

TECH TIPS

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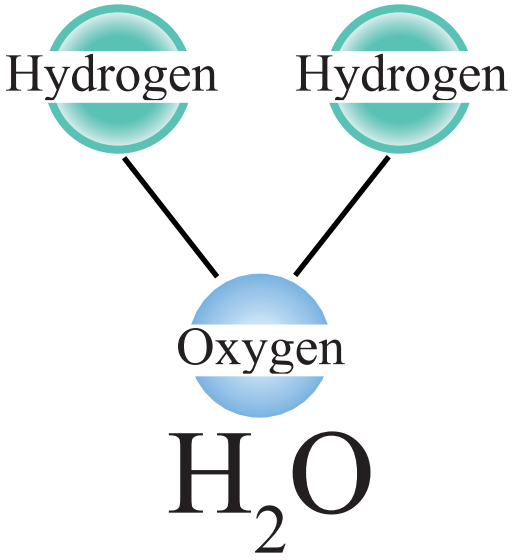
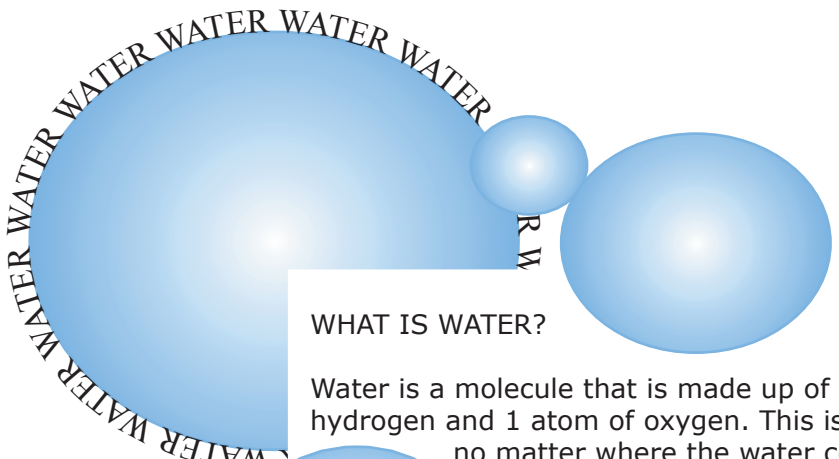
WATER

Water is probably the most familiar substance to us all. It is the most abundant and the most widely distributed compound on earth. It is also probably the most used material by all of us in so many different ways every day.

Water covers 75% of the earth's surface and it comprises 70% of the weight of the human body.

And yet, water is not truly understood by most people.





WHAT IS WATER?

Water is a molecule that is made up of 2 atoms of hydrogen and 1 atom of oxygen. This is always the case no matter where the water comes from or how it is made. The chemical name for water is hydrogen oxide or more correctly dihydrogen monoxide.

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WATER

DISSOLVING POWER

Water dissolves more different substances and in greater quantities than any other liquid. For this reason it is sometimes referred to as the universal solvent. This is an advantage when you are working with water, especially in cleaning where water carries chemicals in solution to where they are needed and carries away soils that are being removed. It is also a disadvantage because water can dissolve so many other materials which are then impurities or contaminants in the water you are using. These impurities can interfere with what you are doing with the water.

HARDNESS

The term hardness when used with water refers to a specific behavior of water and not to how it feels. Hard water has the tendency to produce mineral scales and leave films on surfaces. This happens when water contains minerals that have low solubility and these minerals come out of solution depositing on surfaces. The most common mineral causing hardness is calcium. It has many salts that have low solubility in water. Most often it is calcium carbonate that causes a scale build-up and that is why hardness is usually measured as ppm calcium carbonate. Magnesium in solution also causes hardness but it is less common because there is less magnesium around. Even magnesium hardness is stated as an equivalent ppm of calcium carbonate. While scale most often contains carbonate, in a food plant it can also be composed of sulfate, phosphate and oxalate.

H_2O H_2O H_2O H_2O H_2O H_2O H_2O H_2O

HARDNESS LEVELS

Amount stated as ppm of calcium carbonate

Soft	0 – 60 ppm
Medium	60 – 120 ppm
Hard	120 – 180 ppm

These values are guidelines. Different people could use different ranges.

WATER – CLEANING FUNCTION

Water is extremely important in cleaning because it is used to:

- pre-rinse to remove gross soils
- soften soils left on the surface
- carry detergent to the surface to be cleaned
- carry wastes away from the surface being cleaned
- rinse detergent off of the surface
- carry sanitizer to the surface after cleaning

It is the single biggest ingredient in cleaning solutions. That is why the quality of the water is so important. You need to know what it contains.

WATER SOURCES

Food processing plants can get their water from several sources, each of which can bring their own concerns.
Municipal / City Water – is expected to be treated to a high standard but could still contain ingredients which can cause problems.
Ground or Well Water – tends not to be treated beyond possible filtering and chlorination and is likely to be hard. Be careful when using this water for cleaning.
Reclaimed Water – may have ingredients at unknown levels from previous steps or may be contaminated.

In order to understand what is in water, samples need to be taken and analyzed by a laboratory.

What is potable water?
Potable water is water that you can drink. It is free of pathogens which could make you sick but it is not sterile. It does contain microorganisms but they are at relatively low levels and we can tolerate ingesting them. However, these organisms could be food spoilage organisms.



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