







pH
Hydrogen Ion
Exponent
6.5 - 8.5

Definition

- $\text{pH} = -\log_{10} [\text{H}^+] = \log_{10} 1/[\text{H}^+] \text{ OR } [\text{H}^+] = 10^{-\text{pH}}$

This method has advantage because all states of acidity and alkalinity of solutions with respect to hydrogen and hydroxide ions can be expressed by a series of positive numbers between 0 to 14

$[\text{H}^+]$	(10^0)	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-7}	10^{-8}	10^{-9}	10^{-10}	10^{-11}	10^{-12}	10^{-13}	10^{-14}
pH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
pOH	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
$[\text{OH}^-]$	10^{-14}	10^{-13}	10^{-12}	10^{-11}	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	10^0

Significance

- Chemical reactions depend on pH
- Water Supply and Waste Water Treatment
- Water Softening ,Precipitation., Coagulation, Disinfection, Corrosion Control,Alkalinity and CO_2 Measurement and fluoride activity

Measurement

- Electrometric method - Using pH meter and electrodes
- e.m.f. produced in glass electrode system varies linearly with pH
- pH meter is calibrated potentiometrically with electrode system using standard buffers having assigned values so that $\text{pH} = -\log_{10} [\text{H}^+]$