



PROFESSIONAL

Basic Chemistry Training

THE pH SCALE



ACID

NEUTRAL

ALKALINE

0-----7-----14

5-----9

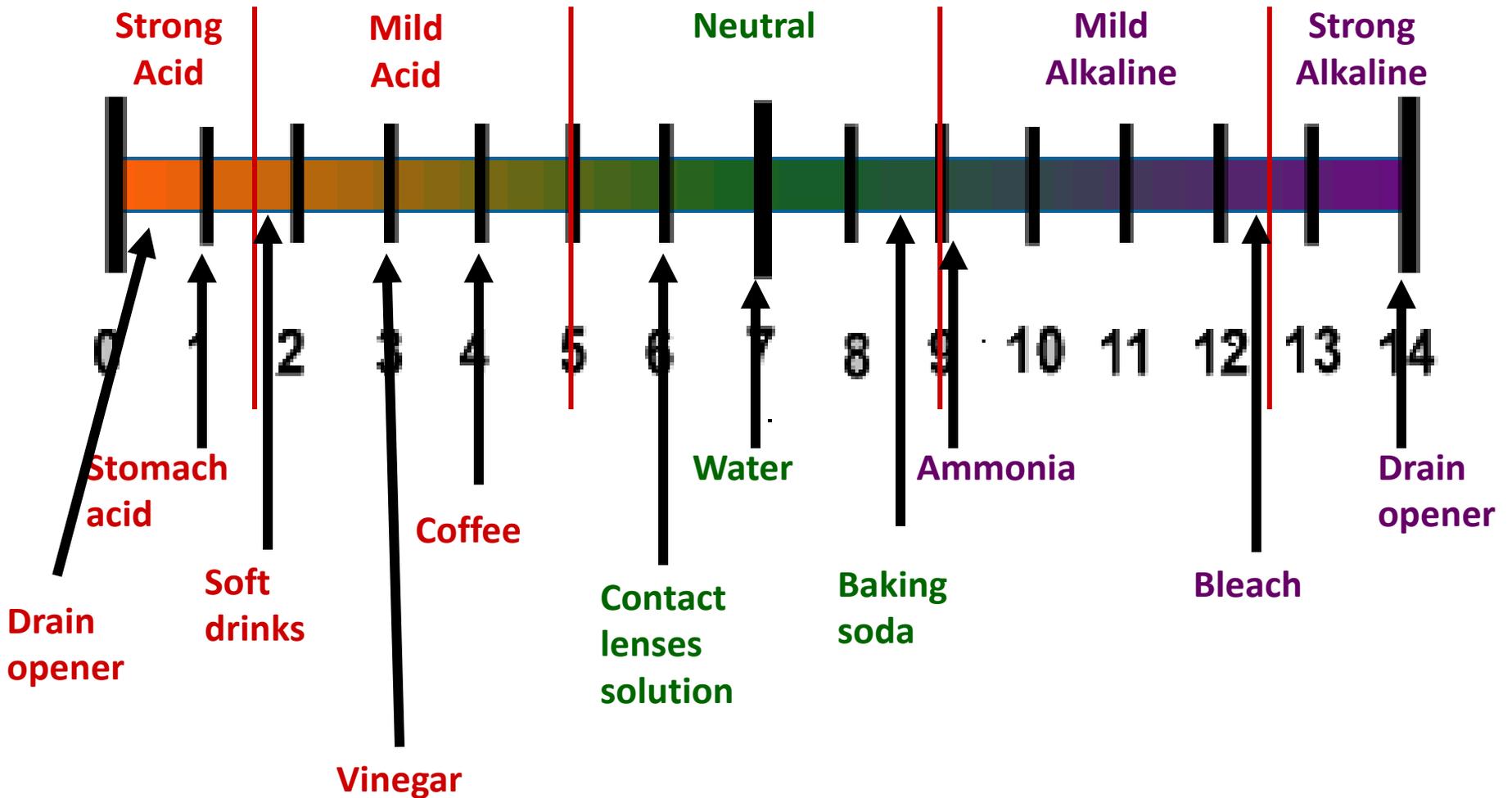
Acceptable Disposal Range

The pH scale ranges from 0-14

- * pH of 7 is Neutral
- * pH less than 7 is Acidic
- * pH more than 7 is Alkaline



COMMON pH EXAMPLES:



PRODUCT CLASSIFICATIONS

è ALKALINE

è NEUTRAL

è ACIDIC

è SOLVENT



Water-Based



No Water



ALKALINE & CAUSTIC

Alkaline solutions

pH greater than 9

used as general cleaners and degreasers.

Caustic solutions

pH of 13 or 14

contain **Potassium Hydroxide** or **Sodium Hydroxide**.

release energy quickly - are very aggressive on soils, surfaces, soft metals & human skin (IMMEDIATE HARM)

Caustics are always alkaline, alkalies are not always caustic.



ACIDS

Acid

pH less than 5

used to brighten metals, remove scale & rust, etch concrete
acid types vary in aggressiveness.

the primary acids used in Zep products are:

Phosphoric, Muriatic, Sulfuric, and Hydrofluoric

Hydrofluoric Acid

very toxic and can be fatal if used incorrectly.

Restricted for sale to approved customers only.



SOLVENTS

Solvents

do not contain water, so therefore a pH can not be measured
some solvents evaporate quickly, some slowly. In general, fast evaporation means flammable (chlorinated solvents are an exception)
they vary in “strength” (the ability to remove soils or tendency to attack surfaces)
used for degreasing and removal of coatings

BE CAREFUL - solvents can damage plastic, rubber, painted surfaces, and more



NATURAL SOLVENTS

Solvents derived from natural, organic sources; considered biodegradable

Excellent degreasers, free rinsing

When water is added, the product emulsifies (becomes milky)

Can damage rubber, plastic, vinyl, and paint with extended contact

Citrus Solvents

Solvents derived from citrus (usually **d-limonene**)

Pine Solvents

Solvents derived from pine oil (usually **pine terpene**)

Soy Solvents

solvents derived from soy (usually **soy methyl ester**)



BUTYL CLEANERS

Butyl (2-Butoxyethanol)

is a water-based solvent commonly used in alkaline cleaning products

generally, the higher the butyl content, the better the product will remove grease; and the higher the alkalinity content, the better the product will be for dirt and general soils.

Very effective cleaner but poses environmental and health concerns for users.



APPLYING BASIC CHEMISTRY

There are **Four** Major Factors That Determine Which Product To Use For A Cleaning Application:

- **Soil** To Be Removed
- **Surface** From Which Soil Is To Be Removed
- **Cleaning Method** Which Can Be Used
- Are there any **Other** restrictions or variables to be aware of
(e.g. specific chemicals not allowed) which will affect the choice of chemical.

