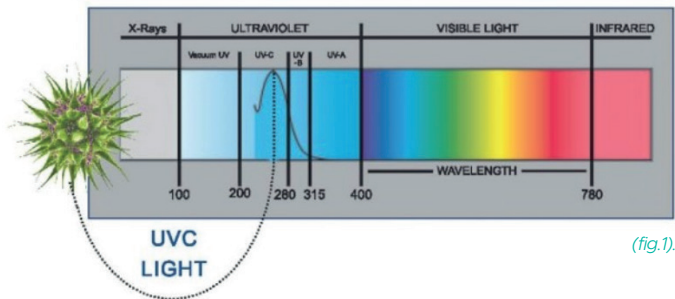


# What is UV-C?

## and how does it kill bacteria and viruses?

### What is Ultra Violet light?

**Ultraviolet (UV) light is produced naturally by the sun.** Ultraviolet (fig.1) is a spectrum of light just below the visible range and it is split into four distinct spectral areas, of which UV-C is one.



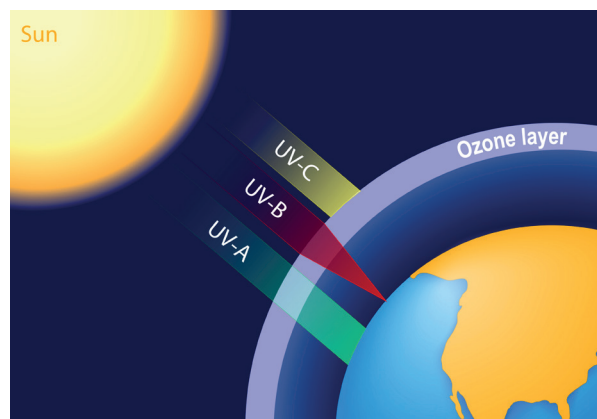
(fig.1)

### The UV-C Spectrum

**The entire UV spectrum can to some extent kill or inactivate microorganism species like bacteria, viruses, spores and protozoans.**

It does this by preventing them from replicating, but the most effective, UV light - UV-C, does not naturally reach the Earth's surface (fig.2).

High-intensity UV-C light, generated by special fluorescent tubes at a wavelength of 253.7 nanometers provides a germicidal effect many thousands of times greater than UV in nature; this is the technology used in Uvisan products. The application of UV-C energy to inactivate microorganisms is also known as Germicidal Irradiation or UVGI.

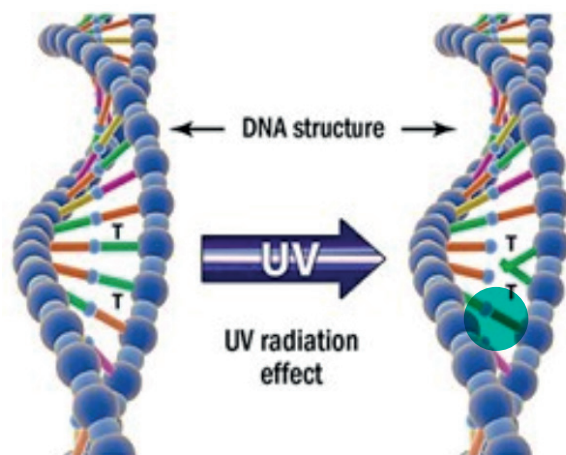


(fig.2) UV-C light not reaching the Earth's surface.

### How UV-C kills bacteria & viruses

**UV-C exposure inactivates microbial organisms such as bacteria and viruses by destroying their DNA, the 'blueprint' these organisms use to develop, function and reproduce (fig.3).**

By removing the organism's ability to reproduce, it is rendered harmless. After UV-C exposure, each individual organism dies off and with no offspring the entire population of microorganisms dies too.



(fig.3) UV-C light destroying DNA

## THE SCIENCE EXPLAINED

### Uvisan UV-C Effectiveness

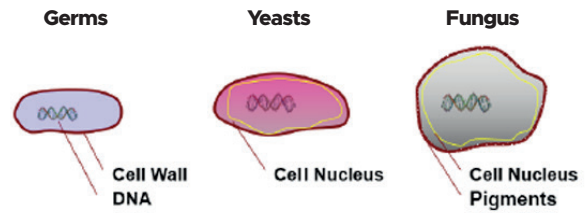
The effectiveness of germicidal UV depends on the duration, intensity, and wavelength of the UV-C the microorganism is exposed to, and to the organism's size and opacity.

The rule of thumb is: the larger the microorganism the higher is the UV-C dose required for deactivation (fig.4). Uvisan cabinets have been calibrated to be effective using a pre-set 2-minute UV-C exposure time against a wide range of microorganisms, including the Covid-19 virus variants. The cabinets can be programmed for longer cycles too. Uvisan Cleanroom solutions are designed before installation to provide the correct dose for the room to be disinfected.

### Uvisan Surface Disinfection

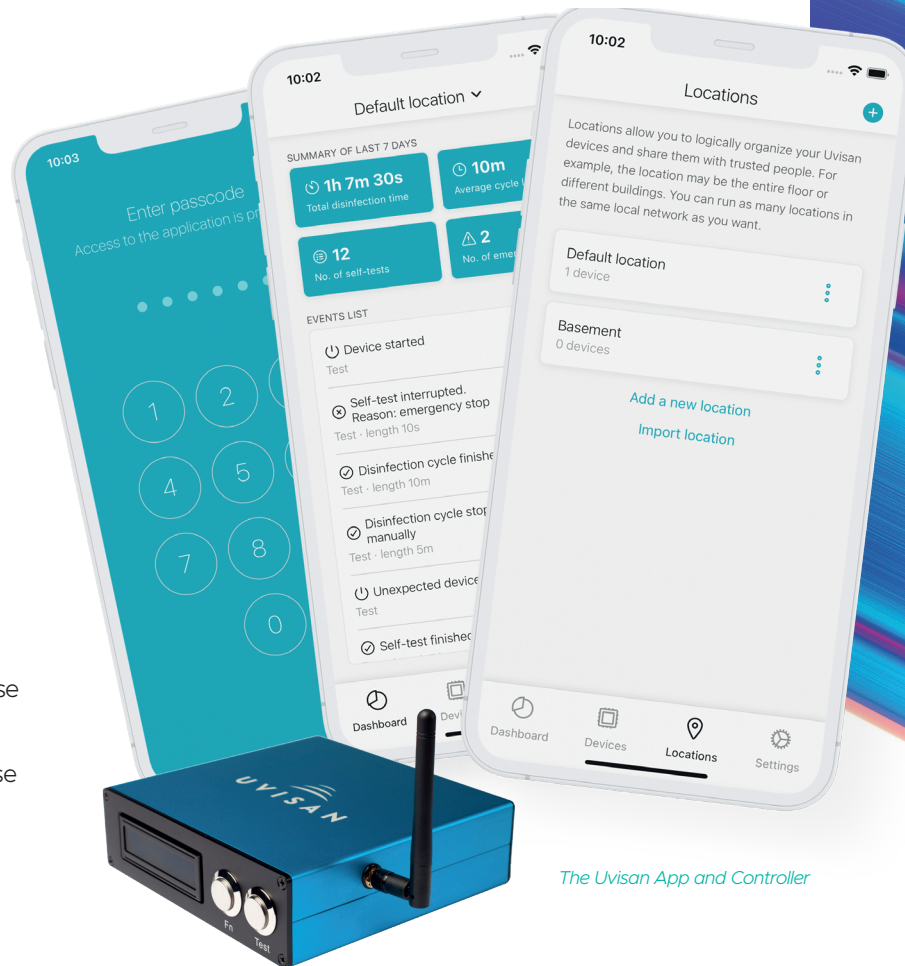
The success of surface disinfection is dependent on the type of the material to be disinfected.

This not only relates to the type of microorganism, but also to the texture of the surface. Disinfection can only occur if the microorganisms can 'see' the UV-C. Microorganisms which are in shadow will not be treated due to the limited exposure to UV-C. Uvisan cabinets are designed to minimise shadowed areas by bouncing the UV-C light around the inner space to designed to minimise shadowed areas by bouncing the UV-C light around the inner space to reach these areas.



	Germs	Yeasts	Fungus
Typical size	1 - 10um	5-8um	2-100um
Dosage needed	2 - 40mJ/cm <sup>2</sup>	10-30 mJ/cm <sup>2</sup>	50-400 mJ/cm <sup>2</sup>

(fig.4. Dosage needed to kill bacteria & viruses)



The Uvisan App and Controller

