

Florescent Bulb Percentage - by: Bob MacCargar

How much total UVB in the 290-300 bands is easy enough to figure by comparing to a spectrograph of the natural sun.

About 5% of the UVB emitted by the sun is in the prim D-UV range of 290-300nanometers. Mercury Vapor lamps have about the same bellcurve as the sun. So, 100uW/cm² would equate to 5uW/cm² of 290-300. If you consider the fact most of the lamps that the friends here are testing fall way below these numbers, it would be difficult to impossible to get an accurate measurement with a filter on this meter.

Because all Merc Vapor lamps have the same bell curve as the sun, taking readings from them is reliable. The florescent tubes are a different story. The bell curve on these differ from tube to tube. If I was to continue research in the UVB output of UVB producing florescent tubes, I would invest in a spectroradiometer. Last year, when pricing them, I found a reliable manufacturer of them in the \$1000 range. With all the software to hook
http://www.jetigmbh.com/Systems/specbos1000uv_en.html

With what I know about the cost of manufacturing UVB producing fluorescents from talking to the engineers and companies putting the actual bulbs together, I am VERY leery of inexpensive tubes registering high UVB numbers. The only way to really tell if theses are producing any useable UVB is to have a spectrograph done. The % attached to the bulb, 2%, 5%, 7%, is suppose to be the percentage of UVB as a comparison of total iridescence emitted. . Without knowing what the total iridescence is, the percentage means nothing. Even more importantly is the fact that the UVB in fluorescents is very sensitive to the quality and quantity of phosphor in the tube along with other ingredients. (Still, fluorescent t lamps producing high readings, even if they have a different bell curve and may not emit as much D-UV as MV lamps, are still much better than the tubes sold as reptile lamps that emit little to NO UVB.)

This is why they are able to produce "narrow" band UVB tubes (which cost quite a bit.). This is also possible with Mercury Vapor arc tubes. The "standard" arc tube emits the highest amount of lower spectrum UVB. By adding other trace minerals, one can "shift" the nanometer range upward. We do this with the UVR curing lamps we produce because the automotive primers on the market are designed to use the upper UVB and UVA radiation range.

Interestingly, this is why metal halide lamps that reproduce "near" perfect full spectrum light have very little UVB even though they are basically mercury vapor arc tubes with many other trace minerals included.

Well, I got a bit off the subject, but its useful information regardless.

Bob Mac