

## Water Reading

Water is an amazing substance and an important reason why there is life on Earth. Without water, our planet would resemble the other “dead” planets in our solar system. The properties of water account for its ability to be involved in all living systems. In this reading you will discover how the properties of water affect what water can do.

The property of \_\_\_\_\_ describes how water molecules are neutral as a whole but one end of the water molecule tends to have a positive charge while the other has a negative charge. Each end of a water molecule is attracted to the opposite charged end of another water molecule. Consequently, water's \_\_\_\_\_ is responsible for the "stickiness" or the \_\_\_\_\_ between the molecules.

Cohesion of water allows water to move uphill in small spaces. Water will move up the fibers of a plant because the \_\_\_\_\_ strength of water molecules to the plant fiber is greater than the cohesion strength between the water molecules. This force helps plants get the water they need to survive. In addition, it moves water upwards in soil. \_\_\_\_\_ of water molecules causes surface tension, water's invisible skin which allows water striders to walk on water.

Water is often described as a \_\_\_\_\_ because it is able to dissolve many other substances. Water is an important part of all body fluids because it contains dissolved in it many \_\_\_\_\_ such as gases, wastes and nutrients. These substances are moved around the body in a water solution.

Polarity is also related to solubility. Polar substances can dissolve other \_\_\_\_\_ substances. Non-polar substances dissolve other non-polar substances. Polar substances and non-polar substances, however, do not mix. In a cell, the cell membrane is non-polar and does not dissolve in water. Cells could not exist with water in or around them if the cell membrane dissolved in water.

Another property of water that affects living things in lakes and oceans is the unique change in \_\_\_\_\_ of water during phase changes. The \_\_\_\_\_ of most substances increases when a liquid becomes a solid. This is not so for water: Solid water is actually less \_\_\_\_\_ than liquid water. It is for this reason that ice floats. Can you imagine a world where ice sank? Lakes would freeze from the bottom up, killing many fish. Frozen water in the polar regions would sink and change the ocean levels. The fact that ice floats is essential for the survival of many aquatic ecosystems and ultimately life on Earth

As you can see, water has many special properties that make its role in nature unique. One of water's special characteristics is the "stickiness" or \_\_\_\_\_ between water molecules. This property of \_\_\_\_\_ helps water to move through plant

fibers. Water able to dissolve many substances. In fact, water is considered the "universal \_\_\_\_\_". Contrary to other substances, water is less \_\_\_\_\_ in its solid form than in its liquid form, hence a solid that floats! Water is the only substance that occurs naturally in all three states on Earth.