

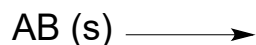
CONCEPT: ELECTROLYTES

- **Electrolytes** represent compounds that conduct _____ when entering their ionic forms when dissolved or melted.

□ Recall, *conductivity* is a physical property that deals with the ability of electric current to flow through a material.

Strong Electrolytes

- Represent solutes that _____ dissolve into ions when placed in a solvent.



□ Strong electrolytes are **Strong Acids**, **Strong Bases**, or the _____ **Compounds** (Solubility Rules).

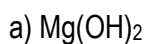
Strong Acids				
Haloacids	Trioxides	Tetraoxides	8A (18)	
_____ Hydrochloric acid	_____ Chloric acid	_____ Perchloric acid	5A (15)	6A (16)
_____ Hydrobromic acid	_____ Bromic acid	_____ Perbromic acid	H_____	7A (17)
_____ Hydroiodic acid		_____ Periodic acid		
	_____ Nitric acid	_____ Sulfuric acid		

EXAMPLE: Provide the equation when sulfuric acid dissolves in a solvent.

- When certain Group _____ and _____ metals combine with the following anions they form **Strong Bases**.
 - The anions include: _____ (hydroxide), _____ (hydride), _____ (amide), and _____ (oxide).

Strong Bases				
Periodic Table	Hydroxides	Hydride	Amide	Oxide
<div>1A (1) 2A (2) 1 H 2 Be 3 Mg 4 5 6</div>	_____ + _____ → _____	_____ + _____ → _____	_____ + _____ → _____	_____ + _____ → _____
	_____ + _____ → _____	_____ + _____ → _____	_____ + _____ → _____	_____ + _____ → _____

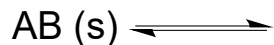
PRACTICE: Which of the following represents a strong base?



CONCEPT: ELECTROLYTES

Weak Electrolytes

- Represent solutes that _____ dissolve into ions when placed in a solvent.



- ☐ The presence of reversible arrows indicates that we have a weak electrolyte.
- ☐ Weak electrolytes are either weak acids or weak bases.

Weak Acids

- If an acid is not _____ then it is automatically going to be _____.

EXAMPLE: Which of the following represents a weak binary acid and therefore a weak electrolyte?

- a) H_2SO_3 b) HCl c) HNO_2 d) HCN e) $HBrO_3$

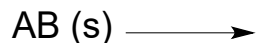
Weak Bases

- Recall these patterns for identification.
 - ☐ Weak bases include from Group 2A _____ and _____, _____ or **neutral amines**.

Amines	
<div>N + H</div> <p><input type="checkbox"/> An amine is a compound that contains N and H. _____ Ammonia</p>	<div>C + N + H</div> <p><input type="checkbox"/> An amine is a compound that contains C, N, and H. _____ Methylamine</p>

Non-Electrolytes

- Consist of *molecular/covalent compounds* that _____ dissolve into ions.



- ☐ Non-electrolytes include water, sugars and alcohols.

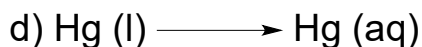
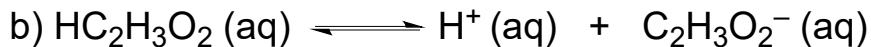
Non-Electrolytes	
<div>Sugars</div> <p><input type="checkbox"/> Covalent compounds with the formula of $C_n(H_2O)_n$. _____ Glucose _____ Sucrose</p>	<div>Alcohols</div> <p><input type="checkbox"/> Covalent compounds with C + H connected to OH. _____ Methanol _____ Phenol</p>

PRACTICE: Which of the following represents a non-electrolyte?

- a) $(CH_3)_2NH_2$ b) $NaOH$ c) HIO_3 d) C_2H_5OH e) $CsNH_2$

CONCEPT: ELECTROLYTES

PRACTICE: Each of the following reactions depicts a solute dissolving in water. Classify each solute as a strong electrolyte, a weak electrolyte or a non-electrolyte.



PRACTICE: Which of the following statements is true?

- a) Perbromic acid, HBrO_4 , represents a weak electrolyte
- b) Lithium chloride, LiCl , represents a non-electrolyte
- c) Formic acid, HCO_2H , represents a strong electrolyte
- d) Zinc Bromide, ZnBr_2 , represents a strong electrolyte
- e) Propanol, $\text{C}_3\text{H}_8\text{OH}$, represents a weak electrolyte