

## Effectiveness of the germicidal action of ELITURBO UV-LIGHT

The effectiveness of the germicidal action is determined by the dose of UV-C radiation required to inactivate the microorganism.

The “dose” is the radiation density multiplied by the exposure time (t) in seconds, and expressed in Joules per square meter (J/m<sup>2</sup>) or millijoules per square centimeter (mJ/cm<sup>2</sup>).

ELITURBO UV-LIGHT Ambient Air Sanitation Units sucks in and effectively irradiate with UV-C rays about 100 m<sup>3</sup> of air per hour, **emitting doses of about 10 ÷ 14 mJ / cm<sup>2</sup>.**

The air circulates through the device and UV-C rays continuously sanitize the air in the “germicidal chamber”. If a microorganism is not effectively deactivated in the first step, UV-C rays will continue to break down its DNA in subsequent steps. Microorganisms multiply rapidly if not controlled; the UV-C rays of ELITURBO UV-LIGHT reduce the microorganisms present in the ambient air at each step. Viruses must be inactivated in the air, in the aerosol, to prevent them from spreading further and also depositing on surfaces.

The lethal Dose necessary to destroy 90% of a type of microorganism is known. For different types of viruses and bacteria doses from 2 to 8 mJ/cm<sup>2</sup> inactivate about 90%.

For example:

- for the flu virus 3,4 mJ/cm<sup>2</sup> are needed,
- for the Coronavirus most experts consider effective a value around 4 mJ/cm<sup>2</sup>.

To neutralize 99,9% of bacteria / viruses it is necessary to increase the "Dose" by about 3 times the base value. ELITURBO UV-LIGHT emits doses of about 10 ÷ 14 mJ/cm<sup>2</sup>, therefore **it is able to inactivate 99,9 % of microorganisms present in the treated air.**

In order to evaluate the Sanitation Efficacy of a device, it is necessary to know the UV-C radiation doses it emits, according to the radiation density of its UV-C lighting devices, and the exposure time to the radiation of airborne microorganism.

The Sanitation Efficacy is “directly proportional” to the power of the UV-C lamps and “inversely proportional” to the air flow of the device, e.g. .:

<b>ELITURBO UV-LIGHT</b>	72 W / 100mc/h =	<b>0,72</b>	(Installed UV-C power / air flow ratio)
OTHER DEVICE #1	36 W / 100mc/h =	0,36	(Installed UV-C power / air flow ratio)
OTHER DEVICE #2	72 W / 1500mc/h =	0,48	(Installed UV-C power / air flow ratio)

Microorganism	90% disinfection mWsec/cm2	99,9% disinfection mWsec/cm2	Microorganism	90% disinfection mWsec/cm2	99,9% disinfection mWsec/cm2
Bacterium coli (in air)	0,7	2,1	Pseudomonas aeruginosa	5,5	16,5
Bacterium coli (in water)	5,4	16,2	Pseudomonas fluorescens	3,5	10,5
Bacillus anthracis	4,5	13,7	S.typhimurium	8,0	24,0
S.enteritidis	4,0	12,0	Sarcina lutea	19,8	59,0
B.megatherium (veg.)	1,1	3,4	Serratia marcescens	2,5	7,2
B.megatherium sp.	2,8	8,0	Dysentery bacilli	2,2	6,6
B.paratyphosus	3,2	9,6	Shigella paradysenteriae	1,7	5,2
13,prodiglosus	0,7	2,1	Spirillum rubrum	4,4	13,0
B.pyocyaneus	4,4	13,2	Staphylococcus albus	1,8-3,3	5,4-10,0
B.subtilis spores	12,0	36,0	Staphylococcus aureus	2,2-4,9	6,6-14,8
Cornynebacterium diphtheriae	3,4	10,0	Streptococcus hemolyticus	2,2	6,6
Eberthella typhosa	2,1	6,3	Streptococcus lactis	6,1	18,0
Escherichia coli	3,0	9,0	Streptococcus viridans	2,0	6,0
Legionella pneumophila	0,92	2,76	Baccillus tuberculi	10,0	30,0
Micrococcus candidus	6,3	19,0	Trichonomas	100,0	300,0
Micrococcus piltonensis	8,1	24,0	Poliovirus	3,2	9,6
Micrococcus sphaeroides	10,0	30,0	Infectus Hepatitis	5,8	17,4
Neisseria catarrhalls	4,4	13,0	Influenza	3,4	10,2
Phytomonas tumefaciens	4,4	13,0	Tobaco mosaic	240	720