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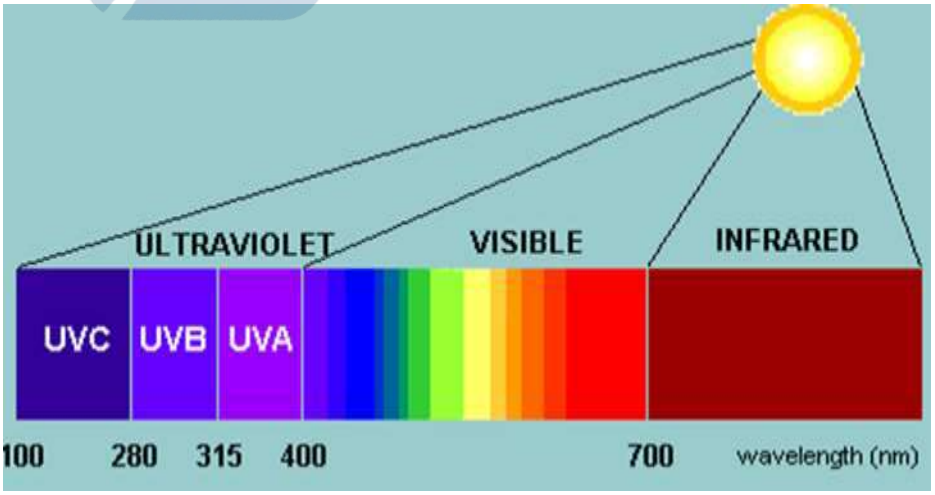
UVC LEDs are the next wave in the LED revolution that can bring the numerous advantages of UVC disinfection. UVC LEDs based light fixtures will become the driving force behind wider adoption.

MIRON Aegis Series (LED Lamp + UV LED) UV LEDs is designed which can be installed in kitchen , toilets and washrooms , for the treatment of beverages, disinfection of surfaces, packaging and other direct contact and non-contact surfaces. In addition, LEDs are rapidly becoming more efficient and cheaper, hence it is expected that LED technology will become more attractive to the lighting industry in the near future.

認識三種紫外線

Recognize three kinds of ultraviolet rays

UVA UVB UVC



Ultraviolet light is a type of electromagnetic radiation that makes black-light posters glow, and is responsible for summer tans — and sunburns. However, too much exposure to UV radiation is damaging to living tissue.

Electromagnetic radiation comes from the sun and transmitted in waves or particles at different wavelengths and frequencies. This broad range of wavelengths is known as the electromagnetic (EM) spectrum. The spectrum is generally divided into seven regions in order of decreasing wavelength and increasing energy and frequency. The common designations are radio waves, microwaves, infrared (IR), visible light, ultraviolet (UV), X-rays and gamma-rays.

Ultraviolet (UV) light falls in the range of the EM spectrum between visible light and X-rays. It has frequencies of about 8×10^{14} to 3×10^{16} cycles per second, or hertz (Hz), and wavelengths of about 380 nanometers (1.5×10^{-5} inches) to about 10 nm (4×10^{-7} inches). According to the U.S. Navy's "Ultraviolet Radiation Guide," UV is generally divided into three sub-bands:

- UVA, or near UV (315–400 nm)
- UVB, or middle UV (280–315 nm)
- UVC, or far UV (180–280 nm)

The guide goes on to state, "Radiations with wavelengths from 10 nm to 180 nm are sometimes referred to as vacuum or extreme UV." These wavelengths are blocked by air, and they only propagate in a vacuum.

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紫外線簡介紫外線（Ultraviolet Ray）簡稱 UV，是一種肉眼所看不到而存在大自然中的一種光線，紫外線依據其波長，能量及生物效應，一般分成長波的 UVA，中波的 UVB 及短波的 UVC 三種，或稱紫外線 A，紫外線 B，紫外線 C。

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紫外線 A（UVA）：係指波長 320 ~ 400nm 的紫外線（長波紫外線），它的波長最長，故能量最低（波長與能量成反比），在紫外線中約有百分之九十五以上是 UVA，雖然它的能量低，但具有很強的穿透力，對肌膚的傷害也最大，因為它可以深入肌膚的真皮層，破壞膠原纖維及彈性纖維，造成曬紅，曬傷，並目產生肌膚不需要的自由基，進而促使肌膚加速老化，且增加黑色素的生成，是引起斑點的主要因素，通常經常照射 UVA 者，還會使肌膚變得鬆弛，產生皺紋，使微血管浮現，造成肌膚長期，慢性和持久性的損傷。UVA 還可細分為 UVA- 2，

UVA-11-波長 320～340nm 稱為紫外線 A2（UVA-2），透力較中波的 UVB

來的深，對肌膚的傷害也比較大些，這種波長的紫外線常會引起肌膚曬傷，變紅發痛，日光性角化症（即俗稱老人斑），而讓肌膚失去透

明感…等，這些症狀主要都是由 UVA-2 所造成的。2-波長 340～400nm

稱為紫外線 A1（UVA-1），這是屬於長波範圍，是紫外線中滲透力最強的範圍，它可達肌膚最深層，即深入肌膚的真皮層，讓肌膚被「曬黑」，是對肌膚傷害性最大的紫外線，卻是一般人最容易忽視的，因為多數人認為只有在炎炎夏日，才有紫外線曬傷的問題，其實在非夏季時間 UVA-1 強度雖然較弱卻仍然存在，長時間累積的照射量仍足以讓肌膚受到傷害，造成肌膚老化，鬆弛，產生皺紋，失去彈性，黑色素沉減殿…等現象。

紫外線 B（UVB）：係指波長 280～320nm 的紫外線（中波紫外線），

這種紫外線僅能達到肌膚表層，造成肌膚表層的受傷，當肌膚被這種光線照到時就會引起立即性的曬傷，有人就利用這種特性，讓 UVB 照射肌膚來治療乾癬。UVB 會讓肌膚角質增厚，暗沈，變紅，眼膜發炎，發痛，變得較乾，以及增加皮膚癌的機率：UVB 的能量雖然比 UVA 來的強，但卻較容易防護。

紫外線 C（UVC）：指波長 200～280nm 的紫外綜，當紫外線的波長越短，所福藏的能量就越強，對肌膚傷害就愈大。不過，紫外線 C 大部份被大氣層中的臭氧層隔離，只有極少量到達地面，大致對人體影響不大，但近年來臭氧層不斷的遭受破壞，UVC 對人體傷害的可能性也逐漸增強，讓人不得不重視。

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Reference:

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In addition to the regular masks, alcohol, and goggles, the ultraviolet germicidal lamp is also an effective anti-epidemic material to fight against the epidemic situation of new pneumonia.

The National "New Coronavirus Infected Pneumonia Diagnosis and Treatment Program (Trial Version 5)" states that the new coronavirus is sensitive to ultraviolet rays.

The principle of ultraviolet disinfection is to use high-energy ultraviolet light to break the DNA double helix, so as to achieve the inactivation of bacteria and viruses. To achieve effective sterilization and disinfection by ultraviolet rays, certain requirements must be met. Attention must be paid to the wavelength, irradiation dose and time of the ultraviolet light source, that is, it must be deep ultraviolet light in the UVC band below 280nm, and a certain irradiation dose and time must be met for different bacteria and viruses , Otherwise it cannot be inactivated.

Consumers should pay attention to the relationship between the intensity of ultraviolet light and the size of the space when purchasing ultraviolet germicidal lamps. Normally, each cubic meter of space requires a 1.5W ultraviolet germicidal lamp, and users can choose products with corresponding power according to the actual situation in the home.

Ultraviolet sterilization lamps are usually used in places where bacteria are prone to breed, such as kitchens, toilets, and other dark and humid places, and can also be used in spaces with high environmental quality requirements, such as wards, operating rooms, and other medical places.

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抗擊新冠肺炎疫情，除了常備的口罩、酒精、護目鏡外，紫外線殺菌燈也是一種有效的防疫物資。

国家《新型冠狀病毒感染的肺炎診療方案（試行第五版）》中指出，新型冠狀病毒對紫外線敏感。

紫外線消毒殺菌的原理就是利用高能量的紫外光打斷 DNA 雙螺旋 ，從而達到對細菌和病毒的滅活。 紫外線實現有效殺菌消毒需要滿足一定要求，要注意紫外線光源的波長、照射劑量和時間，即必須是波長 280nm 以下的 UVC 波段的深紫外光，對不同的細菌和病毒要滿足一定的照射劑量和時間，否則不能滅活。

消費者在選購紫外線殺菌燈時，要注意紫外線強度和空間大小的關係。 通常情況下，每立方米的空間需 1.5W 的紫外線殺菌燈，用戶可根據家中實際情況選擇相應功率大小的產品。

紫外線殺菌燈通常使用在易於細菌滋生的場所，例如廚房、衛生間等陰暗潮濕處，也可以用於對環境質量要求較高的空間內，例如病房、手術室等醫療場所。

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Use ultraviolet germicidal lamps to master skills

Due to the damaging effect of ultraviolet rays on biological cells, when using ultraviolet sterilization lamps, care should be taken not to directly irradiate human skin, nor to look directly at the lamp tube with eyes. Under the premise of ensuring safety, how to use ultraviolet germicidal lamps scientifically and effectively? Miron said that it is necessary to pay attention to the placement and create the best environment for use, while paying attention to the length of use.

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First, due to the extremely weak penetration of ultraviolet rays in the air, it is difficult to achieve long-distance sterilization, so when using it, it should be placed in the main sterilization position, such as the middle of the room, or where bacteria are prone to grow, 1.5m- 2m is suitable.

Second, pay attention to the impact of the use environment on the sterilization effect when using it. Under normal circumstances, the temperature between 27℃ and 40℃ has the highest output intensity of ultraviolet rays and the best sterilization effect. In addition, it is necessary to ensure that the environment is clean and dry. A large amount of moisture and dust in the environment will interfere with ultraviolet rays. Weakening effect reduces actual UV intensity. When using at home, try to close the doors and windows, close the curtains, and turn off the lights to ensure that the room is in a darker condition, which is more conducive to the sterilization effect of ultraviolet rays. For places prone to bacteria and other microorganisms, such as bed covers, the bed can be spread out , Increase the contact area, more conducive to ultraviolet sterilization.

Third, the ultraviolet germicidal lamp should ensure sufficient ultraviolet irradiation time when it is used. Studies have shown that after 5 minutes of irradiation, for effective sterilization and disinfection time, when it reaches 30 minutes, it can achieve daily disinfection effect, and when the irradiation time reaches 60 minutes, it can kill most of the bacteria and other microorganisms in the air. In every 24 hours.

使用紫外線殺菌燈要掌握技巧

由於紫外線對生物細胞的破壞作用，在使用紫外線殺菌燈時要注意不要直接照射到人體皮膚，更不要直接用眼睛去直視燈管。

在保障安全的前提下，如何科學、有效使用紫外線殺菌燈？ 美朗 表示，要注意擺放的位置，營造最佳的使用環境，同時注意使用時長。

第一，由於紫外線在空氣中穿透能力極弱，很難達到遠距離殺菌能力，所以在使用時要盡量放置在主要除菌位置，例如室內中間，或者易於滋生細菌處，距離周圍 1.5m- 2m 為宜。

第二，在使用時要注意使用環境對殺菌效果的影響。 通常情況下，溫度在 27℃到 40℃之間紫外線的輸出強度最大，殺菌效果最好，另外要保證使用環境的清潔和乾燥，環境中大量的水分和灰塵，均會對紫外線有乾擾和削弱作用，降低實際的紫外線強度。 在家中使用時，盡量密閉門窗，拉上窗簾，關閉燈光，確保室內處於較黑暗的條件下，更利於紫外線發揮殺菌作用，對於易滋生細菌等微生物的地方，例如床被，可以將床被展開，增加接觸面積，更利於紫外線的殺菌消毒。

第三，紫外線殺菌燈在使用時應保證充足的紫外照射時間。 研究表明，照射 5 分鐘後，為有效的殺菌消毒時間，當達到 30 分鐘時，就能達到日常消毒效果，當照射時間達到 60 分鐘，就能殺滅空氣中絕大部分的細菌等微生物。以每 24 小時計。

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