UV Germicidal Irradiation Dosage Table

In real-world environments, numerous factors—such as airflow, humidity, and exposure time—make precise UV dosage calculations challenging. UV light can neutralize any microorganism given sufficient exposure.

UV operates on a cumulative basis, meaning that as air circulates through UV light, it continuously disinfects it. If a microorganism is not eliminated on the first pass, repeated exposure further disrupts its DNA until eradication. Studies demonstrated that the 36W high-output UV lamp generating 800 µW/cm² per second at a distance of 1 foot, with an airflow of 534 FPM at 55°F. To determine the required exposure time for sterilizing microorganisms in the chart below, divide the necessary dosage by 800.For example, achieving a 90% reduction of *Bacillus subtilis* spores requires 11,600 µW/cm²:

11,600 ÷ 800 = 14.5 seconds The table below lists the UV incident energy at 253.7 nanometers required for a 90% reduction and complete destruction of various microorganisms.

Organisms:	UV dose in µWs/cm² needed for kill factor:		**Organisms:**	UV dose in µWs/cm² needed for kill factor:	
	90%	**99%**		**90%**	**99%**
Bacteria			Streptococcus viridans	2,000	3,800
Bacillus anthracis - Anthrax	4,520	8,700	Vibrio comma - Cholera	3,375	6,500
Bacillus anthracis Anthrax spores	24,320	46,200			
Bacillus magaterium sp. (spores)	2,730	5,200	**Molds**	**90%**	**99%**
Bacillus magaterium sp. (veg.)	1,300	2,500	Aspergillius flavus	60,000	99,000
Bacillus paratyphusus	3,200	6,100	Aspergillius glaucus	44,000	88,000
Bacillus subtilis spores	11,600	22,000	Aspergillius niger	132,000	330,000
Bacillus subtilis	5,800	11,000	Mucor racemosus A	17,000	35,200
Clostridium tetani	13,000	22,000	Mucor racemosus B	17,000	35,200
Corynebacterium diphtheriae	3,370	6,510	Oospora lactis	5,000	11,000
Ebertelia typhosa	2,140	4,100	Penicillium expansum	13,000	22,000
Escherichia coli	3,000	6,600	Penicillium roqueforti	13,000	26,400
Leptospiracanicola - infectious Jaundice	3,150	6,000	Penicillium digitatum	44,000	88,000
Microccocus candidus	6,050	12,300	Rhisopus nigricans	111,000	220,000
Microccocus sphaeroides	7,000	15,400			
Mycobacterium tuberculosis	6,200	10,000	**Protozoa**	**90%**	**99%**
Neisseria catarrhalis	4,400	8,500	Chlorella Vulgaris	13,000	22,000
Phytomonas tumefaciens	4,400	8,000	Nematode Eggs	4,000	92,000
Proteus vulgaris	3,000	6,600	Paramecium	11,000	20,000
Pseudomonas aeruginosa	5,500	10,500			
Pseudomonas fluorescens	3,500	6,600	**Virus**	**90%**	**99%**
Salmonella enteritidis	4,000	7,600	Bacteriopfage - E. Coli	2,600	6,600
Salmonela paratyphi - Enteric fever	3,200	6,100	Infectious Hepatitis	5,800	8,000
Salmonella typhosa - Typhoid fever	2,150	4,100	Influenza	3,400	6,600
Salmonella typhimurium	8,000	15,200	Poliovirus-Poliomyelitis	3,150	6,600
Sarcina lutea	19,700	26,400	Tobacco mosaic	240,000	440,000
Serratia marcescens	2,420	6,160			
Shigella dyseteriae – Dysentery	2,200	4,200	**Yeast**	**90%**	**99%**
Shigella flexneri – Dysentery	1,700	3,400	Brewers yeast	3,300	6,600
Shigella paradysenteriae	1,680	3,400	Common yeast cake	6,000	13,200
Spirillum rubrum	4,400	6,160	Saccharomyces carevisiae	6,000	13,200
Staphylococcus albus	1,840	5,720	Saccharomyces ellipsoideus	6,000	13,200
Staphylococcus aerius	2,600	6,600	Saccharomyces spores	8,000	17,600
Staphylococcus hemolyticus	2,160	5,500			
Staphylococcus lactis	6,150	8,800			