

Acids and Bases

chapter 9

Common Acids/Bases

Acids

citrus fruits
aspirin
Coca Cola
vinegar
vitamin



Bases

baking soda
detergents
ammonia cleaners
Tums & Rolaids
soap



Acids and Bases

Salts: table salt



Product from acid + base

Acids and Bases

Properties

Acids: 1. sour

2. change color of dyes

3. dissolve metals to form hydrogen

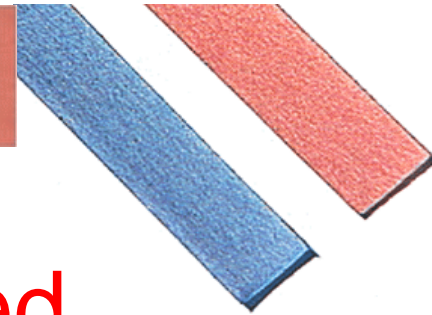
4. react with carbonates to form CO_2

5. neutralize bases

water soluble acids form hydrogen ions

Acids and Bases

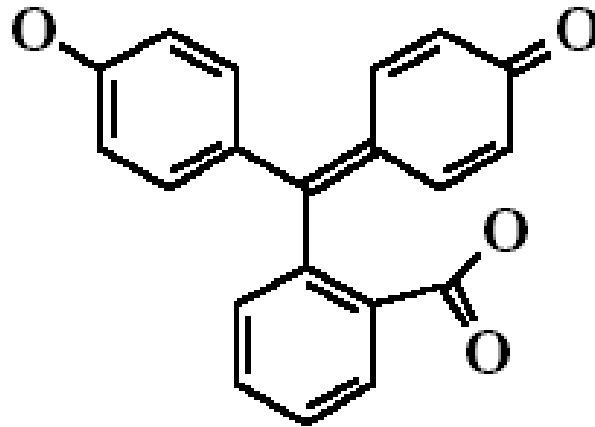
litmus



In acid turns **red**

In base turns **blue**

Acids and Bases



Phenolphthalein
(red in base)



Acids and Bases

Acid Definition:
substance that produces hydrogen ions in water called a **Lowry-Bronsted acid**

Acids/Base Theories

Bronsted - Lowry Definition (1923)



Acid:
proton donor

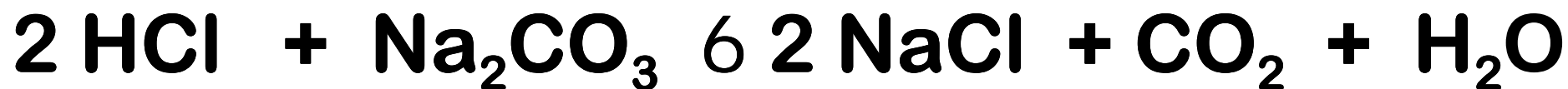
Base:
proton acceptor



Some Reactions



Both are neutralization reactions



Common Acids

All are corrosive

HCl **cleans metals, brick, cement**

H₂SO₄ **car batteries, fertilizers,
industrial chemicals,
nitroglycerin**

HNO₃ **fertilizers, dyes, plastics,
explosives**



Assassination of President McKinley

Leon Czolgosz

Acids and Bases

Properties

Bases: 1. bitter

2. change color of dyes

3. soapy feel

4. neutralize acids

**In water, soluble bases can form
 OH^- or CO_3^{2-} or O^{2-} ions**

These ions react with H^+ ions

NH_3 another common base

Common Bases

NaOH	drain cleaner, soap manufacture
Ca(OH)₂	lime, mortar, plaster, cement
NH₃	cleaner
Mg(OH)₂	milk of magnesia

Drugs: cocaine, morphine, nicotine

pH Scale

Measures
acidity

scale:
0 - 14

acid

base

High H⁺
Concentration

Acidic

Neutral

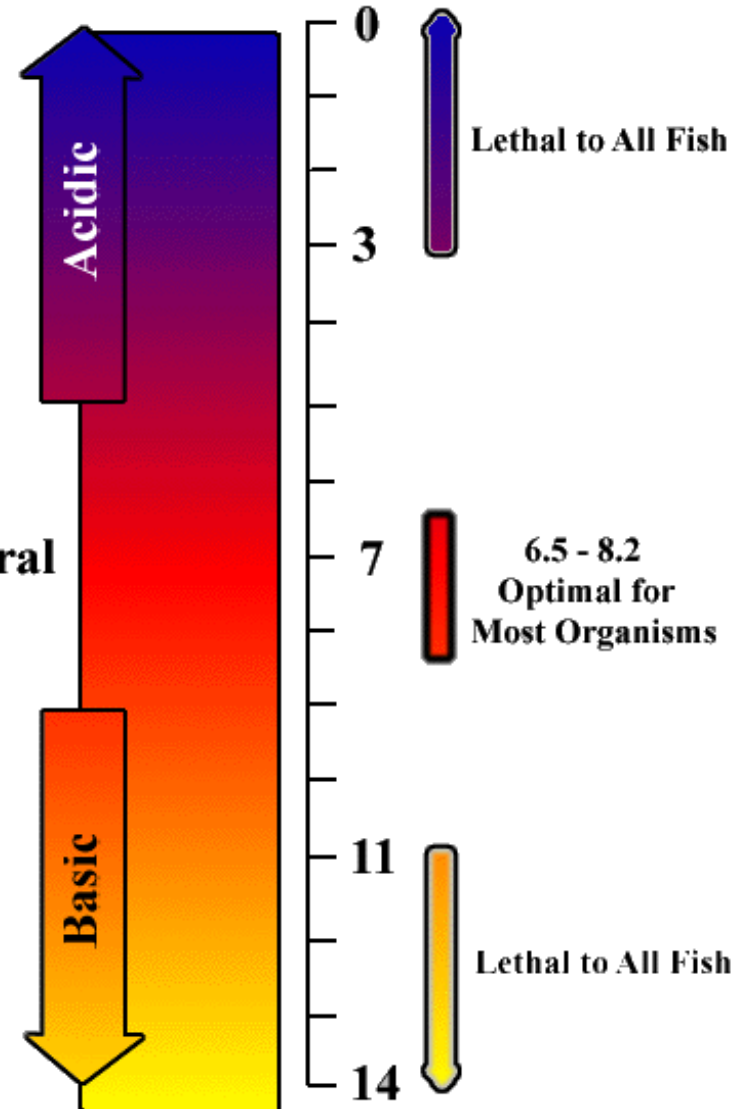
Low H⁺
Concentration

Basic

Lethal to All Fish

6.5 - 8.2
Optimal for
Most Organisms

Lethal to All Fish



pH Scale



Insta-TEST
50 Pool & Spa Test Strips
Free Chlorine (Bromine)
Alkalinity
pH

3

Just swirl & read instantly!

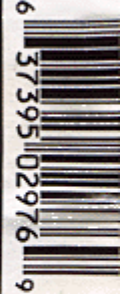
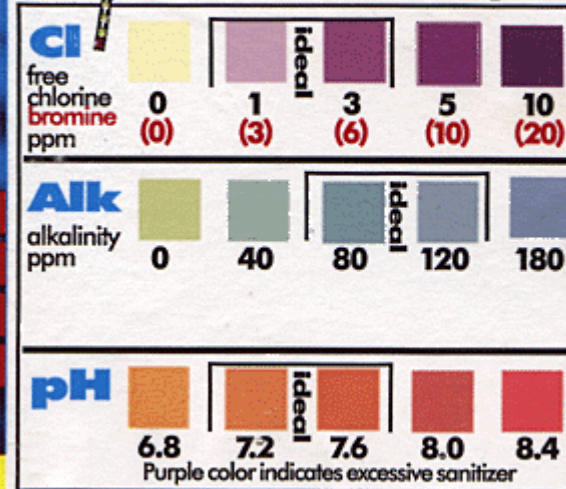
LAMOTTE
 Chestertown, MD 21620 www.lamotte.com/insta

TO USE:



Immerse strip. **SWIRL 3 TIMES***. Remove with **pads face up**. **DO NOT SHAKE OFF EXCESS WATER**. Read immediately
 TBr → FCl → Alk → pH.

*In cup-size samples, swirl 5 times.



Code 2976

made in USA

TIPS:

- Keep wet fingers out of the vial.
- In pools, immerse strip to a depth of 12"-18".
- Close vial tightly after removing strip.
- Store in a cool, dry place.

33093 EXP. 50!

Salts

Product of acid + base reaction



when an acid reacts with a base a salt and water form

when the base is a carbonate
also form CO_2 gas

pH Scale

$$\text{pH} = -\log [\text{H}^+]$$

**$[\text{H}^+]$ = no. moles H^+ per liter
of solution molarity**