

USHIO

METAL HALIDE LAMPS

AQUALITE SERIES



METAL HALIDE LAMPS FOR AQUARIUMS AND REEF SYSTEMS

USHIO Aqualite™ Metal Halide lamps feature the best combination of color balance, color rendering and light output for healthy marine aquarium and reef system lighting. Our USHIO BLV factory in Germany, collaborated with leading marine biologists to develop the first 10,000K Metal Halide lamps. We have successfully set the benchmark of quality for over ten years.

The Aqualite™ 10,000K lamps have a high color temperature from a single point source which simulates the appearance of sunlight near the equator in ocean depths of approximately 5 meters. Aqualite™ 14,000K and 20,000K+ lamps simulate water color at deeper depths and with differing wavelength spikes. Coral fluorescence will be excited in some species under the enhanced blue spectrum of the 14K and 20K + lamps. The superior spectral balance of the Aqualite™ lamps are ideal for lighting and environmental conditions for reef systems. This includes fish, coral, invertebrates, marine fauna and flora.

Available in Double Ended 75W, 150W, 250W; Single Ended 175W, 250W, 400W, 1000W with color temperatures of 10,000K, 14,000K and 20,000K+

FEATURES AND BENEFITS

- High color temperature — 10,000K, 14,000K, 20,000K+
- Excellent color rendering — up to 90 CRI
- Superior spectrum balance
- High color stability
- High intensity
- Made in Germany



APPLICATIONS

- Marine / Aquariums
- Terrariums
- Salt water reefs; hard corals
- Plants
- Fountains
- Waterscape
- Pools
- Architecture
- Landscape

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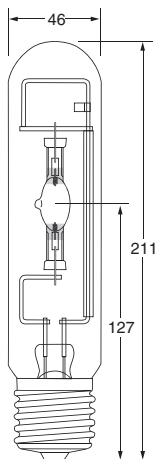
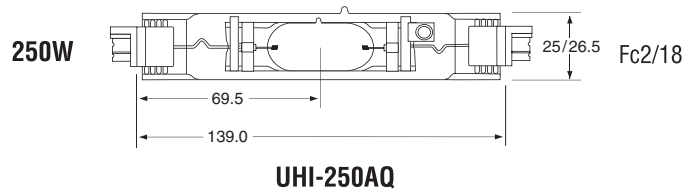
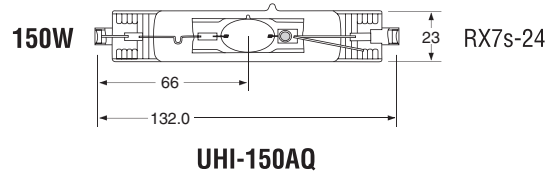
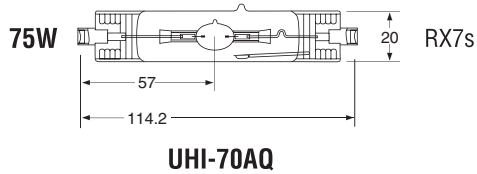


CHARACTERISTICS & SPECIFICATIONS

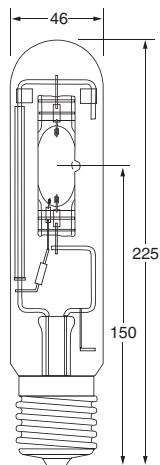
AQUALITE™ METAL HALIDE

All dimensions are in millimeters

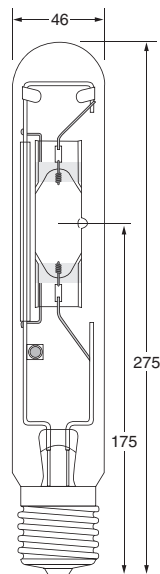
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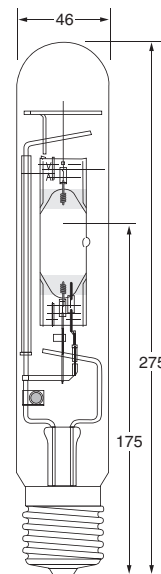
UHI-S175AQ
175W



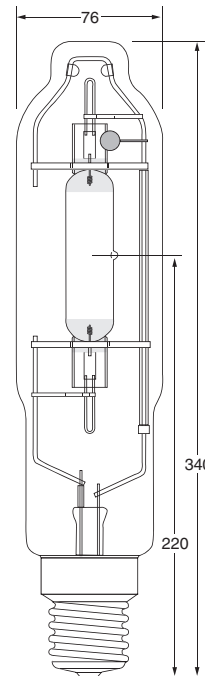
UHI-S250AQ/CWA
250W



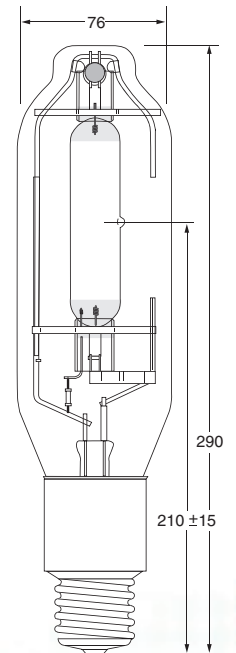
UHI-S400AQ
400W



UHI-S400AQ/CWA
400W



UHI-S1000AQ
1000W



UHI-S1000AQ/CWA
1000W



CHARACTERISTICS & SPECIFICATIONS

AQUALITE™ METAL HALIDE

Watts (W)	Ushio Ordering Code	Ushio Lamp Code	Color Temp (K)	Lamp Current (A)	Luminous Flux (lm)	CRI	PAR Value/Watt	Recommended Life (h)	Ballast
DOUBLE ENDED — RX7s & Fc2/18 BASE									
75	5000870	UHI-70AQ/10	10000	0.9	3100	80	14	6000	M85**
75	5001627	UHI-70AQ/14	14000	0.9	TBA	90	TBA	6000	M85**
75	5001606	UHI-70AQ/20+	20000+	0.9	1700	n/a	TBA	6000	M85**
150	5000440	UHI-150AQ/10	10000	1.8	7000	90	35	6000	M81**
150	5001587	UHI-150AQ/14	14000	1.8	6800	70	35	6000	M81**
150	5001588	UHI-150AQ/20+	20000+	1.8	3000	n/a	16	6000	M81**
250	5000763	UHI-250AQ/10	10000	3.0	10500	90	56	6000	M80**
250	5001589	UHI-250AQ/14	14000	3.0	10600	70	56	6000	M80**
250	5001590	UHI-250AQ/20+	20000+	3.0	5000	n/a	26	6000	M80**
SINGLE ENDED — E39 BASE									
175	5001586	UHI-S175AQ/65	6500	1.5	11675	70	52	6000	M137*
175	5000761	UHI-S175AQ/10	10000	1.5	7500	90	47	6000	M137*
175	5001591	UHI-S175AQ/14	14000	1.5	7500	70	47	6000	M137*
175	5001592	UHI-S175AQ/20+	20000+	1.5	4300	n/a	22	6000	M137*
250	5001070	UHI-S250AQ/10/CWA	10000	3.0	11000	90	54	8000	M58
400	5001492	UHI-S400AQ/10/CWA	10000	3.6	18500	90	95	8000	M59
400	5000760	UHI-S400AQ/10	10000	3.2	18500	90	95	8000	M135*
400	5001608	UHI-S400AQ/14	14000	3.2	18500	70	TBA	6000	M135*
400	5001607	UHI-S400AQ/20+	20000+	3.2	8000	n/a	TBA	6000	M135*
1000	5000910	UHI-S1000AQ/10	10000	9.5	50000	90	230	3000	M83**
1000	5001493	UHI-S1000AQ/10/CWA	10000	4.1	46000	90	230	3000	M47

Burn Position: Double Ended: Horizontal ± 45°
 Single Ended: Universal 360°
 (1000W): Horizontal ± 60°

Recommended Ignition Voltage: 4kV
 *Pulse start ballast with ignitor **Need ignitor with 4kV
 Lamp should be switched off for at least 15 minutes/week

Case quantity: Double Ended: 10/case
 Single Ended: 12/case; 1000W 6/case

Enclosed fixture rated:
 !Use only in fixtures installed with tempered safety glass
 !For architectural use — UV protective glass is necessary

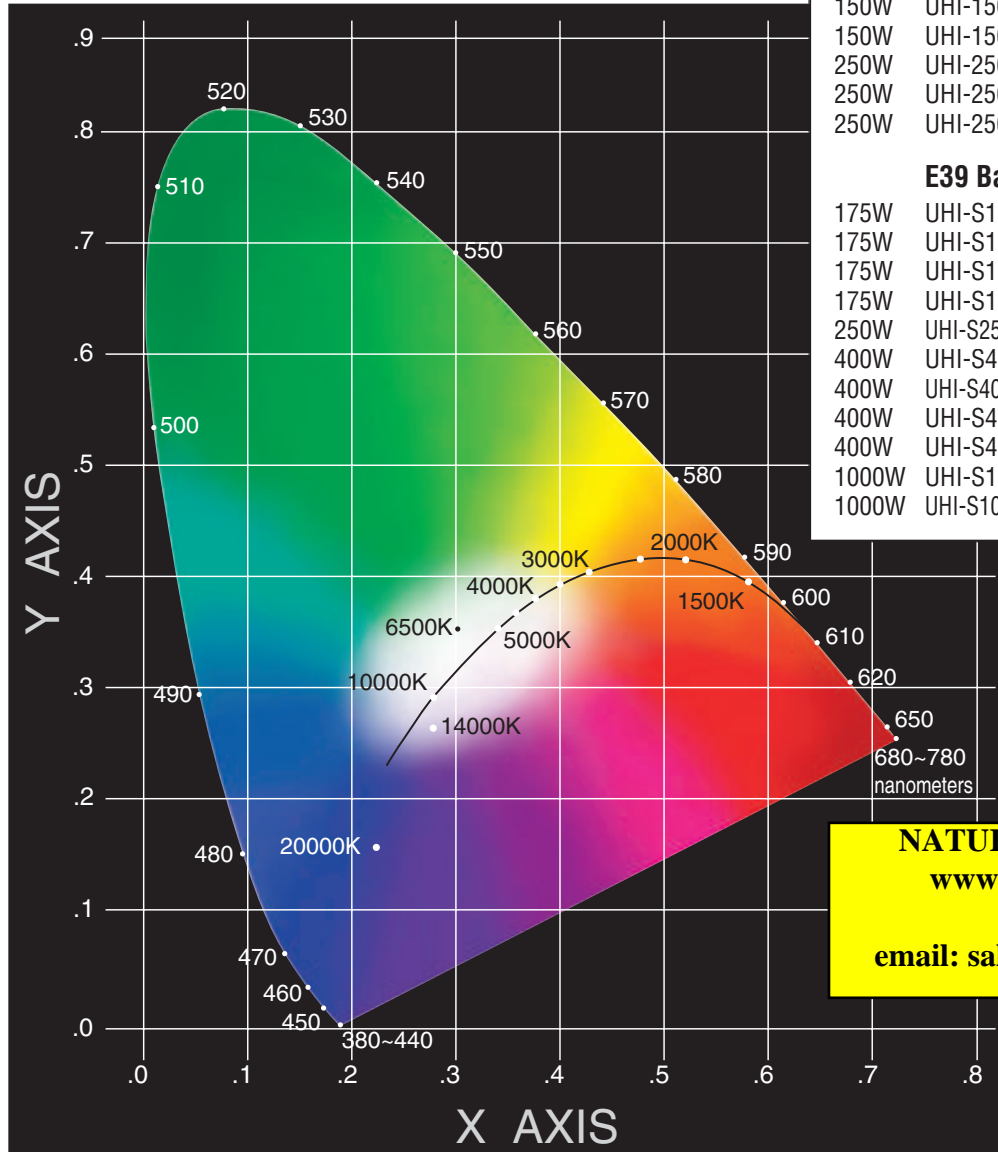


Aqualite™ Metal Halide lamps are manufactured under ISO 9001 guidelines ensuring quality and security for the purchaser.

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CHROMATICITY DIAGRAM



AQUALITE™ Chromaticity Coordinates

Double Ended

75W	UHI-70AQ/10	X=0.285	Y=0.275
75W	UHI-70AQ/20+	X=0.200	Y=0.180
150W	UHI-150AQ/10	X=0.285	Y=0.275
150W	UHI-150AQ/14	X=0.287	Y=0.260
150W	UHI-150AQ/20+	X=0.220	Y=0.160
250W	UHI-250AQ/10	X=0.285	Y=0.275
250W	UHI-250AQ/14	X=0.287	Y=0.260
250W	UHI-250AQ/20+	X=0.220	Y=0.160

E39 Base

175W	UHI-S175AQ/65	X=0.304	Y=0.360
175W	UHI-S175AQ/10	X=0.285	Y=0.275
175W	UHI-S175AQ/14	X=0.287	Y=0.260
175W	UHI-S175AQ/20+	X=0.220	Y=0.160
250W	UHI-S250AQ/10/CWA	X=0.285	Y=0.275
400W	UHI-S400AQ/10	X=0.285	Y=0.275
400W	UHI-S400AQ/10/CWA	X=0.285	Y=0.275
400W	UHI-S400AQ/14	X=0.270	Y=0.270
400W	UHI-S400AQ/20+	X=0.200	Y=0.140
1000W	UHI-S1000AQ/10	X=0.285	Y=0.275
1000W	UHI-S1000AQ/10/CWA	X=0.285	Y=0.275

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Correlated Color Temperature = Measured in degrees of Kelvin (K), color temperature is the absolute temperature of a blackbody radiator resembling that of the light source. Color Temperature can be used as a general rule of thumb to measure the appearance of “warmth” or “coolness” of a light source. It does have its limitations since lamps with the same color temperature rating will not often look the same between manufacturers. Other measurements such as CRI and spectral distribution should be considered when choosing a light source for your aquarium.

Household incandescent lighting that appears warm and yellow is approximately 2,700K. Outdoor daylight is approximately 5,600-6,000K. Aqualite™ 10,000K lamps approximate equatorial daylight at 5 meters of ocean depth. Aqualite™ 14,000K and 20,000K+ lamps are slightly bluer in appearance, simulating deeper water environments, ideal lighting for invertebrates such as lobsters and jellyfish. These lamps are also used in nighttime simulations.

CRI or Color Rendering Index: CRI is an internationally accepted system to measure the capability of a light source to render color naturally. The closer the number is to 100 the closer that light source is rendering color like natural daylight. Fish, coral and plant life will appear much more true to life under higher CRI light sources.



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AQUALITE™ SPECTRAL DISTRIBUTION

Spectral Distribution

Wavelength theory provides a graphical representation of radiant energy and the electromagnetic spectrum. The preferred unit of wavelength for the visible and ultraviolet (UV) regions of the spectrum is the nanometer (nm).

UVC = 100–280nm: Most harmful and used in sterilization to kill biological organisms.

UVB = 280–315nm: Harmful and causes sunburn, skin cancer, and eye damage.

UVA = 315–400nm: Longer wavelength and less energy than other UV. It is the least harmful but still can be damaging.

Visible Light = 380–780nm

What about the UV?

UVC and UVB in excessive amounts can be detrimental to fish and corals; However, UV light does occur naturally in sunlight which in balanced amounts is not necessarily harmful. Studies have found that the majority of coral reef fish produce mucus that absorbs harmful UVB rays. Corals also have developed a natural pigmentation as a protection from UV. Metal halide lamps produce UV light which can be significantly filtered by fixture glass and water depth. USHIO's Aqualite™ metal halide lamps are balanced to reduce excessive amounts of UV light for your reef system.

PAR (Photosynthetically Available Radiation):

A measurement used to help determine the photosynthetic amount of light needed by corals and plant life. Photosynthesis in corals utilizes energy between the (blue) 400nm wavelengths and (red) 700nm wavelengths.

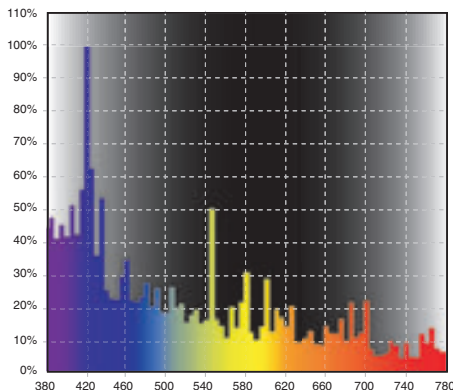
Aqualite™ 10,000K lamps produce the ideal balance of blue, white and red light in the spectrum to simulate daylight in the water. Our Aqualite™ lamps reduce the green light, a spectrum which can promote the growth of the "bad" algae that grows on corals.

Fixture Glass?

USHIO recommends the use of tempered safety glass on any fixtures using our Aqualite™ metal halide lamps. The safety glass not only reduces some UV, but also extends the life of your lamps and sockets by protecting them from salt water corrosion. UV protective glass is required for any architectural use of Aqualite™ metal halide lamps where people are directly exposed to the light.

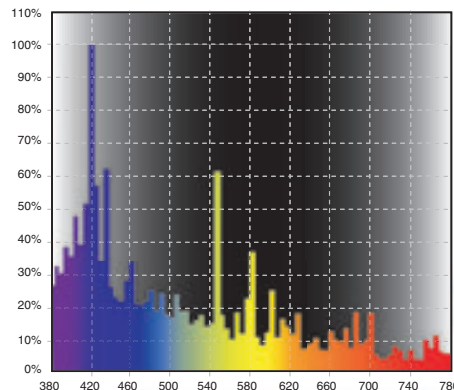
SPECTRAL DISTRIBUTION CHART

150W 10,000K



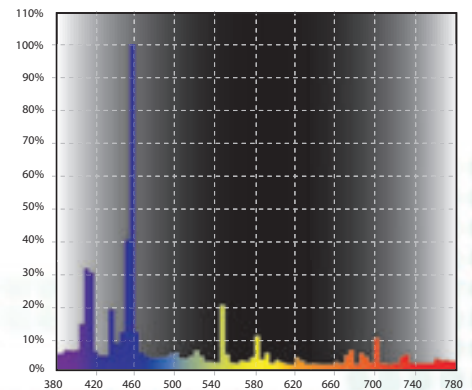
Wavelength (nm)

150W 14,000K



Wavelength (nm)

150W 20,000K



Wavelength (nm)

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Luminous Flux: Measured in Lumens is an industry standard for measuring the visible light output from the lamp.

Operating/Burn Position: The operating position of the lamp is specified to provide the proper light output and color. Changing the lamp operating position can change the thermal properties of the arc tube during operation causing some metals or salts to drop out of the arc stream and thus changing the color of the lamp.

Lamp Life: The median life of metal halide lamps is statistically determined under controlled conditions on a 11 hours on, 1 hour off, cycle. Environmental factors including the lamp housing, reflector, power supply, and lamp cooling will affect lamp life considerably.

All metal halide lamps degrade in light output and may shift in color over time. Inferior lamps are easy to spot since they significantly shift in color and drop off rapidly in output. The lamp life rating between different manufacturers may be the same on paper but performance over the life of the lamp will tell you your true cost of ownership.

USHIO Aqualite™ metal halide lamps utilize proprietary rare-earth mixtures to provide the most consistent lamp color over the entire lifetime of that lamp. Our arc tube forming process and coatings ensure that light degradation levels are kept to a minimum. For the best health of your aquarium and reef system, it is recommended that you schedule regular lamp changes depending upon your timing cycles and rated lamp life. It is normal for metal halide lamps to stabilize in color and output within 100 hours of "burn in" operation.

Brand new lamps will always produce more light than lamps near their end of life. Your corals and fish will need time to adjust to the higher light levels. It is recommended that when a lamp is first replaced, that you first raise the light fixture and then lower it as the lamp ages.

Timing Cycles: For the health of your fish and reef systems the lighting system should be turned on at least 12 hours per day. Check with marine biology sources to determine the proper amount of daylight hours needed for your specific species.

Ballasts and Power Supplies: It is extremely critical to match the proper ANSI coded lamp to the ANSI coded ballast. Failure to do so will cause improper lamp ignition, poor color and spectral performance, and short life.

For example: USHIO's 175W Aqualite™ is a pulse start lamp. Pulse start type lamps may ignite and work just fine on a probe start ballast for a few months; however, as the lamp ages, the electrodes erode and higher voltage is needed to start the lamp. The open circuit voltage provided by probe start ballasts is not sufficient to ignite a pulse start lamp. Pulse start lamps like our 175W Aqualite™ always require an ignitor to keep the lamp starting throughout its life cycle.

