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Protein Skimmers 101: A Necessity For Your Aquarium

Our Friends · Monday, July 26th, 2021

It's common knowledge that fish require little more than clean water and a decently sized aquarium for a happy life. Simply changing the water every now and then can be considered as basic maintenance, but that doesn't necessarily mean that it will remain clean until the next refill.

Bacteria, small viruses, as well as numerous polluting molecules will appear in your tank, and one of the most efficient ways to do so is to get a protein skimmer. Today we'll talk about what [protein skimmers](#) are, the available types, how they work, and ultimately, why you should start using one.

Protein skimmer – basics, design, and function

A protein skimmer is essentially a filtration system that forms tiny bubbles, in which water pollutants are quickly trapped and expelled from the tank. Various living organisms can stick to the aquarium's surface no matter how hard you scrub its walls and even the water that is believed to be pristinely clear hosts certain bacteria and pollutants.

Essentially, protein skimmers are capable of trapping these microorganisms, as well as minerals, salts, nitrites, ammonia, amino acids, chunks of food and debris, and many other potential pollutants, which are otherwise nearly impossible to clear out of a tank.

Different types of protein skimmers have different designs, but their basic features (and functions) are always the same; a skimmer features a water collection cup, a source of pressure, and a body.

Why do you need one?

In essence, it's impossible to fill a tank with 100% clean water, to begin with. Hose and tap water are typically polluted with all kinds of contaminants, and even if you use water filters (activated alumina, carbon, distillation, or reverse osmosis filters), you probably won't be able to get rid of all harmful bacteria, viruses, hazardous molecules, and atoms.

Even if we imagine a scenario where a futuristic filter exists that can provide you with pristinely clear water, fish and other marine lifeforms produce waste over time. Protein skimmers, basically, automate the aquarium cleaning process and make it far more efficient than any other similar gadget.

However, there are certain situations where protein skimmers may not be needed. Having a 'cleaner' fish in your tank will dispose of most of the wasteful components (organic and otherwise)

while built-in UV lights are able to make short work of harmful living organisms that made themselves at home in your tank.

How does it work?

Protein skimmers generate quantities of tiny bubbles into a pool of water. Pollutants are drawn to the bubbles and are then directed towards the collection cup, where the waste is disposed of. As a general rule of thumb, the smaller the bubbles are, the more efficient the skimmer is.

While this is the basic definition of how most skimmers work, each type has its own particularities and changes in its method of operation. Some skimmers clean the tank from the inside and leave the waste in a specified container (co-current skimmers) while others are meant to keep the water circulating while filtering it.

Types of protein skimmers

The size, speed, versatility, price, and ultimately the efficiency of a skimmer are determined by many factors, with the type being among the most important ones. The most notable categories of protein skimmers include co-current, counter-current, hybrid, Venturi valve, and double pump skimmers, so let's briefly touch on all of them:

Co-current skimmers

The original protein skimmers utilized the co-current method of operation. Their pressure source is installed at the bottom end of the reaction tube, drawing water upwards into the collection cup. They're called "co-current" as the direction of both air pressure and water is the same, which minimizes the time that bubbles make contact with the water (aside from its surface).

However, they're much less effective than other types in the sense that they rely on obscure technology; they're not capable of filtering too many types of pollutants, and they may take a while to trap the ones that they can. The main benefits of co-current skimmers are affordability, simple setup, and excellent suitability in terms of small aquariums.

Counter-current skimmers

The counter-current skimmers operate in a diametrically opposite way than co-current skimmers. Instead of pushing the tank's water into the sump, counter-current skimmers first process the water in the reaction chamber before letting it fill the aquarium.

One of the main similarities between co-current and counter-current skimmers is that they both rely on air pressure to generate pollutant-trapping bubbles, which is achieved via pressure pumps. Counter-current skimmers let the water flow downwards, where it meets the stream of bubbles generated by the pump. The opposite directions of water and air pressure coined the name for this type of skimmer.

Air-driven CC skimmer

A variant of the counter-current skimmer is the Air-driven CC skimmer. Essentially, it utilizes a tube where the bubbles would rise upwards, injecting the bubbles into the tank, after which they circulate between the body and the tubes, releasing pollutants into the specified collection cup prior

to re-entering the aquarium.

Hybrid skimmers

Hybrid skimmers use both counter and co-current mechanisms. They feature strong impellers instead of regular pressure pumps and typically have two water-directing sections. The bubble-generating unit (co-current) is usually located on the right side while the bubble-directing one is on the left (counter-current).

Venturi Valve skimmers

Although outdated, [Venturi skimming systems](#) are fairly efficient at protein skimming. Basically, these skimmers feature a pump on one side that pushes the water through the valve, which generates tiny bubbles on the other end. Although the petite size of generated bubbles makes Venturi skimmers great on paper, the lack of water-directing features is its main drawback.

Double Pump Skimmers

Basically, skimmers that feature two pumps instead of one are capable of maintaining a longer filtering cycle through sheer power alone. One pump is responsible for pumping the water through a skimmer while the second pump induces air pressure. The entire process takes place at the same reservoir before reaching the tank. These skimmers are faster but louder and usually more expensive.

We hope that this brief rundown was useful to you and that you have learned something new today about protein skimmers. Makes sure you are staying safe in these times we are all going through and have a good one, guys!

Photo by [Huy Phan](#) on [Unsplash](#)

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