

Aquarium Aeration, the importance of

Drs. Foster & Smith Educational Staff

If you wait until the fish in your aquarium are gasping for O₂ at the surface, or hanging out near filter returns, it may be too late to avoid serious stress, or worse. You need to make sure there is a plentiful supply of O₂ at all times. In a correctly set-up aquarium this is normally not an issue. While the filter usually creates a satisfactory level with surface agitation, there are other internal and external factors at play that can deplete oxygen resources, or inhibit their regeneration. Occasionally, bad things can happen. For example, a filter can become clogged, water may get too hot, or electricity is unexpectedly interrupted. Here are some effective maintenance tips to minimize and resolve problems:



- **Test regularly** - To avoid unnecessary stress on your fish, we recommend you test regularly. Our [Salifert Oxygen Test Kit](#) is designed to accurately measure levels in your aquarium. For continuous monitoring of O₂ levels, try an electronic O₂ monitor. At 77 degrees a freshwater aquarium should test near 8.3 mg/l (ppm) of O₂, while a marine aquarium should test between 7.0 and 6.4 mg/l (ppm) of O₂ depending upon the specific density.
- **If needed, operate an air pump** - Air pumps used with [airstones](#) create a column of bubbles to help remove unwanted gases. They should be shut off only for short periods for maintenance any time water quality is compromised, or when aquarium water temperature is higher than normal. They should not be used for extended periods of time in live-planted aquariums because they dissipate the needed CO₂. We recommend having a spare pump, ready-to-install, should your primary pump fail. A small [battery operated air pump](#) can also save the day during a power outage.
- **Remove waste and change water** - Bacteria feeding on decaying matter and waste settling on the bottom, consume oxygen. Doing a partial water change every 3-4 weeks, no more than 25% at a time, improves water quality making more oxygen available to fish. A [Aqueon Aquarium Water Changer](#) or [siphon](#) device makes this task easy. Remember to add a [dechlorinator](#) if you are using water with chlorine, and a product like [Ammono-Lock 2](#) if it also contains chloramines.
- **Maintain consistent water temperature** - Warm water holds less O₂ than cold water. Sunlight can quickly overheat your aquarium making the water unable to hold sufficient dissolved oxygen for your fish or plants. High heat promotes algae blooms and a number of other problems. Keep your aquarium out of direct sunlight. If the aquarium cannot be repositioned, provide shade. Lights and other equipment can also generate excess heat. If the water temperature is consistently too high, you may need a chiller to bring things into balance. A drop-in chiller requires no plumbing and is easy to install.
- **Use live plants** - [Live plants](#) are a perfect way to provide your aquarium with oxygen. A plant's life cycle includes taking a certain amount of CO₂ from the aquarium's water and then generating oxygen. The amount of oxygen generated by artificial plants? Zero.
- **Maintain adequate filtration** - Dirty [filters](#) lose efficiency and eventually can fail altogether, blocking water flow and oxygenation. Be sure to clean your filters regularly, and make sure you cleanse it right before you depart for vacation.
- **Balance the bacteria** - Medications and clogged filters can lower the number of beneficial bacteria needed to keep your aquarium healthy. Both ammonia and nitrites prevent fish from drawing oxygen from water. Ammonia burns fish gills and makes them ineffective, and nitrite makes it hard for blood to circulate oxygen. If a test kit indicates the presence of either in any amount, the bacteria level in your aquarium needs to be increased. Clean filters maximize the effectiveness of bacterial additives.
- **Manage the fish population** - Excess waste can be generated when too many fish crowd your aquarium. Nitrifying bacteria consume oxygen while feeding on fish waste, and could leave too little to go around. Be careful not to add too many fish to your aquarium, and, if necessary, relocate fish if they over-populate themselves.



Don't take the oxygen supply in your aquarium for granted. Test regularly and take steps to keep your fish and plants well supplied.

