

Aquarium Lighting Selection Guide

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Are you new to [aquarium lighting](#)? Learn how proper lighting plays a vital role in the success of all aquarium systems, and what options are available to the beginning hobbyist.

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.

Different Light Bulbs and Light Fixtures for Different Setups

There are a wide variety of lighting options for aquarists. This diverse selection allows hobbyists of all levels to provide the right lighting conditions for their particular aquarium inhabitants. Aquarium light fixtures are generally grouped into four general categories (from oldest technology to most innovative): Normal output fluorescent lighting, compact fluorescent lighting, high intensity metal halide lighting, and LED (Light Emitting Diode) systems.

Normal Output Fluorescent Lighting

Also called [Standard Fluorescent Lights](#), these versatile lighting systems are the easiest way to illuminate an aquarium. Fluorescent light fixtures are a great choice for fresh and saltwater fish-only aquariums. The [wide selection of bulbs](#) available for these easy-to-use, affordable, and energy-efficient light fixtures allows hobbyists to customize aquarium lighting. Use different bulbs to provide the right light for your aquarium inhabitants.

<p>50/50 or Actinic White Bulbs - Emit a blend of white and blue light that helps recreate marine light conditions. Generally, it is a combination of 10,000°K white light and blue actinic light. This blended light encourages photosynthetic coral growth while providing light that is pleasing to the human eye.</p>	
<p>Color-Enhancing Bulbs - Emit light from the "warmer" end of the color spectrum to augment or enrich color. Designed to display the colors of your fish to their fullest. Ideal for fish-only fresh and saltwater aquariums.</p>	
<p>Full Spectrum/Daylight Bulbs - Emit all the wavelengths of visible light and closely approximates the visual effects of natural sunlight. Contains a blend of all the colors of the color spectrum. These general-purpose bulbs are ideal for all types of fresh and saltwater aquariums.</p>	
<p>Actinic Bulbs - Emit light predominantly from the blue end of the color spectrum. Recreates light conditions found in deep water and provides the light energy necessary for proper photosynthetic coral growth. Actinic bulbs are ideal for reef aquariums.</p>	
<p>Plant Bulbs - Emit light that stimulates plant growth. With peak light emissions in both the red and blue regions of the color spectrum, this light maximizes photosynthetic activity for lush planted aquariums.</p>	
<p>High-Intensity Bulbs - Emit bright light with a high color temperature (Kelvin-rating) usually ranging from 10,000°K to 20,000°K. It is a crisp white light commonly used in conjunction with actinic bulbs in marine aquariums. 20,000°K bulbs will emit a brilliant white-blue light that appears "cooler" to simulate deeper marine light conditions.</p>	

Compact Fluorescents

Compact fluorescent are higher light output versions of standard fluorescent light systems. Instead of single tube bulbs, compact fluorescent systems incorporate [dual or quad tube bulbs](#) for greater light output from a single bulb. A single compact fluorescent light fixture easily does the job of two standard fluorescent fixtures. This space-saving feature makes compact fluorescent systems a great choice when upgrading from standard fluorescent systems. Fortunately, compact fluorescent light systems are no more difficult to operate and maintain than standard fluorescent light systems. These self-contained lighting systems are easy to operate and since they are a type of fluorescent light system, they have all the benefits of fluorescent lighting. For example, low operating cost, lower heat emission, and a wide selection of bulbs with color temperatures ideal for both freshwater and marine applications.

Metal Halides

[Metal halide systems](#) are high intensity discharge (HID) lighting systems popular among many advanced aquarium hobbyists. [Metal halide bulbs](#) are comprised of a main glass bulb with a series of wires connecting another glass bulb (arc tube) within it. When electricity passes through the arc tube, the gases and metal salts contained within the tube produce light. Unlike other high intensity discharge lighting systems (e.g., sodium or mercury vapor lights), the light spectrum and the color rendition produced by metal halides is suited for aquarium use. Metal halide fixtures are ideal for aquariums, such as reef aquariums, with inhabitants that require high lighting conditions. Metal halide systems are also used for very large aquariums or aquariums deeper than 24 inches where other lighting systems may not be powerful enough to provide adequate illumination.

LED (Light Emitting Diode)

As a relative "newcomer" to the world of aquarium lighting, [LED light fixtures](#) are often subject to confusion and misconceptions. LED technology employs a radically different approach to light generation. LEDs emit light as energized or excited subatomic particles pass through a semiconductor material. This distinct process of light generation called electroluminescence requires FAR LESS energy to produce brilliant light for an energy-efficient choice to aquarium lighting.

When concerned with supporting photosynthetic aquatic life, hobbyists should look for PAR values of LED fixtures. PAR or Photosynthetically Active Radiation designates a spectral range of light that photosynthetic organisms utilize during photosynthesis. Keep in mind that PAR values vary at different depths and distances from the LED light source. In other words, the same LED fixture will have multiple PAR values capable of supporting different species with different light requirements. Due to the relatively complex nature of expressing PAR levels and a lack of standardization, not all manufactures will provide PAR information the same way. To determine which LED aquarium light fixture is right for you, please refer to our handy [LED Lighting Comparison Guide](#).

Choosing the right lights for your aquarium is a matter of personal taste and your inhabitant's needs. However, be sure to always use lighting systems specifically designed for aquariums. The right lights help you enjoy the beauty of your aquarium AND keep your inhabitants healthy.