

Acids, Bases, and Salts

Acids

- Arrhenius' definition: an acid releases H^+ in aqueous solution (NB. 'in aqueous solution' means dissolved in water).
- The formula for an acid begins with H.
e.g. HCl, HCH_3COO , H_2SO_4 , H_3PO_4 , etc.
N.B. The exception is CH_3COOH (acetic acid), which is an alternate way of writing HCH_3COO .
- Acids taste sour (e.g. lemon juice, vinegar).
- Acids conduct electricity in aqueous solution.
- Acids range in pH from 1-7 (not including 7).
- Acids are corrosive (they will corrode metal or living tissue).
- Acids turn blue litmus paper red (red litmus will stay red in an acid).
- Acids are ionic compounds.

Bases

- Arrhenius' definition: a base releases OH^- in aqueous solution.
- The formula for a base ends with OH^- e.g. NaOH, $Ca(OH)_2$, $Al(OH)_3$, NH_4OH , etc.
- Bases taste bitter.
- Bases conduct electricity in aqueous solution.
- Bases range in pH from 7-14 (not including 7).
- Bases are corrosive (e.g. oven cleaner, detergents).
- Bases turn red litmus paper blue (blue litmus will stay blue in a base).
- Bases will neutralize acids.
e.g. antacids like $Mg(OH)_2$ are used to neutralize stomach acid.
- Bases are ionic compounds.

Salts

- These are all ionic compounds that are not acids or bases.
- All metal and nonmetal combinations (as long as metal is not H and nonmetal is not OH) are salts. e.g. $CaBr_2$, NH_4Br , NaCl, $FeCl_3$, Cu_2CO_3 , etc.
N.B. a polyatomic ion may replace the metal or nonmetal portion of an ionic compound.

Question

Classify the following compound as acids, bases, or salts:

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| 1. CaS | 6. $Mg(OH)_2$ |
| 2. HBr | 7. CH_3COOH |
| 3. Li_3PO_4 | 8. $Fe(OH)_2$ |
| 4. NH_4OH | 9. $AlBr_3$ |
| 5. HCl | 10. H_2CO_3 |