EconoLux Industries Limited - 宜諾科技有限公司

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PRO-LED™ 100W LED Grow-lights

The PRO-LED™ Grow-lights are fixed spectrum lights, with an 85% to 95+% match to the McCree Curve, or with HPSH (HPS Helper) spectrum, depending on the COB selected. The PRO-LED™ series also has a close match to Sunlight (except the HPSH) according to model selected (see spectrum graphs). The PRO-LED™ lights have passive cooling using heat-pipes, with your choice of 60°, 90°, or 120° borosilicate glass lenses with silicone seals, and they are IP54 (water proof).

The PRO-LED-100W lights are ideal for seedlings/cloning areas, small grows, as supplemental lighting, or as your main top-lights. Give your plants the light they need to grow and thrive with the PRO-LED Series.

The spectrum of the lights are based on the latest scientific research and utilises the ELPL -BMC COBs, which have a 90+% match to the McCree Curve - see What Light Do Plants Need? and The McCree Curve Explained.

The PRO-LED™ LED Lights are designed for the rigors of high-humidity Greenhouse environments. They are water resistant (IP-54) and have no fan as they are a passively cooled light (convection cooling with heat-pipes). They are made from rust resistant, powder coated aluminum.

LED COB

The PRO-LED™ LED Grow Lights are quipped with the 100 Watt ELPL Mc series or HPSH series COBs. Based on the latest scientific research, the Mc series COBs are unique in that they are the world's first LED COBs to offer an 85% to 95+% match to the McCree curve; or the HPSH COBs which are designed to supplement HPS lamps with extra UV, Blue, Deep Red and Infra Red light.

SPECTRUM

The McCree curve is the spectral curve that scientists have determined is the best for growing a variety of crop plants. Our PRO-LED™ lights have an 85%, 90%, or 95+% match with the McCree curve, or the HPSH supplementary light spectrum.

The extra UV and blue light provided in the Mc90 and Mc95+ spectrum is ideal for applications such as growing leafy green plants (lettuce, kale, arugula, etc.), herbs (parsley, rosemary, basil, etc.,) and for germination and cloning of all types of plants. The plethora of red light also insures that these lights are also ideal for growing flowering and fruiting plants, as well as medicinal plants.

PRO-LED 100 With MC90+ COB growing Wasabi

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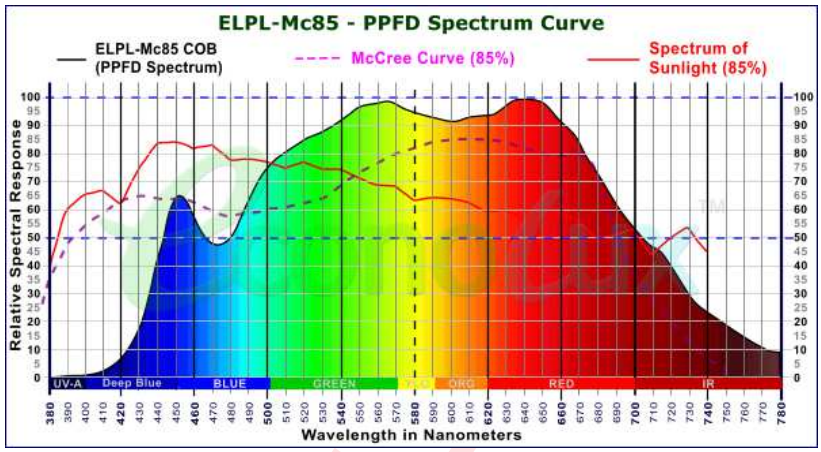
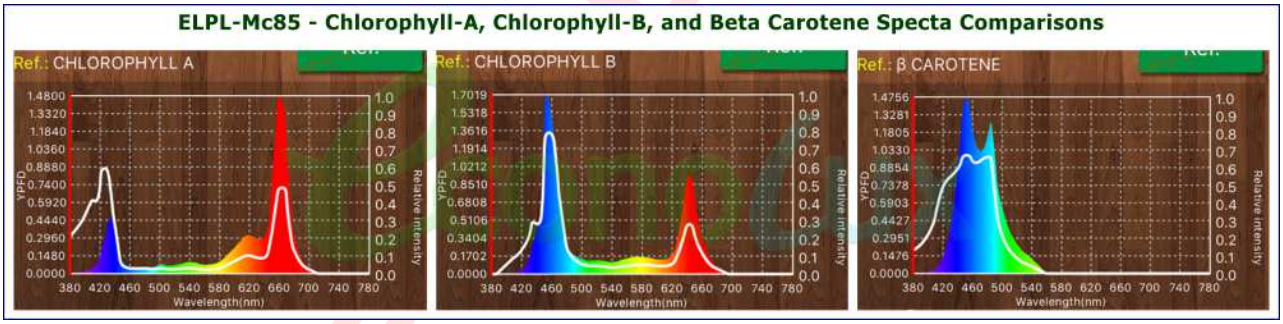
Mc85 SPECTRUM & COMPARISON CHARTS



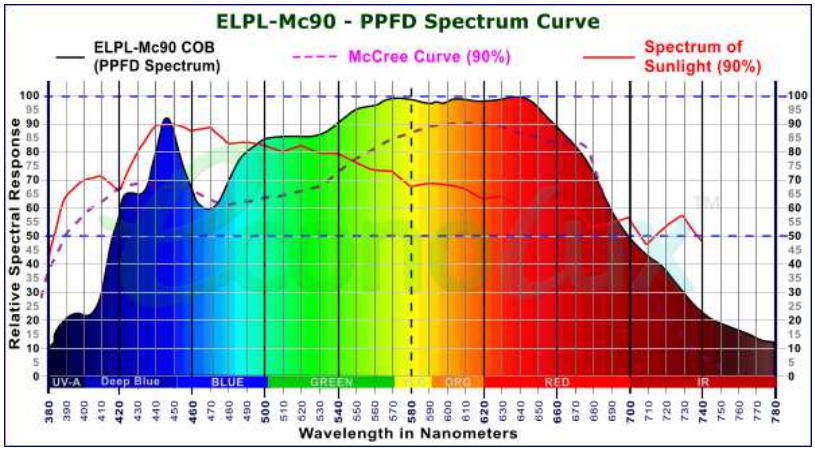
The chart (right) shows the PPFD spectrum of the Mc85 COB, with the McCree curve (as a dashed purple line - set to 85%), and with the spectrum of sunlight (solid red line set to 85%). We use the PPFD spectrum as it is a better indicator of the photosynthesis effects that can be expected from a light source.

You can see from the Chart, the ELPL-Mc85 series has a true full spectrum output from 410~770nm. The Mc series of COBs are the world's only LED light source with such a close match to the McCree curve.

The graphs (below), from our plant/grow light spectrometer, measuring in PPFD (PAR) *, shows a comparisons of the ELPL-Mc85 100W COB spectrum, to various standard curves for Chlorophyll A, Chlorophyll B, and Beta Carotene - the major light absorbing compounds in plants responsible for growth. The Mc85 COB grow light engine's match to these curves is quite close due to the ELPL-Mc85 COBs careful construction, and the use of our self-developed and proprietary Mc85 phosphor coating.



Mc90 SPECTRUM & COMPARISON CHARTS



The chart (right) shows the PPFD spectrum of the Mc90 COB, with the McCree curve (as a dashed purple line - set to 90%), and with the spectrum of sunlight (solid red line set to 90%) - note the enhanced UV and blue light in this model.

We use the PPFD spectrum as its a better indicator of the photosynthesis effects expected from a light source. You can see from the Chart, the ELPL-Mc90 series has a true full spectrum output, from 395~780nm.

***Note:** Light energy for plants is measured as Photosynthetic Active Radiation (PAR), with light falling onto a surface measured as Photosynthetic Photon Flux Density (PPFD)

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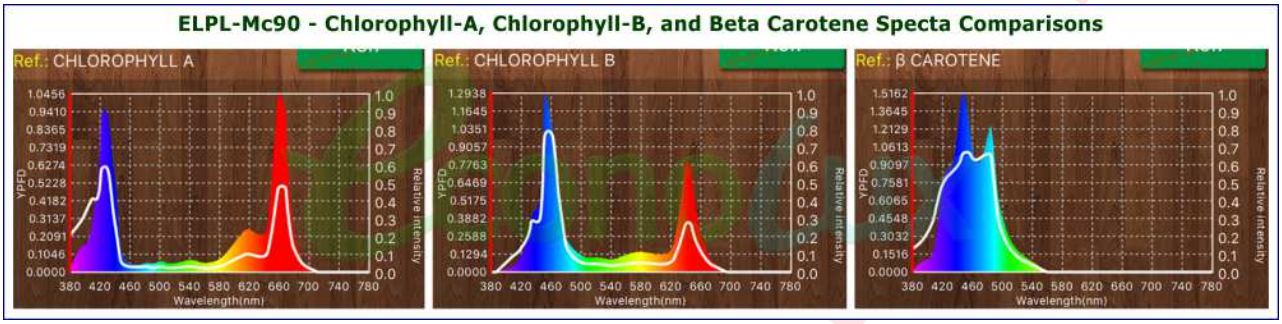
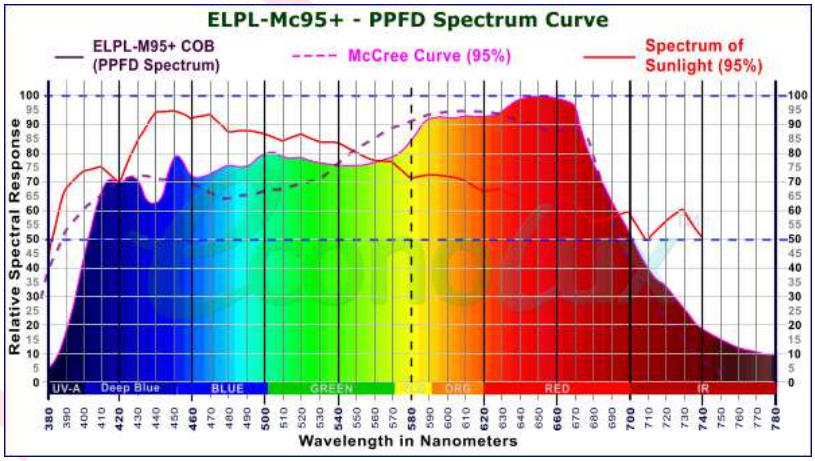
Mc90 SPECTRUM & COMPARISON CHARTS - Continued

The graphs (below), from our plant/grow light spectrometer, measuring in PPFD (PAR) *, shows a comparisons of the ELPL-Mc90 100W PRO-LED spectrum, to various standard curves for Chlorophyll A, Chlorophyll B, and Beta Carotene - the major light absorbing compounds in plants responsible for growth. The Mc90 COB grow-light engine's match to these curves is very close due to the ELPL-Mc90 COBs careful construction, and the use of our self-developed and proprietary phosphor coating.



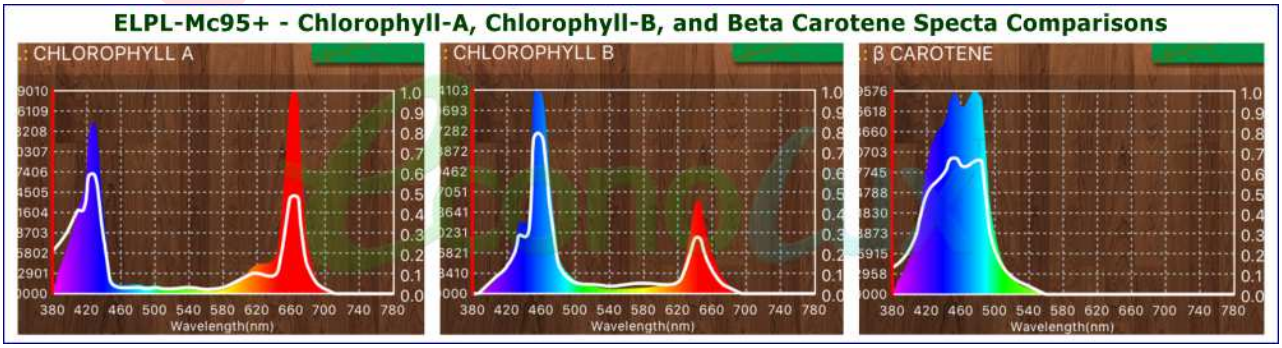
Mc95+ SPECTRUM & COMPARISON CHARTS



The chart (right) shows the PPFD spectrum of our premium, 24 band, Mc95+ COB, with the McCree curve (as a dashed purple line - set to 95%), and with the spectrum of sunlight (solid red line also set to 95%). Note the enhanced UV and blue light in the Mc95+ COB. We use the PPFD spectrum as it is a better indicator of the photosynthesis effects that can be expected from a light source. You can see from the spectrum chart, the ELPL-Mc95+ Model has a true full spectrum output, from 385~780nm.

The graphs (below), from our plant/grow light spectrometer, measuring in PPFD (PAR) *, shows a comparisons of the ELPL-Mc95+ 100W COB spectrum, to various standard curves for Chlorophyll A, Chlorophyll B, and Beta Carotene - the major light absorbing compounds in plants responsible for growth.

The Mc95+ COB grow-light engine's match to these curves is almost perfect due to the ELPL-Mc95+ COBs careful construction with 24 bands of LEDs, and the use of our self-developed and proprietary phosphor coating.



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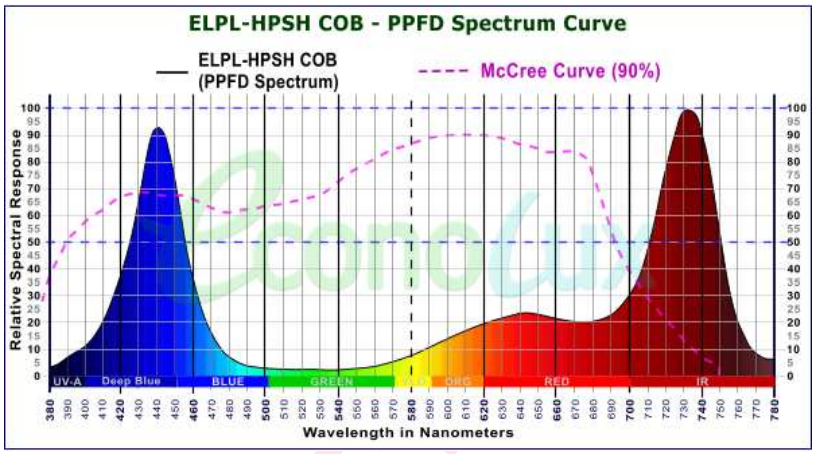
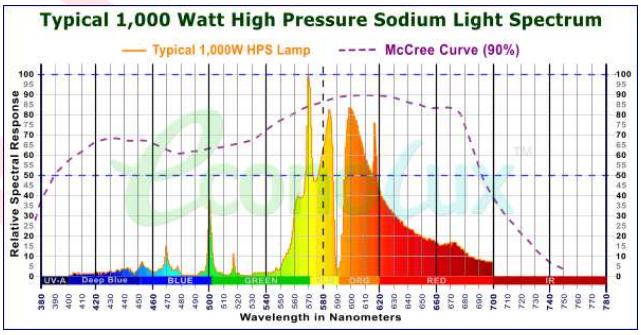
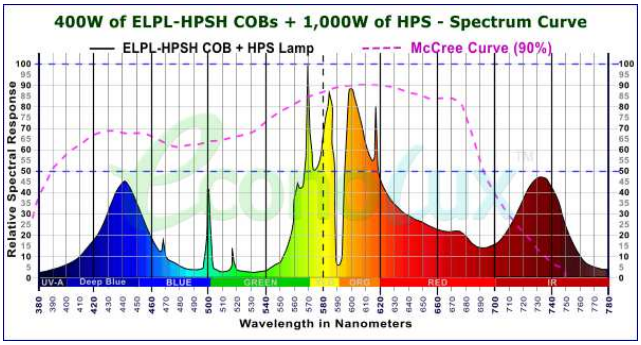
HPSH SPECTRUM & COMPARISON CHARTS



The ELPL-HPSH COB Series of light-engines has an unusual spectrum, as it is designed as a supplementary light to add to a High Pressure Sodium light. Note that it emits UV light in the 390~410nm range, abundant blue light in the 410 ~ 470nm range (with a peak at 440nm), some Orange light from 590~630nm, abundant Red light from 620~700nm, and strong Far Red and Infra Red light output from 700~780nm (with a peak at 735nm). These are all wavelength which the HPS lamps do not produce, or which they produce weakly with insufficient light for the plant's needs - especially flowering plants.



The spectrum on the right shows the output of a typical 1,000 Watt High Pressure Sodium grow-light - Note that it produces almost no UV light, and only miniscule amounts of Blue light. While the HPS light does produce some red light in the 620~700nm orange to red range, the red light output falls off rapidly around the crucial 660nm wavelength, and the HPS light produces almost no Infra Red Light (700~780nm). This lack of UV, Blue, Far Red and Infra Red light is less than ideal for growing plants, especially flowering plants which need additional Red light, and take advantage of the 'Emerson Effect' when IR light is available to the plants.



The spectrum on the right shows the results when combining the recommended 4 pieces (400W) of HPSH PRO-LED lights with a typical 1,000W HPS lamp. The effect of the HPSH lights can be increased by adding 6 HPSH PRO-LED lights (600W), or the supplementary effect can be decreased by adding only 2 HPSH lights (200W).

You will note that there is now an increase in the UV and blue light in the 390nm to 490nm range, as well as a slight increase in green light, an increase in Red light around the 630~680nm range, and a large increase in Far Red light in the 720nm to 755nm range, so that flowering plants can take advantage of the 'Emerson effect', which increases photosynthesis.

***Note:** Light energy for plants is measured as Photosynthetic Active Radiation (PAR), with light falling onto a surface measured as Photosynthetic Photon Flux Density (PPFD)

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ADVANCED LED AND DRIVER TECHNOLOGY

The PRO-LED™ LED lights are built with the most advanced, proprietary, LED technology to insure maximum output, a close match to the McCree curve or HPSH spectrum, long service life, and maximum energy savings.

The drivers are premium quality, MeanWell brand, with universal (100~250VAC, 50/60Hz) power input, thus they can work almost anywhere. (Higher input voltage models are optionally available.)

PASSIVE COOLING AND RUGGED CONSTRUCTION

The housings of the PRO-LED™ LED lights are carefully designed with large heat-sink fins for effective passive cooling of a 150W COB. There is 50% more cooling capacity than needed - this means no noisy, high maintenance fans. With an IP-54 water and dust proof rating, they are well suited to the high humidity conditions found in greenhouses.

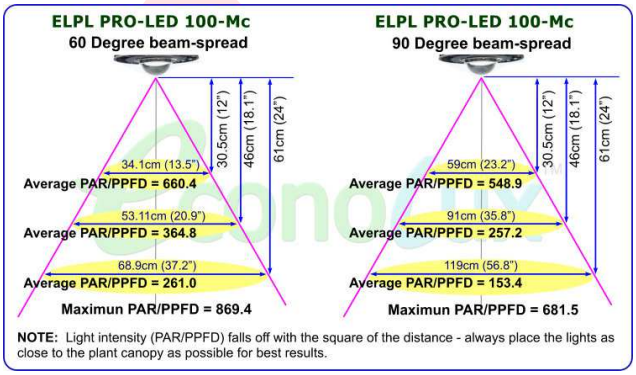
MAXIMUM ENERGY AND MAINTENANCE SAVINGS

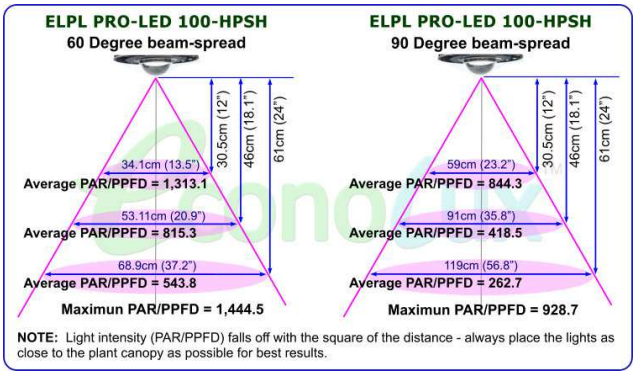
The PRO-LED™ LED lights can save 25% to 30%, and often more, in energy costs compared to conventional metal halide or high-pressure sodium grow lights. They also save time and money on maintenance.

These savings are available while providing a perfect spectrum with a close match to the McCree curve, or the unique HPSH spectrum, both of which provide an increased crop yield due to the additional wavelengths of light that aren't available from the typical grow-lights.

PAR/PPFD* OUTPUT

These charts shows the coverage area of the PRO-LED™ grow lights, along with the average PAR/PPFD at various distances from the light, with standard 60 and 90 degree lenses (other beam-spread lenses are optionally available).





***Note:** Light energy for plants is measured as Photosynthetic Active Radiation (PAR), with light falling onto a surface measured as Photosynthetic Photon Flux Density (PPFD)