

Squeezing Ultra-Bright Black Light from Your Easel Hood

By Kerry Kistler
for ChalkedAndAmazed.com (7/09)

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Over the years, I have had to wrestle with venues that were not darkened properly. There have been churches with huge skylights, floor to ceiling stained glass, and hosts that “forgot” to cover the windows, causing my fluorescent and hidden drawing effects to glow anemically (if at all). Most recently I was in a new facility which had auditorium lights that could not be shut off completely, only dimmed—a current trend in safety lighting for public buildings. For years, ambient light issues like these have plagued chalkers everywhere. But recently I discovered a fairly simple solution that solves most of these problems for a modest cost.

THE SCIENCE OF UV

First, it might be helpful to take a quick look at the science behind black light. **The Wildfire Report** (a FREE 56 page download from WildFireFX.com) is packed with info:



“Long wave UV, or UV-A, is the kind used in entertainment applications [such as bowling alleys, amusement parks, mini golf, and chalk art]. This is what’s known as ‘black’ light. ‘Black’ because you can’t see it. In comparison to short-wave or medium-wave UV, long-wave UV is pretty safe. This range is defined by the wavelengths between 315 and 400nm.

For best results, the [lamp] should peak at 365-368nm. Many so-called black lights aren’t really black lights at all. For example, there is the much-touted UV LED in recent years. Most UV LED’s produce light at 385nm to 400nm...but still fall short of the 365nm ‘sweet spot.’ The biggest problem with...LED fixtures is that invisible fluorescent materials don’t respond well, if at all. To get the best

results for all UV sensitive materials, use a [lamp] peaking at 365nm.”

True. I have experimented with UV LED flashlights thinking they might be an alternative for people who end up with one of my drawings. These LED flashlights are a useless waste of money when it comes to making our fluorescent and invisible chalks glow. Only one or two of the fluorescent colors react (poorly) and not one of the invisible colors respond at all.

STEPS TO BOOSTING YOUR BLACK LIGHT LAMP

If you want your black light bulb to create brilliant glowing effects, there are three factors to consider. The first factor is to make sure you are using a quality lamp that has a more reactive fluorescent material in the phosphor coating. Not all bulbs are created equal. There are a few brands that produce better results. More on this below.

The second factor is to use lamps that have a smaller diameter. This may seem counter-intuitive but a fatter tube does NOT produce more output. With a smaller diameter tube the fluorescent material is closer to the center of the tube and will fluoresce more brightly. Most 2' and 4' black light lamps have a diameter of T12. Avoid these and look for the skinnier black light lamps which have T8 in their number.



The third factor in producing the brightest output possible is using a very high output (VHO) electronic ballast. This type of ballast ensures a smooth, noise-and-flicker-free output with an instant start. Perhaps the best ballast in this class is the Ice Cap (model 430-

008). Used extensively in the aquarium industry, this ballast is known to double the output of fluorescent lamps by overdriving them—a 30W lamp will produce nearly 60W.

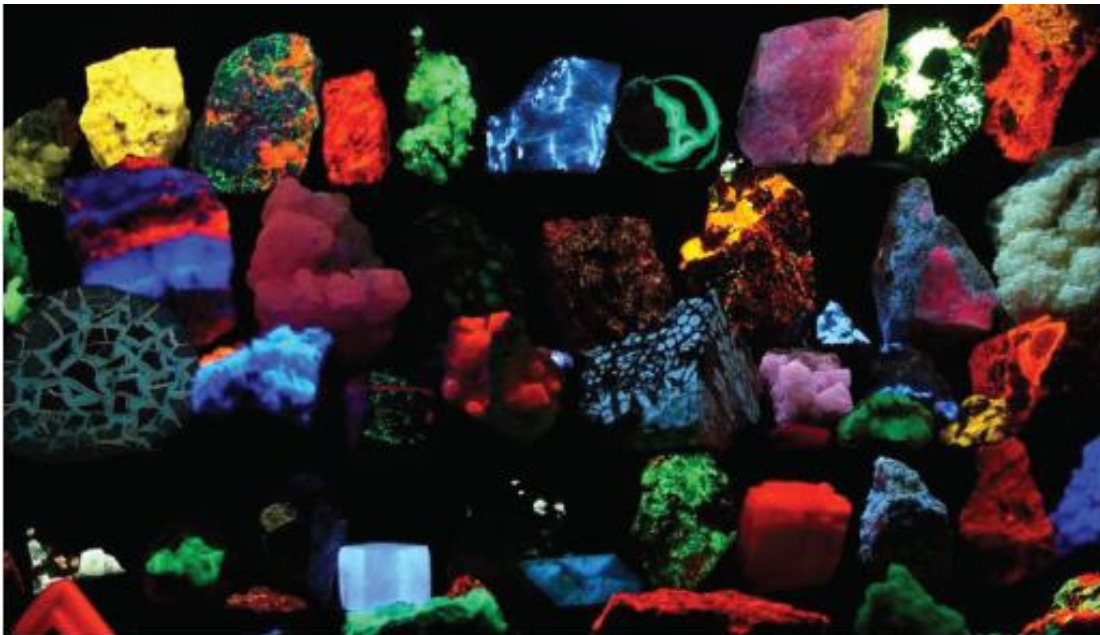
According to WildFireFX.com tech support, they use Ice Cap ballasts in all their black light fixtures, so I trust their research in this area. There is a small downside: according to WildFire, overdriving a lamp will shorten its life by about 30%. Some cheap Chinese brands will burn out more quickly because not all lamps can handle a VHO ballast very well. So, pay a bit more and stick with quality bulbs such as the Wildfire SableLux (48" from WildfireFX.com or Blacklight.com), Damar (36" from Blacklight.com or Lightbulbsdirect.com), Ushio (24" from WildfireFX.com or Blacklight.com), Sankyo Denki (36" from Techwest.com). Of course, suppliers change their product line-up all the time, so check online by brand name or search for F32T8BLB (48") or F30T8BLB (36") or F20T8BLB (24"). EternityArts.com also carries a Korean-made brand in 36", 24" and 18" (though I am uncertain of the quality).

SIMPLE INSTALLATION & AMAZING RESULTS

I purchased an Ice Cap 430-008 from Advanced Aquatics in Schaumburg, IL for about \$170 and replaced the standard ballast in my LeGrand Easel light hood. The Ice Cap ballast is larger, but there is still adequate room beneath the reflector to install it using several pop rivets. The wiring schematic, which comes with the ballast, is designed

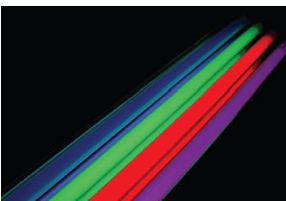
for two or more bulbs. However, since the LeGrand light hood contains only one 36” lamp, Ice Cap tech support gave me these directions which work perfectly: 2 red wires to one end of bulb, 2 blue wires to the opposite end. Cap off the yellow wires (do not tie together). Connect the black, white and ground per instructions and bypass any starter since it won’t be needed.

Be aware that the increase in output may not be that noticeable when looking at the lamp itself because black light waves are not seen by the human eye. The real test of brightness is not the visible output of the fixture, but the output of the fluorescing object—in our case, the chalk. The difference was obvious after I installed the Ice Cap ballast. A moderate amount of ambient light is no longer a hand-wringing frustration for me. In fact, if anything, the ultra-bright output of my black light is almost too much! Now, when I flip on my black light, the invisible picture can be seen faintly, even under three 150W white light bulbs in my hood! It is difficult to have the hidden picture slowly emerge in the controlled manner I prefer, though this is a small sacrifice. The benefit is that the hidden picture WILL be seen in nearly all lighting conditions.



Some of the glowing, fluorescent minerals used to make our chalk. *by Hannes Grobe*

AN EXPERIMENTAL LIGHT “HOOD”



Although this is an expensive alternative, it might be worth exploring: a 4’ light fixture with 4 colored fluorescent bulbs, which are dimmable—red, blue, green (or white) & black light. WildfireFX.com offers the Spectra Master Elite. This high-output color changer is DMX 12 controllable for flash, strobe, or alternating among the colors and has formulas for achieving alternate colors like orange, pink, violet, etc. The fixture is pricey, at nearly \$1100, but would sure be fun to experiment with. The product data sheet is on the following page, and a full product manual in PDF can be downloaded from WildFireFX.com.

Wildfire

Spectra Master™ Series

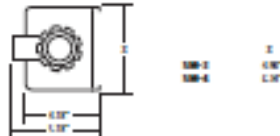
Controllable Fluorescent Color Changers

The Spectra Master Lighting Series by Wildfire is a unique line of DMX controllable T8 linear fluorescent color changers, available in three lamp Premier and four lamp Elite models. Featuring high output electronic ballasts and polished Everbrite reflectors, these versatile lighting fixtures produce 200% more light output than standard fluorescent lighting units and can be programmed via DMX 512 to flash, strobe, dim and alternate between lamps, allowing the user to create a wide variety of colors using a process known as color additive mixing.



Features:

- High Output Electronic Ballasts
- Custom Phosphor Lamps
- Spectrally Matched Filter Sleeves
- Polished Everbrite Reflectors
- Positive Locking Sockets
- Adjustable Mounting Brackets



Connections & Control Functions:

Premier Model:

5 pin XLR and RJ-45 connections for DMX in and DMX out. One set of address switches, three DMX channels. Each lamp can be individually programmed via DMX 512 to Flash, Strobe and dim down to 2% output.

Elite Model:

5 pin XLR and RJ-45 connections for DMX in and DMX out. One set of address switches, four DMX channels. Each lamp can be individually programmed via DMX 512 to Flash, Strobe and dim down to 2% output.

Specifications:

Housing	Sheet Steel with Stainless Steel Hardware
Finish	Flat Black Powder Coat
Mounting Brackets	Fully Adjustable
Reflector	Polished Everbrite Aluminum
Sockets	6-8 Positive Locking Medium Bi Pin G13
Ballast	Electronic VHO, Power Factor > 92%
Rating	Premier: 90-270 VAC / 50-60 Hz. 2.0A max. 200 Watts Elite: 90-270 VAC / 50-60 Hz. 3.0A max. 300 Watts
Circuit Protection	Four 2.5A Slow Blow and Four 1A Fast Blow Fuse
Operating Temperature	50° F to 100° F
Power Cord	6' 16/3 SOW with male Edison
Lamps	Premier: F40T(12)(10)(8) Non Energy Saver Type Lamps Elite: F40T(12)(10)(8) Non Energy Saver Type Lamps
Peak Spectral Output	658nm Red, 514nm Green, 421nm Blue and 368nm BLB
Lamp Life	8,000 Hours Solid On Mode (Flash, Strobe and Dimming modes will reduce lamp life)
Weight	Premier: 10.15lbs / 4.60kg Elite: 11.40lbs / 5.17kg

Standard Equipment:

- Adjustable Mounting Brackets
- 1 F40T8R (658nm Red) Lamp
- 1 F40T8G (514nm Green) Lamp
- 1 F40T8B (421nm Blue) Lamp
- 1 F32T8BLB (368nm UV) Lamp

Optional Accessories:

- UVT Protective Lens Kit (Premier 138-011)(Elite 138-012)
- Louver Kit (Premier 138-014)(Elite 138-015)
- Light Stand Mount (147-005)
- Floor Mount (147-006)
- T-Bar Ceiling Mount (147-003)



Wildfire Lighting & Visual Effects

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