

Aquarium Filter Maintenance

Aquarium filter types and maintenance.

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Without regular maintenance, it is impossible for aquarium filters to provide good aquarium water quality and stable water chemistry.

Aquarium Filter Types

Except for undergravel filters, aquarium filters are all similar in function if not detail. A pump draws water through different types of media, namely mechanical media, biological media and chemical media.

Because biological and chemical media won't work if clogged with silt, the water entering an aquarium filter always goes through the mechanical filter first. For this reason, it is important to arrange the different media types inside your filter as described by the manufacturer.

Most filters need to be cleaned every 4 to 8 weeks.

Mechanical Media

Mechanical filter media removes silt and organic debris. Synthetic filter wool is commonly used for this, either loose or in preformed pads. Filter wool is difficult to clean properly, and is normally replaced each time the filter is opened.

Sponges and ceramic noodles are sometimes used for mechanical filtration, though being coarser than filter wool, they are less effective at removing silt. On the other hand, if rinsed each time the filter is cleaned, such media can be used reliably for year after year.

Biological Media

Sponges, porous ceramic noodles and sintered glass noodles are all used to host the bacteria that perform biological filtration.

Maintenance of biological media is similar to mechanical filtration, except that biological media should never be exposed to conditions likely to kill bacteria; it is best cleaned by rinsing it in a bucket of aquarium water. Biological media should never be allowed to dry out or be washed under a hot tap.

Replacing Biological Media

It may be necessary to replace biological media that has become irredeemably clogged with silt. This will not impair the efficiency of your filter, provided no more than half of the biological media is replaced within a three-month period. Bacteria on the remaining media will quickly colonize the new media, ensuring good water quality.

Chemical Media: Carbon

Activated carbon is the most commonly used chemical medium. Traditionally it has been used to remove the yellow tannins that tint old water. In practice, large, regular water changes have made carbon largely obsolete, though it may still be useful in certain situations.

Carbon has a useful working lifespan of about four weeks. Older carbon must be replaced; otherwise it simply becomes too clogged with bacteria and silt to perform any useful function. Carbon cannot be cleaned or "recycled" for further use.

Chemical Media: Zeolite

Zeolite (ammonia remover) is used primarily in tanks where biological filtration cannot be used, such as hospital tanks. Zeolite needs to be replaced regularly, typically weekly and certainly before any ammonia is detected.

Up to a point, zeolite can be recharged and reused. Used zeolite can be soaked in salty water at a concentration of 8 tablespoons of non-iodized salt per pint of warm water. This can extend the life of zeolite up to as much as three months.

Chemical Media: Calcareous Media

Calcareous media, such as coral sand, crushed coral and crushed oyster shell are used to raise carbonate hardness and minimize acidification. Such media is constantly dissolving into the water. If the pH drops, the speed at which the dissolving

increases, raising the pH back up again. This pH-buffering ability is important in aquaria where hard, basic water conditions are required.

Given that calcareous media will only dissolve when in contact with water, the more they are covered with debris or bacteria, the less effectively they perform. It is therefore critical that such media are regularly cleaned and replaced, if necessary.

Though hardly convenient, this applies just as much to undergravel filters incorporating calcareous media as to canister filters containing such media. In either case, a noticeable drop in pH and carbonate hardness is an immediate sign that the calcareous media being used needs to be cleaned or replaced.

Undergravel Filters

Undergravel filters are unique because they use the substrate as the filter medium. In the case of a typical freshwater aquarium, medium to fine gravel is used. Water is drawn into a bed of gravel 2 to 3 inches in depth, through the filter plate, and then up and out via airlift tubes or one or more powerheads.

The gravel performs both mechanical and biological filtration. Silt and debris get trapped in the gravel, and the gravel grains are covered with the bacteria that remove ammonia and nitrite. Each time water changes are done, simply stir the gravel with a stick, and siphon out the muck that emerges. When done regularly, this should keep an undergravel filter in good working order.

Inevitably, some debris will collect under the filter plate. Once a year, strip down the aquarium, lift the plate out, and clean the bottom of the tank thoroughly. Because the gravel is live biological media, treat it as you would any other live biological media: Do not allow it to dry out, and do not wash it under a hot tap.

Reverse-flow undergravel filters should stay clean longer than traditional undergravel filters — but only if the canister filter, which works as a kind of pre-filter, is properly maintained.

Neale Monks studied zoology at the University of Aberdeen in the north of Scotland and obtained his Ph.D. at the Natural History Museum in London. He's also been a marine biologist, a high school teacher, a university professor and a museum's exhibit designer. But his real love has always been tropical fish. His particular interest in brackish water fish culminated in his editing of the first encyclopaedic book on the topic, 'Brackish-Water Fishes', published by TFH in 2007. Neale regularly contributes to all the major English-language fishkeeping magazines, focusing especially on community tanks, biotopes, healthcare and water chemistry issues. After living in London and then for a while in Lincoln, Nebraska, Neale now lives in a quaint cottage in a pretty market town in Hertfordshire, England, where he divides his time between teaching and writing.