



**American Ultraviolet™**  
The Leader in Ultraviolet Technology

**Incident Energies of Germicidal Ultraviolet Radiation at 253.7  
Nanometers Necessary to Inhibit Colony Formation in Organisms (90%)  
and for 3-Log (99.9%) Reduction**

| <b>MOLD SPORES</b>     | <b>Color</b>           | <b>Energy needed for kill factor</b>           |              |
|------------------------|------------------------|--|--------------|
|                        |                        | <i>Microwatt seconds per square centimeter</i> |              |
|                        |                        | <b>90%</b>                                     | <b>99.9%</b> |
| Aspergillus flavis     | <i>Yellowish green</i> | 60,000   | 99,000       |
| Aspergillus glaucus    | <i>Bluish green</i>    | 44,000   | 88,000       |
| Aspergillus niger      | <i>Black</i>           | 132,000  | 330,000      |
| Mucor racemosus A      | <i>White gray</i>      | 17,000   | 352,000      |
| Mucor racemosus B      | <i>White gray</i>      | 17,000   | 352,000      |
| Oospora lactis         | <i>White</i>           | 5,000  | 11,000       |
| Penicillium expansum   | <i>Olive</i>           | 3,000  | 22,000       |
| Penicillium roqueforti | <i>Green</i>           | 13,000   | 26,400       |
| Penicillium digitatum  | <i>Olive</i>           | 44,000   | 88,000       |
| Rhisopus nigricans     | <i>Black</i>           | 111,000  | 220,000      |

  

| <b>ORGANISM</b>                  | <b>90%</b> | <b>99.9%</b> |
|----------------------------------|------------|--------------|
| Bacillus anthracis               | 4,520      | 8,700        |
| Bacillus magaterium sp. (spores) | 2,730      | 5,200        |
| Bacillus magaterium sp.(veg.)    | 1,300      | 2,500        |
| Bacillus paratyphusus            | 3,200      | 6,100        |
| Bacillus subtilis spores         | 11,600     | 22,000       |
| Bacillus subtilis                | 5,800      | 11,000       |
| Clostridium tetani               | 13,000     | 22,000       |



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| <b>ORGANISM (continued)</b>             | <b>Energy needed for kill factor</b>           |              |
|---|--|--------------|
|   | <i>Microwatt seconds per square centimeter</i> |              |
|   | <b>90%</b>                                     | <b>99.9%</b> |
| Corynebacterium diphtheriae             | 3,370  | 6,500        |
| Eberthella typosa                       | 2,140  | 4,100        |
| Escherichia coli                        | 3,000  | 6,600        |
| Leptospira Canicoal-infections Jaundice | 3,150  | 6,000        |
| Micrococcus candidus                    | 6,050  | 12,300       |
| Micrococcus spheroides                  | 1,000  | 15,400       |
| Mycobacterium tuberculosis              | 6,200  | 10,000       |
| Neisseria catarrhalis                   | 4,400  | 8,500        |
| Phtomonas tumeficiens                   | 4,400  | 10,000       |
| Proteus vulgaris                        | 3,000  | 6,600        |
| Pseudomonas aeruginosa                  | 5,500  | 10,500       |
| Pseudomonas fluorescens                 | 3,500  | 6,600        |
| Salmonella enteritidis                  | 4,000  | 7,600        |
| Salmonella paratyphi-enteic fever       | 3,200  | 6,100        |
| Salmonella typhosa-typhoid fever        | 2,150  | 4,100        |
| Salmonella typhimurium                  | 8,000  | 15,200       |
| Sarcina lutea                           | 19,700   | 4,200        |
| Serratia marcescens                     | 2,420  | 3,400        |
| Shigella dysenteriae-Dyentery           | 2,200  | 4,200        |
| Shigella flexneri-Dysentary             | 1,700  | 3,400        |
| Shigella paradysenteriae                | 1,680  | 3,400        |
| Spirillum rubrum                        | 4,400  | 6,160        |
| Staphylococcus albus                    | 1,840  | 5,720        |



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**Energy needed for kill factor**

*Microwatt seconds per square centimeter*

| <b>ORGANISM (continued)</b> | <b>90%</b> | <b>99.9%</b> |
|-----------------------------|------------|--------------|
| Staphylococcus aureus       | 2,600      | 6,600        |
| Streptococcus hemolyticus   | 2,160      | 5,500        |
| Streptococcus lactis        | 6,150      | 8,800        |
| Streptococcus viridans      | 2,000      | 3,800        |
| Vibrio comma-Cholera        | 3,375      | 6,500        |
| <b>PROTOZA</b>              | <b>90%</b> | <b>99.9%</b> |
| Chlorella vulgaris (Algae)  | 13,000     | 22,000       |
| Nematode eggs               | 4,000      | 92,000       |
| Paramecium                  | 11,000     | 20,000       |
| <b>VIRUS</b>                | <b>90%</b> | <b>99.9%</b> |
| Bacteriophage (E. coli)     | 2,600      | 6,600        |
| Infectious Hepatitis        | 5,800      | 8,000        |
| Influenza                   | 3,400      | 6,600        |
| Poliovirus-Poliomyelitis    | 3,150      | 6,000        |
| Tobacco mosaic              | 240,000    | 440,000      |
| <b>YEAST</b>                | <b>90%</b> | <b>99.9%</b> |
| Brewer's yeast              | 3,300      | 6,600        |
| Common yeast cake           | 6,000      | 13,200       |
| Saccharomyces carevisiae    | 6,000      | 13,200       |
| Saccharomyces ellipsoideus  | 6,000      | 13,200       |
| Saccharomyces sp.           | 8,000      | 17,600       |



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### *253.7 Nanometer Wavelength Reflectance on Various Surfaces*

| <b>Material</b>                | <b>% Reflectance*</b> |
|--------------------------------|-----------------------|
| Aluminum (etched)              | 88                    |
| Aluminum (foil)                | 73                    |
| Aluminum (polished commercial) | 73                    |
| White Wall Plaster             | 40-60                 |
| Chromium                       | 45                    |
| Nickel                         | 38                    |
| White Cotton                   | 30                    |
| Stainless Steel                | 20-30                 |
| Tri-Plated Steel               | 28                    |
| Water-Based Paints             | 10-30                 |
| White Paper                    | 25                    |
| Silver                         | 22                    |
| White Oil-Based Paint          | 5-10                  |
| White Porcelain                | 5                     |
| Glass                          | 4                     |

*\*Values obtained at normal incidence. Reflectance increases rapidly at angles of incidence greater than 75%.*