















ACIDS, ALKALIS, AND THE pH SCALE

The pH scale is a way of gauging the acidity or alkalinity of a solution. It is calculated using: $\text{pH} = -\log_{10}[\text{H}^+]$. Adding an acid to water increases the H^+ (H_3O^+) concentration, and decreases the OH^- concentration. An alkali does the opposite.

	pH	H ⁺ CONCENTRATION (in moles per litre)	OH ⁻ CONCENTRATION (in moles per litre)	EVERYDAY EXAMPLE
ALKALINE Turquoise → Blue → Purple	14	1×10^{-14}	1	Drain Cleaner 
	13	1×10^{-13}	0.1	Bleach 
	12	1×10^{-12}	0.01	Ammonia 
	11	1×10^{-11}	0.001	Soap 
	10	1×10^{-10}	1×10^{-4}	Antacid Tablets 
	9	1×10^{-9}	1×10^{-5}	Baking Soda 
	8	1×10^{-8}	1×10^{-6}	Seawater 
NEUTRAL Green	7	1×10^{-7}	1×10^{-7}	Pure Water 
ACIDIC Red → Orange → Yellow	6	1×10^{-6}	1×10^{-8}	Urine (average) 
	5	1×10^{-5}	1×10^{-9}	Black Coffee 
	4	1×10^{-4}	1×10^{-10}	Tomato Juice 
	3	0.001	1×10^{-11}	Soda 
	2	0.01	1×10^{-12}	Lemon Juice 
	1	0.1	1×10^{-13}	Stomach Acid 
	0	1	1×10^{-14}	Battery Acid 