

How & Why Ultraviolet Disinfection Works

Ultraviolet energy can be separated into UV-A, UV-B and UV-C.

Ultraviolet Germicidal Irradiation (UVGI) uses UV-C, the component of ultraviolet energy that breaks through the outer membrane of microbes like yeast, mold, bacteria, viruses or algae. When the UV-C energy reaches the DNA of the microbe, modifications cause the microbe to lose its ability to reproduce. UVGI lamps provide a powerful and concentrated dose of UV-C energy that will sanitize the air and surfaces, destroying pathogens that come in contact with the UV rays. Musty, moldy type odors can be eradicated, along with tuberculosis, cold and flu viruses, smallpox and other airborne diseases and influenza. The healthcare industry has been using UV germicidal energy to sanitize hospital rooms and medical equipment since the early 1900's. The Centers for Disease Control confirms the germicidal effect of UV-C lamps. FEMA recommends it's use for counter-bioterrorism.

UV Dose for Inactivation

Agrobacterium lumefaciens 8,500
 Bacillus anthracis (anthrax veg.) 8,700
 Bacillus anthracis Spores (anthrax spores) 46,200
 Bacillus megatherium Sp. (veg) 2,500
 Bacillus megatherium Sp. (spores) 5,200
 Bacillus paratyphosus 6,100
 Bacillus subtilis 11,000
 Bacillus subtilis Spores 22,000
 Clostridium tetani 23,100
 Clostridium botulinum 11,200
 Corynebacterium diphtheriae 6,500
 Dysentery bacilli 4,200
 Eberthella typhosa 4,100
 Escherichia coli 6,600
 Legionella bozemanii 3,500
 Legionella dumoffi II 5,500
 Legionella gormanii 4,900
 Legionella micdadei 3,100
 Legionella longbeachae 2,900
 Legionella pneumophila (Legionnaire's Disease) 12,300
 Leptospira canicola-Infectious Jaundice 6,000
 Leptospira interrogans 6,000
 Micrococcus candidus 12,300
 Micrococcus sphaeroides 15,400
 Mycobacterium tuberculosis 10,000
 Neisseria catarrhalis 8,500
 Phytomonas tumefaciens 8,500
 Proteus vulgaris 6,600
 Pseudomonas aeruginosa (Environ.Strain) 10,500
 Pseudomonas aeruginosa (Lab. Strain) 3,900
 Pseudomonas fluorescens 6,600

Streptococcus faecalis 10,000
 Streptococcus hemolyticus 5,500
 Streptococcus lactis 8,800
 Streptococcus pyogenes 4,200
 Streptococcus salivarius 4,200
 Streptococcus viridans 3,800
 Vibrio comma (Cholera) 6,500
 Vibrio cholerae 6,500

MOLDS

Aspergillus amstelodami 77,000
 Aspergillus flavus 99,000
 Aspergillus glaucus 88,000
 Aspergillus niger (bread mold) 330,000
 Mucor mucedo 77,000
 Mucor racemosus (A & B) 35,200
 Oospora lactis 11,000
 Penicillium chrysogenum 56,000
 Penicillium digitatum 88,000
 Penicillium expansum 22,000
 Penicillium roqueforti 26,400
 Rhizopus nigricans (cheese mold) 220,000

PROTOZOA

Chlorella vulgaris (algae) 22,000
 Blue-green Algae 420,000
 E. histolytica 84,000
 Giardia lamblia (cysts) 100,000
 Nematode Eggs 40,000
 Paramecium 200,000

VIRUS

Rhodospirillum rubrum 6,200
Salmonella enteritidis 7,600
Salmonella paratyphi (Enteric Fever) 6,100
Salmonella Species 15,200
Salmonella typhimurium 15,200
Salmonella typhi (Typhoid Fever) 7,000
Salmonella 10,500
Sarcina lutea 26,400
Serratia marcescens 6,160
Shigella dysenteriae - Dysentery 4,200
Shigella flexneri - Dysentery 3,400
Shigella paradysenteriae 3,400
Shigella sonnei 7,000
Spirillum rubrum 6,160
Staphylococcus albus 5,720
Staphylococcus aureus 6,600
Staphylococcus epidermidis 5,800

Adeno Virus Type III 4,500
Bacteriophage 6,600
Coxsackie 6,300
Infectious Hepatitis 8,000
Infl uenza 6,600
Rotavirus 24,000
Tobacco Mosaic 440,000

YEASTS

Baker's Yeast 8,800
Brewer's Yeast 6,600
Common Yeast Cake 13,200
Saccharomyces cerevisiae 13,200
Saccharomyces ellipsoideus 13,200
Saccharomyces sp. 17,600

*Approximate - Various sources may report slightly differing inactivation dosages