

Properties of Water

Formula for Water is H₂O

The oxygen has a partial negative charge and the hydrogens have a partially positive charge. The fact that there are two different ends with different charges – the molecule is considered POLAR

Being polar makes it so that when multiple molecules are together in the same area, the positive charge on one molecule will bond to the negative charge on another molecule. The two molecules will bond together – this is called a hydrogen bond. These are weak bonds but when you have many molecules and many bonds, they are very strong. Surface tension is created by hydrogen bonds.

Water is a universal solvent – it can dissolve many substances (sugar, salt, kool aid), but there are some substances that it cannot dissolve. Cannot dissolve oil – it is hydrophobic (water fearing)

Solid is less dense than liquid (unique to water)

- Ice floats – significant for aquatic life

Water resists temperature change – takes a lot of energy (whether it is gaining or releasing energy) before water changes temperature.

beach example

Resistance to temperature change makes it a good insulator.

Organisms that have a lot of fat (such as a walrus) – but fat cells are mostly composed of water

Nuclear reactors produce a great deal of heat which is why reactor plants typically have a lake to help cool the reactors.

Cohesion – water molecules stick to each other

Adhesion – water molecules stick to other substances

Both of these allow for capillary action – enables plants to draw water up from their roots to their leaves.