



Your CO2 laser cooling system is the most critical part of the machine. A well maintained cooling system will increase the efficiency and lifespan of the laser tube.

We have seen many recommendations on water additives, type of water to use, and even home made antifreeze.

So what is the best water to use?

Tap water is not recommended due to the presence of naturally occurring minerals. Mineral content increases the conductivity of water.

Distilled water (distilling is a process that involves boiling water and condensing the steam to achieve a solution with a very low to no mineral content) has low conductivity due to the absence of mineral content.

This is important due to the high voltages present in a CO2 laser. By having impurities or additives in the system you are not only increasing the fluid's conductivity but also its ability to absorb minerals and oxygen present in the surrounding environment, further increasing the conductivity.

Typically our CO2 lasers operate with voltages in the range of 15-30KV - that is 30 000 Volts DC. At these voltages you have to take into consideration the air gap, conductivity of surrounding materials and the capacitive coupling effect of the glass laser tube, as electricity can travel through air, glass and water.

By raising the conductivity of the cooling water, you are potentially creating a shorter (less resistant) path to ground for the electricity to travel. The end result of this can be loss of output power, and damage to the tube and / or power supply.

De-ionized water made from distilled water is also fine to use.

We do not recommend the usage of algacides or biocidal treatments due to the corrosiveness of some of these solutions, not to mention ph instability that they can cause. They are simply not required.

If absolutely necessary the only algacide we would recommend is that used in aquariums - the Tetra brand Algae Control, and its primary active chemical is Polyquaternium.



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