



Dissolved Oxygen (DO): 2 Tablets, small vial, overfill with water

- Aquatic animals need oxygen to survive. Natural waters with high DO levels can support a diversity of aquatic organisms.
- Cold water can hold more dissolved oxygen than warm water.
- High levels of bacteria from sewage pollution or large amounts of rotting plants can cause the % saturation to decrease.

Biochemical Oxygen Demand (BOD):

- A measure of the quantity of dissolved oxygen used by bacteria as they break down organic wastes.
- In slow moving and polluted rivers, much of the available dissolved oxygen is consumed by bacteria robs DO from other aquatic organisms

% saturation

		Dissolved Oxygen		
		0 ppm	4 ppm	8 ppm
Temp °C	2	0	29	58
	4	0	31	61
	6	0	32	64
	8	0	34	68
	10	0	35	71
	12	0	37	74
	14	0	39	78
	16	0	41	81
	18	0	42	84
	20	0	44	88
	22	0	46	92
	24	0	48	95
26	0	49	99	
28	0	51	102	
30	0	53	106	

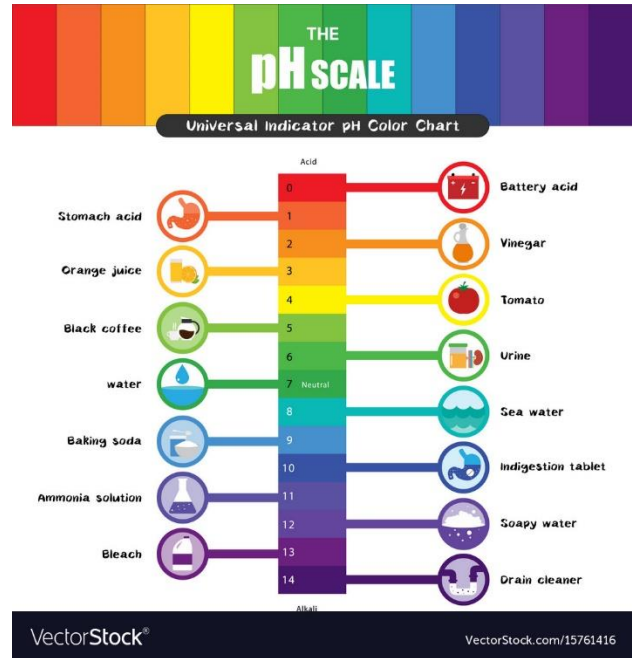
*Calculations based on solubility of oxygen in water at sea level, from *Standard Methods Water & Wastewater*, 18th edition.

Nitrate: 1 Tablet, 5 mL of water, cover w- sleeve

- Nutrient needed by all aquatic plants and animals to build protein.
- Contributes to strength of plants.
- The decomposition of dead plants and animals and the excretions of living animals release nitrate into the aquatic system.
- Excess nitrate increases plant growth and decay, promote bacterial decomposition, and therefore, decrease the amount of oxygen available in the water eutrophication and dead zone
- Sewage is the main source of excess nitrate added to natural waters, while fertilizer and agricultural runoff also contribute to high levels of nitrate.
- Drinking water containing high nitrate levels can affect the ability of our blood to carry oxygen. This is especially true for infants who drink formula made with water containing high levels of nitrate.

pH (Power of Hydrogen): 1 Tablet, 10 mL of water

- measurement of the acidic or basic quality of water.
- The pH scale ranges from a value of 0 (very acidic) to 14 (very basic), with 7 being neutral.
- Natural water is usually between 6.5 and 8.2.
- Aquatic organisms are adapted to a specific pH level and may die if the pH of the water changes even slightly.
- Can be affected by industrial waste, agricultural runoff, or drainage from improperly run mining operations.



Phosphate: 1 Tablet, 10 mL of water

- Nutrient needed for plant and animal growth and is also a fundamental element in metabolic reactions. Contributes to blooming of plants.
- High levels can lead to overgrowth of plants, increased bacterial activity, and decreased dissolved oxygen levels → eutrophication and dead zone
- Comes from several sources including human and animal waste, industrial pollution, and agricultural runoff.

Temperature:

- Affects the amount of dissolved oxygen in the water, the rate of photosynthesis by aquatic plants, and the sensitivity of organisms to toxic wastes, parasites and disease.
- Thermal pollution, the discharge of heated water from industrial operations, for example, can cause temperature changes that threaten the balance of aquatic systems.
- Groundwater and deep surface water have a stable temperature throughout all seasons.