

Lighting Basics

One of the three basic needs of an African violet is light. The best type of light is artificial light. It gives you the best control over your growing environment. These days there are many choices for the violet enthusiast. The most common choice is the fluorescent bulb. They come in three different widths. The T12, T8 and T5.

| Common Questions & Answers | | Comparison | | |
|--|--|--------------------------|--------------------------|---------------------------|
| | | T5 Bulbs | T8 Bulbs | T12 Bulbs |
| What does the alpha numeric code for each bulb mean? (What does T5 mean?) | | $\frac{5}{8}$ of an Inch | $\frac{8}{8}$ of an Inch | $\frac{12}{8}$ of an Inch |
| <i>The letter "T" stands for "tubular" and the number indicates the diameter of a bulb.</i> | | | | |
| How does the diameter of bulb affect light output? | | Highest Efficiency | High Efficiency | Old and Inefficient |
| <i>Energy efficiency</i> | | | | |
| How do you measure efficiency? | <i>CRI (Colour Rendering Index): indicates quality of light</i> | 85 CRI | 85 CRI | 62 CRI |
| | <i>LPW (Lumens per Watt): indicates quantity of light measured</i> | 103 LPW | 92 LPW | 78 LPW |
| | <i>CU (Co-efficiency of utilization) example comparison</i> | .90 CU | .76 CU | .46 CU |
| T5's seem to have the highest efficiency does that translate to cost saving? | | | | |
| <i>Not necessarily. Most T5's are only 9% more efficient than T8's which translates to nominal cost savings over time.</i> | | | | |

A lumen is how much light a bulb produces and when it hits the surface it is called a foot-candle. Violets need about 1000 foot-candles for optimum growth. This means that they are low energy plants

Florescent bulbs also produce different color light. For African violets, the blue spectrum is for photosynthesis and the red spectrum is for blooming. You will find that light on the spectrum are spoken in terms of Kelvin's. The least expensive setup is to use one cool white, who can be sold from 4100 to 6000 Kelvin and one warm white, which is 3000 Kelvin. The more expensive grow lux bulbs are 1600 to 1900 Kelvin. The higher the Kelvin the bluer spectrum light it produces and the lower the Kelvin the redder spectrum light it produces.

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So how do you determine how close to the fixtures you place your plants and how many hours a day do you keep your lights on? First violets need to rest. They must have at least 8 hours of darkness to process the light. So never have your lights on more than 16 hours a day. Next different plants need different degrees of light. Lighter foliage requires more light than darker foliage. The light in the middle is brighter than the light on the ends. If you are using T8 bulbs start out at 8 hours. For those using T12 bulb start at 10 hours. If you feel you need more light only increase by 1 hour every week until you have what you feel is your best growing conditions. Most people do not need more than 12 hours for their plants. How far from the light should the plants be? Generally the rule of thumb is 8 to 10 inches for mini's and semi-mini's and 10 to 12 inches for standards. Plants grown under T8 and T5 bulbs should be grown further away from the light than plants grown under T12 bulbs.

When it is time to change your lights remember they produce 20% more light in the first few weeks. So one simple rule never change both bulbs at the same time! The best rule of thumb is to change the bulb about 6 months apart. Also when you change a bulb cut your time down 1 hour for a few weeks. Also make sure that the bulbs and reflectors are clean. Light output can be reduced as much as 80% from dirty dusty reflectors and bulbs.

When you are growing for show you should start a couple months before and gradually increase your light by one hour a week. Show schedules are handed out to help you determine when to start this. Remember that the extra light is used to stimulate flower production for a specific occasion and it does stress a plant. Once you are done growing for show put your plants on their regular light schedule or you are going to have problems due to too much light.

The last thing that needs to be mentioned is the new technology of led lighting. Led's do not need ballast to run therefore they are very energy efficient and cool. You can place your plant as few as 3 inches below the light and it will not suffer from too much heat or burning from the light. The lights do come in cool and warm, blue and red, so they cover the light spectrum that violets need. This breakthrough will allow growers to have more shelf space to grow their plants and will save on air conditioning and electricity. It is still new and premade light fixtures cost up to \$600 dollars. There is a homemade LED system that is being experimented with on the internet (Facebook's Violet Nerds). This has no history so I cannot tell how well it works but it may be the wave of the future.

One of my sources were two articles written by Neil Lipton in the November December 2012 and the March April 2013 AVM's. If you want more information please look at these two articles.