Electrolytes vs Non-electrolytes

	Electrolyte	Non-electrolyte
Definit-ion	A substance that when dissolved in water, conducts electricity.	A substance, that when dissolved in water DOES NOT conduct electricity. (ex: sugar)
Why	Because when dissolved in water, ions (+ and - charge) are produced. (because molecules separate)	Because when dissolved in water, ions ARE NOT produced (molecules stay together)
How to Identify them	The 1st element will start with a metal (Found in group 1, 2 or 3) ex- NaCl	The first element will start with a non-metal (found in groups 4-7) ex- PCl_3

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Electrical Conductivity of a solution is its ability to allow an electric current to flow through it.

The strength of electrolyte is determined by how bright the light is.

** Pure water does not conduct electricity; the substances(electrolytes) dissolved in the water are what allow the electric current to flow through the solution.

Electrolyte Dissociation

Def: The separation of a molecule into its atoms (this is a physical change and does not change the nature of the solute)

Ex: $NaCl_{(s)} \Rightarrow Na^{+}_{(aq)} + Cl^{-}_{(aq)}$

$CaS_{(s)} \Rightarrow Ca^{+2}_{(s)} + S^{-2}_{(s)}$

How to determine if electrolyte dissociation will occur?

****Does it conduct electricity???**

Look at **1st of compound.**

1st element is a **metal = electrolyte** = electricity is produced

1st element is a **non-metal = non-electrolyte** = no electricity

***Elements starting with 'H' will conduct electricity.**

Which examples will conduct electricity?

$CaCl_2$

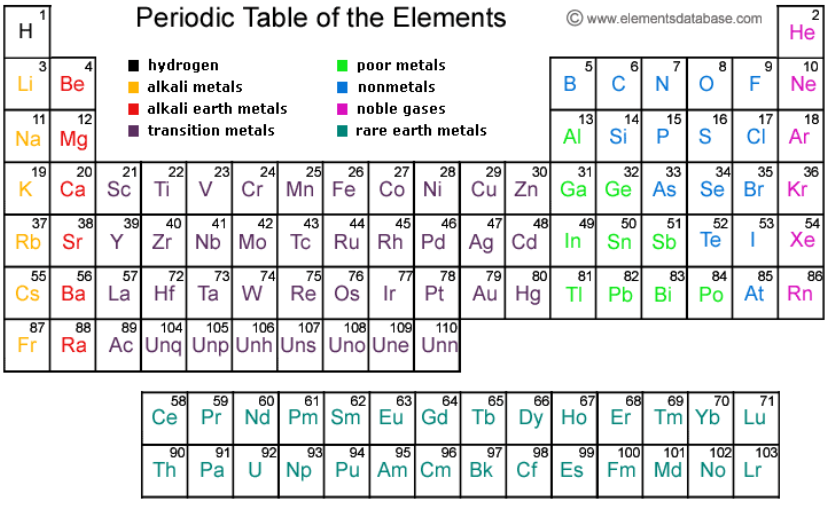
H_2SO_4

P_2S_3

KOH

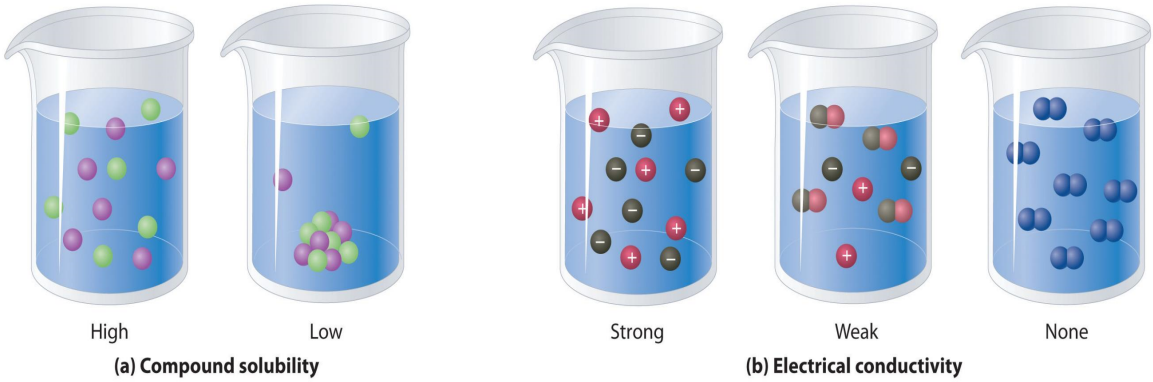
SCl_2

CCl_4



Conduction capabilities

Looking at the picture below, determine which solutions have high conductivity, low conductivity and no conductivity and explain why.



Types of electrolytes

	Acid	Base	Salt
Definition	Releases H+ ions	Releases OH- ions	Metal + Non-metal
Electrolyte	yes	yes	yes
Litmus paper	Blue turns Red	Red turns blue	No change
Found in	Vinegars Fruit juice Soda	Cleaning products Heartburn meds	Fertilizers Bath Salts
Recognize ***	**Starts with "H"** **ends with a non-metal**	**Ends with "OH"** **Starts with a Metal**	**Metal and Non-metal**
Examples ***	**HCl** **H_3PO_4** **H_2SO_4** **H_2S** **CH_3COOH (Vinegar)**	**NaOH** **LiOH** **$Ca(OH)_2$** **$Al(OH)_3$**	NaCl $CaCl_2$ $MgBr_2$ $AlPO_3$
Exceptions *MEMORIZE	**H_2O**	**C_2H_5OH** **CH_3OH** **CH_3COOH (Vinegar)**	

From the molecular formula, how can you determine if a substance is a non-electrolyte?

Does not start with "H"

Does not end in "OH"

Does not start with a metal!

Past Exam Questions

1. You have a sample of sodium hydroxide (NaOH), which is a white solid. You want to show in the laboratory that this sample is a base. Under which condition will this sample manifest its basic properties?

A) On condition that it is dissolved in water
B) On condition that there is sufficient quantity of it
C) On condition that it is sufficiently compressed
D) On condition that it is in powder form

2. The following four compounds are to be mixed (separately) with water:

$C_6H_{12}O_6$ $MgSO_4$ C_2H_5OH KOH

Which two of these compounds will produce an electrolytic solution when mixed with water?
A) $C_6H_{12}O_6$ and $MgSO_4$
B) $MgSO_4$ and KOH
C) $C_6H_{12}O_6$ and C_2H_5OH
D) C_2H_5OH and KOH

1. Four chemical substances are given below.

1. H_2SO_4 2. $Ca(OH)_2$
3. $MgCl_2$ 4. C_2H_5OH

Which of these substances is a base?
A) Substance 1
B) Substance 2
C) Substance 3
D) Substance 4

Attachments

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