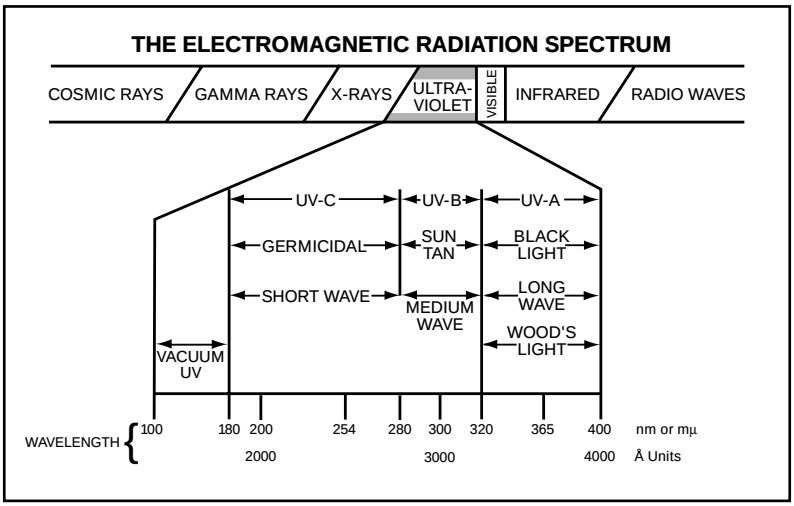
SPECTRONICS CORPORATION
956 Brush Hollow Road, P.O. Box 483
Westbury, New York 11590
800-274-8888 • 516-333-4840
Fax: 800-491-6868 • 516-333-4859
www.spectroline.com

TECHNICAL BULLETIN #32

WHAT IS ULTRAVIOLET LIGHT?

Ultraviolet light, or more correctly, ultraviolet radiation is a form of energy that occupies a small portion of the electromagnetic radiation spectrum (see chart below). This spectrum ranges from the highest energy (shortest wavelength) cosmic rays to the lowest energy (longest wavelength) radio waves. Ultraviolet radiation is produced by many natural and artificial sources and often accompanies visible light.



Electromagnetic radiation is usually characterized by **wavelength** and is expressed in terms of nanometers (10^{-9}m), often abbreviated as nm. Wavelength has also been commonly measured in terms of millimicrometers or millimicrons (mμ) and earlier in Angstrom Units (ÅU).

10 ÅU = 1 nm = 1mμ

The ultraviolet portion of the electromagnetic radiation spectrum has been commonly divided into three regions:

The **SHORT WAVELENGTH** region, also known as far ultraviolet, germicidal or UV-C, extends from 180-280nm. Although it has little penetrating power, short wave UV can cause severe burns to the eyes and skin. When short wave UV affects the eyes, the discomfort is commonly known as “welder’s flash” or “ground glass eyeball.” The usual artificial sources of this radiation are low pressure, mercury vapor lamps (and certain other metal vapor lamps) used in UV sterilization, chromatography, mineralogy, EPROM erasing, photochemical reactions, etc.

The **MEDIUM WAVELENGTH** region, also known as middle ultraviolet, erythemal or UV-B, extends from 280-320nm. It has high penetrating power and can seriously burn the eyes and skin. The usual artificial sources of this radiation are “sun lamps” used for cosmetic or therapeutic purposes and vitamin production.

The **LONG WAVELENGTH** region, also known as near ultraviolet, black light, Wood’s light or UV-A, extends from 320-400nm. A portion of the population is overly sensitive to radiation in this region of the spectrum and may experience adverse effects. For example, some people experience “blue haze” interference when viewing sources of long wave UV due to the fluorescent effects in the ocular media. The usual artificial sources of this radiation are low and medium pressure mercury vapor lamps used in nondestructive testing, quality control inspection, leak detection, medical diagnosis, UV curing, general fluorescence analysis, etc.

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