

Properties of Water

PROPERTY			IMPORTANCE TO BIOCHEMISTRY
Heat Capacity & Thermal Conductivity	1.0 cal/g 5.2 cal/hr•cm•K	highest of all liquids and solids except liq. ammonia	prevent extreme T's; heat transfer
Enthalpy of Fusion	1.44 kcal/mol	highest except for ammonia	thermal buffer in aquatic environ
Enthalpy of Vaporization	9.73 kcal/mol	highest of all substances	heat and water transfer to atmosphere
Thermal Expansion	0.99997 g/cm ³ (4°C); 0.99984 (0°C); 0.95836 (100°C)	Maximum density at 4°C, solid less dense than liquid	colder water, ice near surface, insulates below
Solvent		dissolves more substances in higher concentrations than any other substance	variety of nutrients available to organisms
Freezing & Boiling Point	0°C; 100°C	much higher than similar substances	most water as liquid
Light Transmission		most transparent in visible	underwater photosynthesis