

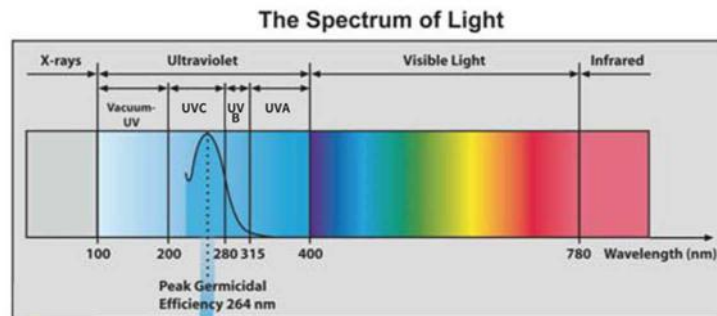
SECTION 15

Ultraviolet Disinfection

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Ultraviolet Disinfection

Information



Ultraviolet (UV) systems can provide a quick, effective and chemical free solution for many applications.

UV light in the range of 200 to 280 nanometres is the most effective range for pathogen destruction and is known as the germicidal spectrum, 254 nanometres being the most effective value.

UVC light has the ability to inactivate a wide range of nuisance micro-organisms by damaging their DNA. This damage prevents the organism from reproducing thus rendering them harmless.

The amount of UV energy you apply is known as the UV dose. It is a product of the UV intensity (energy per unit of surface area) and the exposure time. The UV dose is typically expressed in $\mu\text{Wsec}/\text{cm}^2$ or mJ/cm^2 . The adjustment of either the intensity or flow rate will adjust the applied dose. This is why the same size UV can have different published UV dose rates, depending upon the lamp output, chamber design and the flowrate. You can achieve different UV dose rates simply by changing the flow rate.

The UV dose required to achieve inactivation depends upon the micro-organism. For example e-coli is inactivated at a dose rate of $6.6\text{mJ}/\text{cm}^2$, and both Giardia Lamblia and Cryptosporidium at $10\text{mJ}/\text{cm}^2$. Some viruses and fungi require higher dose rates.

Typically flow rates are quoted at three distinct dose rates. The first is $16\text{mJ}/\text{cm}^2$, and is based on an old US public health publication. A dose rate of $30\text{mJ}/\text{cm}^2$ has since become an industry standard. $40\text{mJ}/\text{cm}^2$ has recently been adopted by NSF, and as a result, by some public authorities as well.

The important thing is to note that different suppliers and manufacturers are quoting different dose rates, and you need to take this into account when comparing units.

The UV chamber is a pressure vessel and should be manufactured to ASME guidelines. The use of properly rated pressure tube and correct manufacturing ensures reliability in service and guards against failure.

The quartz sleeve must be manufactured from pure quartz to provide optimum transmissibility, strength, and provide a thermal barrier with the water being treated.

There are many different types of lamp on the market, and they also come in many lengths, connections and configurations. The effectiveness of any UV unit should have been verified with a specific lamp type. Fitting the wrong lamp type may compromise the performance of the unit. For this reason, spare parts should be genuine, or at least specifically designed for the application by a reputable supplier. To this end, we promote genuine LUMINOR spare parts.

Quality matters when it comes to protecting your health, and we recommend you choose a UV based on quality and reliability rather than on the lowest available price.

LUMINOR quality is unsurpassed, and backed by an industry leading 3 year warranty.

NOTE: To prevent particles from shading micro-organisms, pre-filtration to 5 microns is recommended for all UV systems.