

# Aquarium Lighting

6 Questions You May, Or May Never, Have Thought To Ask.

## 1 BESIDES ILLUMINATING MY UNDERWATER WORLD, WHY IS AQUARIUM LIGHTING SO IMPORTANT?

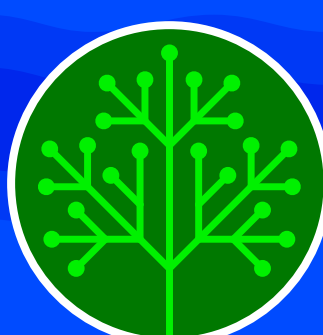
Aquarium lighting plays a much bigger role than simple illumination. It also...

### PROVIDES:



Energy

### ENSURES:



Healthy growth of photosynthetic plants that create oxygen

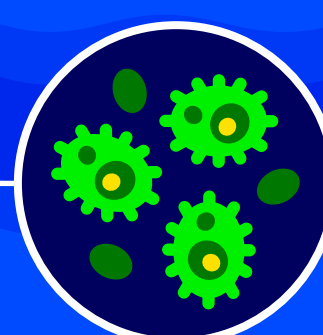
### BENEFITS:



Overall well-being of your fish



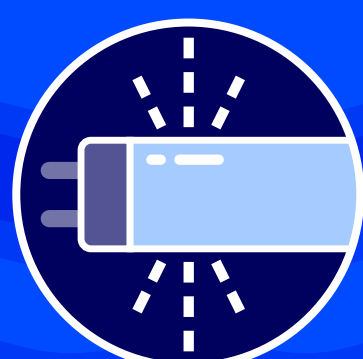
Water quality



Healthy growth of corals and bacteria

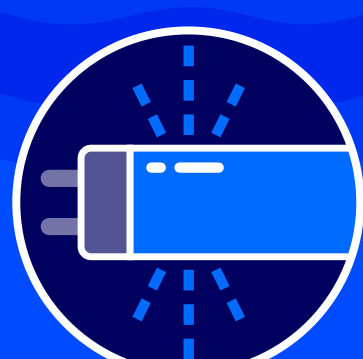
## 2 WHAT KIND OF LIGHTING DO MOST FISH OWNERS TYPICALLY GET?

There are various types of freshwater aquarium lighting options to choose from, including:



### Fluorescent

The most common type of lighting and traditionally the most inexpensive. Primarily for general illumination.



### T5 HO (High Output) Fluorescent

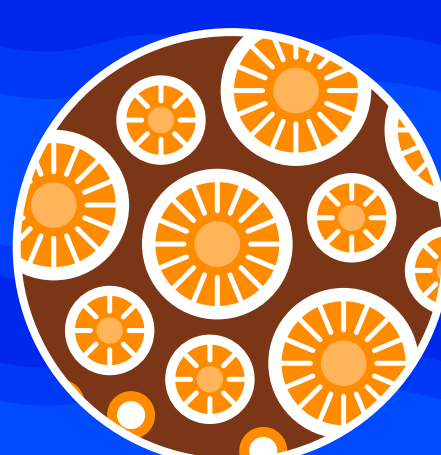
T5 HO bulbs are almost twice as bright as standard bulbs. Ideal in larger tank environments that require brighter, deeper penetration and a mix of bulb types.



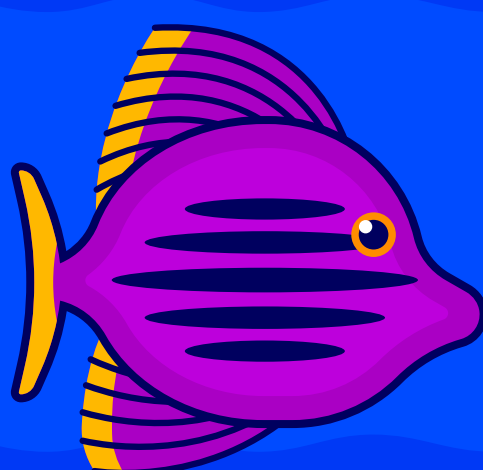
### LED (Light Emitting Diode)

With its slim design, shimmer effects and colors, cool operating temperatures, and low cost to operate—LED lighting is fast becoming the favorite for both freshwater and saltwater aquarium owners. A wide selection of sizes and types are available for any aquatic environment. LEDs also generate a consistent color of light through their lifetime.

## 3 HOW LONG SHOULD I KEEP MY AQUARIUM LIGHTS ON?



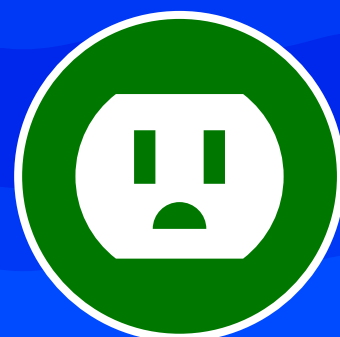
10–12 hours daily is ideal for plants and corals.



6–12 hours is ideal for livestock only.

## 4 IF TANKS ARE MEASURED IN GALLONS, AND FISH IN INCHES, WHAT IS "VISIBLE" LIGHT MEASURED IN?

### WATTAGE



The amount of energy used.

### KELVIN



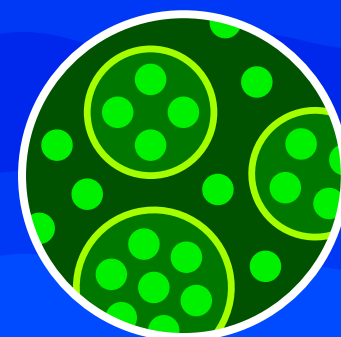
The color of the lighting (low is a warm color, high is a cool color).

### LUX



The brightness (as perceived by the human eye for general viewing).

### PAR

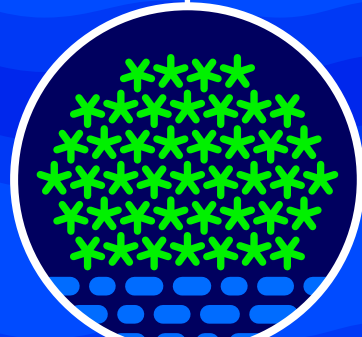


Photosynthetically Active Radiation, the light that is useful to grow plants and beneficial algae.

## 5 HOW MUCH LIGHT DO I NEED FOR MY TANK?

### PLANTED TANK

15-30 PAR for low light plants, 30-80 PAR medium light plants, 80+ PAR for high light plants.



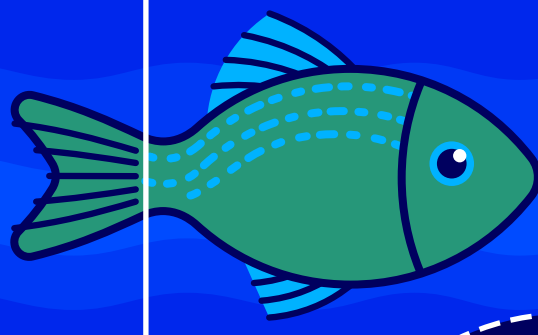
### FISH-ONLY TANK

5500 to 6500 Kelvin for general viewing. Unlike plants, fish do not have a biological need for light so require less. (Natural sunlight at noon has a rating of 5500 Kelvin).



### MARINE-REEF TANK

300–500+ PAR in general for soft and hard corals.



### GLOFISH® TANK

A new entry to aquatics, GloFish® fluorescent fish fluoresce while under a blue spectrum light.



## 6 WHO WAS THE FIRST PERSON TO DISCOVER LED LIGHTING?

The innovation and development of LED lighting spans over a century and is attributed to the work of a number of brilliant individuals across the globe:

### The History of LED Lighting<sup>1</sup>

1907

London, United Kingdom

H. J. Round

discovered electroluminescence using silicon carbide and a cat's whisker.

1961

Dallas, Texas

James R. Biard

Gary Pittman

developed the first modern LED at Texas Instruments. This was the first modern LED.

1972

St. Louis, Missouri

M. George Craford

created the first yellow LED at Monsanto. He also developed a brighter red LED.

2003

Blacksburg, Virginia

Marineland's

Betta Sphere

produces the first LED product in aquatics.

1927

Saint Petersburg, Russia

Oleg V. Losev

created the first LED—no practical uses were identified at that time.

1962

Syracuse, New York

Nick Holonyack Jr.

developed the red LED at General Electric, the first LED of visible light and practical use.

1979

Tokushima, Japan

Shuji Nakamura

of Nichia Corporation invented the first high brightness LED.



www.tetra-fish.com



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