

Basic Aquarium Lighting FAQs

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Why is lighting important for aquariums?

In its most basic role, aquarium lighting allows hobbyists to observe aquarium inhabitants. But more importantly, proper aquarium lighting provides vital energy to photosynthetic plants and animals. As the primary light source (and in most cases, the only light source), proper aquarium lighting is essential for any system that contains photosynthetic organisms such as plants, anemones, or corals. Lighting also influences fish behavior and physiology and is vital for the overall health and well-being of the entire aquarium.

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With so many different types of light bulbs and light fixtures, how do I know which one is right for me?

The first step in selecting the appropriate light fixture and the corresponding bulbs is to identify use. Aquarium lighting has two main uses: a general aesthetic one and a functional one to sustain the biological processes that occur in the aquarium. To narrow down your selection, identify your needs as well as the needs of your aquarium inhabitants and determine what you want to achieve in your particular aquarium setup.

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Which lighting system is recommended for fish-only, planted or reef aquariums?

The specific lighting requirements may vary from one aquarium to another but the following recommendations serve as a good general guideline when selecting a lighting system.

Fish-only Aquariums: Fish, artificial plants, decorative wood and/or ceramics.
Recommended Lighting System: [Standard](#) or a [Compact Fluorescent system](#).

Freshwater-planted Aquariums: Fish, live plants, decorative wood and/or ceramics.
Recommended Lighting System: [Standard Fluorescent](#), [T-5 HO](#), [VHO](#), [Compact Fluorescent](#) or [Metal Halide/HQI system](#).

Saltwater Reef Aquariums: Fish, invertebrates, corals, and liverrock.
Recommended Lighting Systems: [T-5 HO](#), [VHO](#), [Compact Fluorescent](#) or [Metal Halide/HQI system](#).
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How do I choose a light fixture that will provide enough light for my aquarium inhabitants?

When we are interested in providing light conditions necessary to sustain life, we are most interested in the intensity of a bulb. In general, fixtures that utilize higher wattage bulbs tend to have greater light intensity. Therefore, the total wattage of a light fixture serves as a good general guide when calculating lighting needs. Keep in mind that many factors such as water depth, water clarity, and height/location of the light fixture affect light intensity. To compensate for potential light-loss, select a fixture on the higher end of the recommended watts-per-gallon range. Lighting requirements will also vary depending on the species you are keeping, so it is essential to research the specific lighting requirements of each species.

Fish-only Aquariums - A lighting system with a total output between 1 to 2 watts per gallon should be sufficient to simulate a day-night cycle. Because the requirements of a fish-only aquarium are forgiving, you can choose the spectrum of bulb that best suits your preference. Avoid the use of standard hardware store bulbs, which promote the growth of brown algae.

Freshwater-planted Aquariums - Depending on the particular plant species you plan to keep, as well as the depth of your aquarium, you will need a lighting system with a total output between 2 and 5 watts per gallon. Full-spectrum bulbs (also called daylight bulbs, grow bulbs or plant lights) designed specifically for aquarium-use ensure healthy plant growth.

Saltwater Reef Aquariums - To correctly light a reef aquarium that is 24" deep or less, use a lighting system with a total output between 4 to 8 watts per gallon. You can relax requirements significantly by choosing corals and invertebrates that require low light levels, or non-photosynthetic invertebrates. The light requirement of corals and invertebrates varies dramatically depending on the species and the location of the reef they inhabit in the wild. Most corals that inhabit ocean depths between 15 to 65 feet have adapted to intense light conditions or hide themselves within the reef for safety. While corals found at depths below 65 feet are non-photosynthetic or have adapted to extremely low light conditions. Many reef hobbyists prefer the intense lighting provided by metal halide fixtures utilizing 10000°K bulbs in combination with blue Actinic bulbs.
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How do I calculate light output of a fixture in watts-per-gallon?

To calculate the number of watts-per-gallon an aquarium receives from a light fixture, simply divide the total wattage of the light fixture by the number of gallons of the aquarium. For example, a 55-watt fixture used over a 29-gallon aquarium will provide its inhabitants with slightly less than 2 watts of light per gallon. While this amount of light is perfect for fish-only aquariums, it may not be adequate for most photosynthetic reef inhabitants.

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How long do I keep the lights on my aquarium?

In general, the length of time your aquarium lights are on (photoperiod) should simulate the natural day and night cycle. A photoperiod of 10 to 12 hours of light a day will provide sufficient light energy for photosynthetic plants and animals, but depending on the type of aquarium and the light requirements of the aquarium inhabitant, photoperiods can be slightly longer. The easiest way to maintain the proper photoperiod in a consistent manner is through the use of aquarium timers.

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Do I need a glass top or canopy with my light fixture?

The use of a [glass top or canopy](#) is recommended for all light fixtures, especially fixtures with exposed bulbs or without a protective lens or splashguard. Not only do glass canopies provide additional stability for your light fixture, they also protect the light bulb and fixture from condensation and splashing. Contact with water can damage the unit or cause serious injury.

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How often should I replace the bulbs and why?

The intensity of a bulb diminishes over time. Even though the bulb will still light up, it may not be emitting the necessary spectrum or intensity to support healthy growth. In many instances, the diminished light output can encourage nuisance algae growth.

[Incandescent Bulbs](#) - Replace every 2 to 4 months.

[Standard Fluorescent Bulbs](#) - Replace every 6 to 18 months depending on ballast type.

[VHO Fluorescent Bulbs](#) - Replace every 4 to 18 months depending on ballast type.

[T-5 HO Fluorescent Bulbs](#) - Replace every 16 to 24 months.

[Compact Fluorescent Bulbs](#) - Replace every 14 to 24 months.

[Metal Halide Bulbs](#) - Replace every 6 to 18 months.

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