FAQs: Reverse Osmosis Water

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What is reverse osmosis?

Reverse osmosis (RO) is a water purification process in which water is forced through a

semi-permeable membrane that removes 90-99% of tap water impurities. The result is water that is free of minerals and other contaminants.

Membrane type determines the amount of dissolved solids a unit is capable of removing. For example, Cellulose Tri-Acetate (CTA) membranes have a removal rate of 88-94%, Thin Film Composite (TFC) membranes remove between 94-98% of dissolved solids, and Hi-S Membranes have higher removal rates, between 97.5-99%, and are especially adept at removing silicates.

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Why do I need RO water?

Tap water often contains impurities that can cause problems when added to an aquarium. These include phosphate, nitrate, chlorine, and various heavy metals. High levels of phosphate and nitrate fuel aggressive algae growth, and copper, often present in tap water due to leaching from pipes, is highly toxic to invertebrates. Because RO filters remove practically all of these impurities, they are becoming more popular among aquarists, particularly marine hobbyists.

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After I produce RO water, can I just add it to my aquarium?

Reverse osmosis removes virtually everything from tap water, including essential minerals your aquarium inhabitants need to flourish. Depending on the type of aquarium the RO water is being used for, it may be necessary to add these essential minerals back into the purified water. Most marine salt mixes already contain these minerals and the use of RO conditioners is not necessary. However, freshwater aquariums require re-mineralization to achieve the desired pH.

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What is the difference between reverse osmosis and deionization?

Reverse osmosis and deionization (DI) perform the same task of removing impurities from tap water. However, DI purifies water utilizing the principle of ion exchange to remove impurities and replaces them with pure water.

In most instances, an RO unit serves as a well-rounded filtration method that removes the majority of impurities; coupled with a post deionization filter, the resulting water is 99.9% pure. Many RO units are available as a combined RO/DI unit or are able to accommodate an add-on DI unit that simply attaches to your existing RO unit.

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How do I know if my reverse osmosis water is pure?

If your RO product water is pure, your aquarium should have minimal algae growth, a steady pH level, and low phosphate and nitrate levels. You can check the purity of your RO product water using a conductivity meter, TDS meter, or by measuring the general hardness and alkalinity of the water with a test kit. Purified water will have a general hardness of 0 GH and alkalinity of 0 dKH. If your test values vary from those described above, you may need to replace cartridges and/or the RO membrane.

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I am seriously thinking about purchasing a reverse osmosis unit but I am worried that it involves too much maintenance. What kind of maintenance is required to properly run a RO unit?

Properly installed RO units will require very little maintenance. To get the best performance out of your newly installed reverse osmosis unit, the system must be flushed prior to use.

The life of the membrane and pre-filters will vary depending upon water conditions, but most RO membranes do not need replacing for several years. However, the carbon and sediment pre-filters should be replaced at least every six months. Further extend the life of your RO membrane by using a flush kit on a regular basis.

Water pressure and water temperature will also influence performance. Never run hot water through an RO unit: this will severely damage the membrane. The optimal temperature of the input water should be between 70 and 77 degrees Fahrenheit and the optimal water pressure should be 65 pounds per square inch. To achieve this water pressure, an RO pump may be necessary.

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We use well water for our freshwater aquarium and we are having a difficult time lowering the pH. We tried using pH conditioners and the pH level will go down for a few days, but then it starts climbing again. What's going on and what can we do?

In some areas, especially in regions that have limestone deposits, well water will contain high levels of minerals, making the water "hard." Water hardness is closely associated with pH and influences the ease at which pH can be altered. The high mineral content functions as a buffer and counteracts the effects of pH conditioners.

In order for pH conditioners to work properly, the minerals must first be removed from the source water. The most effective way to do this is through the use of a reverse osmosis unit. They can remove up to 99% of the minerals and other impurities in your water.

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I'm having problems with brown algae in my fish-only aggressive marine aquarium. I do regular water changes but with no results. What else can I do to get rid of the brown algae?

A number of factors encourage the aggressive growth of brown algae, but the presence of excess nutrients, including silicates, is the number one factor. Excess nutrients most commonly come from overfeeding.

Depending on what part of the nation you live in, your source water may contain varying levels of chloramines, nitrate, phosphate, silicates, and other algal nutrients. Test your source water to see if these chemical nutrients are present.

Test for ammonia, nitrite and nitrate using a master test kit such as the one from Aquarium Pharmaceuticals. Seachem offers both a silicate test kit and a phosphate test kit. If your source water reads positive for these chemicals there are several steps you can take to remedy the situation.

- **Reverse Osmosis Units -** These water-purifying units will remove chemical nutrients directly from your source water.
- **Protein Skimmers -** Remove dissolved proteins in your aquarium before they have a chance to break down.
- **Chemical filter media -** Placed in your filter, chemical filter media such as Poly Filter and Phosphate + Silicate Magnet will remove silicates, phosphate and organic waste materials.

However, if the introduction of these nutrients stems directly from your source water, the algae will have a constant nutrient source, no matter how many water changes you may perform or how efficient the protein skimmer or the chemical media may be. Thus an RO unit will be your only permanent solution.

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ESSENTIALS:

- R/O Right helps replenish essential trace elements freshwater aquariums need when using RO water.

- **Equilibrium** establishes ideal mineral/electrolyte balance for planted aquariums when using RO water.

- **LiveAquaria® Professional Reef Salt Mix** reconstitutes RO water with vital minerals and trace elements found in natural sea water.

RELATED ARTICLES

- Proper Aquarium Water Quality: Choose the Best Reverse Osmosis Unit for Your Needs
- Proper Aquarium Water Quality: RO Units Selection Guide
- Proper Aquarium Water Quality: Advantages of Using Reverse Osmosis Water
- Proper Aquarium Water Quality: How to Install a RO Water Collection System