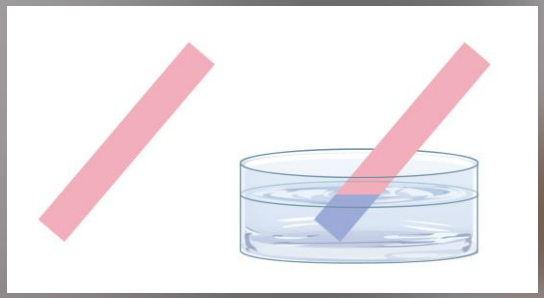
c. Ammonia (NH_3) is a base.

in water becomes Ammonium Hydroxide (NH_4OH).

A. Characteristics of Alkalis:

1. Taste bitter
2. Feel soapy to touch.
3. Can burn skin (caustic/ corrosive).
4. Alkalis change oil and fat into soluble soapy substance, that can be washed away with water.

5. Alkalis turn red litmus paper into blue



6. All Alkalis contain Hydroxide particles (OH)
7. Alkaline solutions conduct electricity well.

4.4: Indicators:

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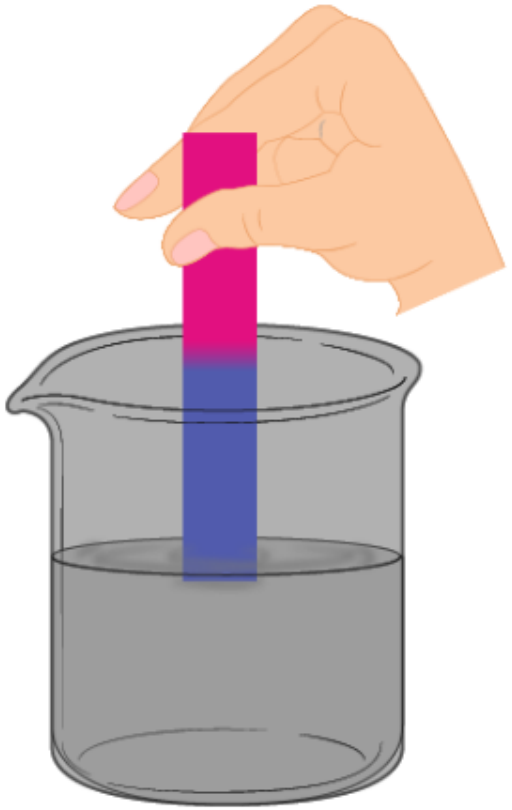
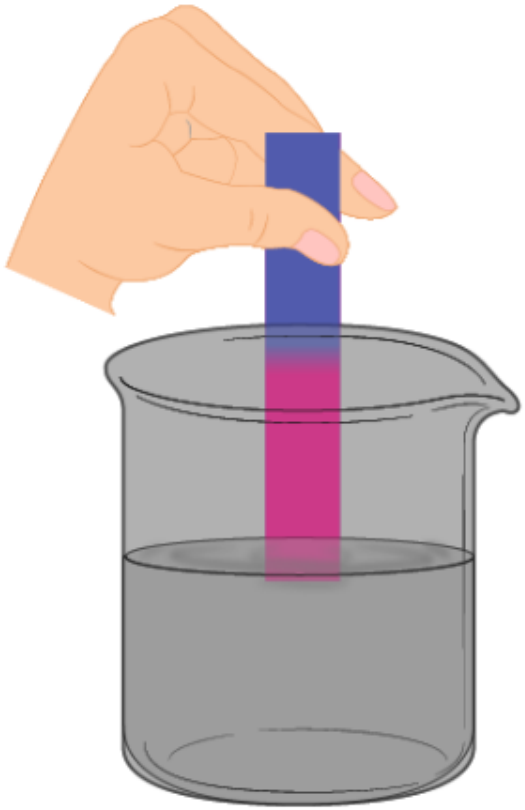
- A substance that shows whether a solution is an acid or alkali by changing its colour.

Litmus paper indicators:



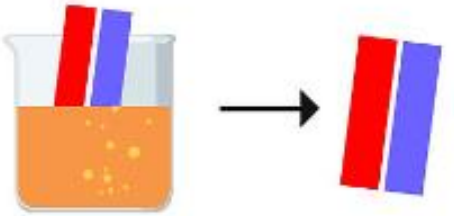
In an alkali, red litmus paper turns blue.



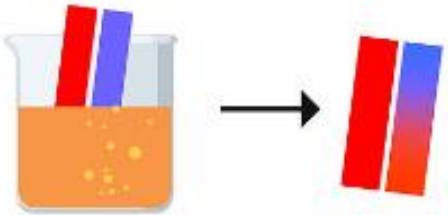
In an acid, blue litmus paper turns red.

teachoo

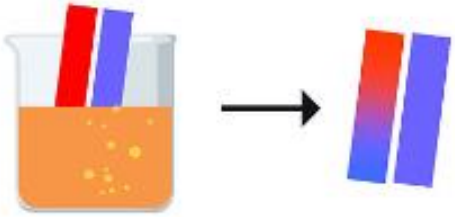
NATURAL INDICATORS



Red litmus remains Red
Blue litmus remains Blue



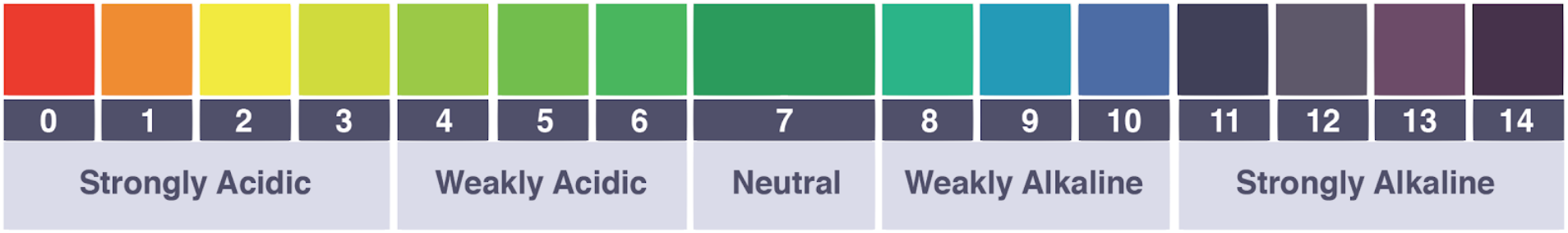
Red litmus remains Red
Blue litmus turns Red

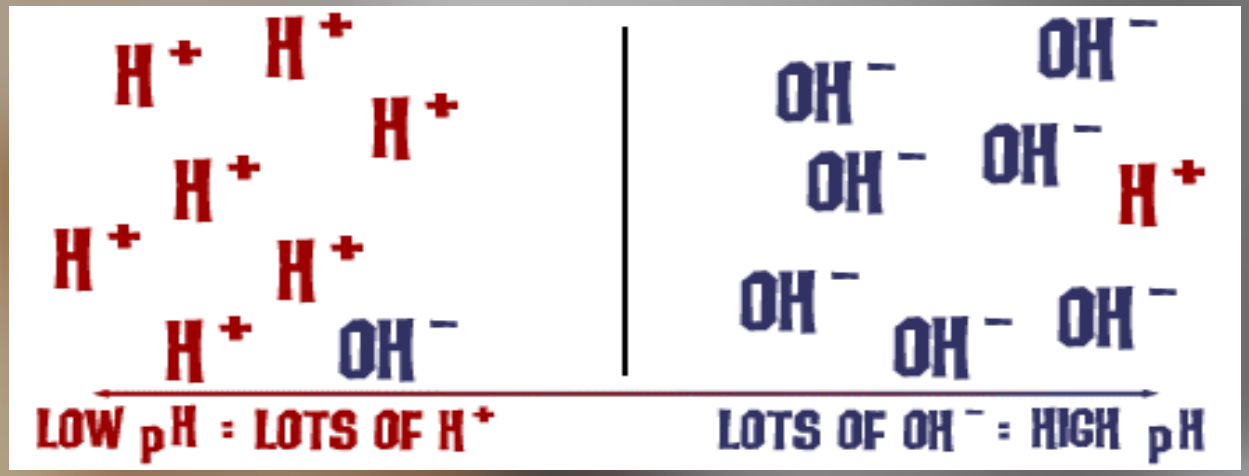


Red litmus turns Blue
Blue litmus remains Blue

4.5: Universal Indicator: page 132

- A mixture of indicators that give range of colours, used to show how strong or weak an acid or an alkali is.


0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Strongly Acidic
Weakly Acidic
Neutral
Weakly Alkaline
Strongly Alkaline


H+ H+
H+
H+
H+ H+
H+ OH−
OH− OH−
OH− OH− H+
OH− OH− OH−
LOW pH = LOTS OF H+
LOTS OF OH− = HIGH pH