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Application Bulletin
UVP-AB-105

DETERMINING EPROM ERASURE OR STERILIZATION TIME

Sterilization dosage = (UV intensity) x (Exposure time). Therefore,

$$\text{Sterilization time in seconds} = \frac{\text{Sterilization dosage: } (\text{W.sec/cm}^2) \times 1{,}000{,}000}{\text{Intensity: } (\mu\text{W/cm}^2)}$$

or

$$\frac{\text{Sterilization dosage: } (\mu\text{W.see/cm}^2)}{\text{Intensity: } (\mu\text{W/cm}^2)}$$

Notice the term "μ" in the numerator of the second equation - this is not in the first equation. By multiplying the numerator in the first equation by 1,000,000, you are converting *watt s* into *microwatt .s* One microwatt = one watt x 10^{-6} (10 to the (-6) power).

Assume you are sterilizing ostrich or emu eggs and the sterilization dosage = 8800 μW.sec/cm^2; the intensity of the light source is 1500μW/cm^2. Note that we are referring to *micr o*watt seconds. Since the dosage is already in microwatts, there is no need to multiply the numerator by 1,000,000.

The resulting equation would be:

$$\frac{\text{Sterilization dosage: } 8800\mu\text{W.sec/cm}^2}{\text{UV Intensity: } 1500\mu\text{W/cm}^2} = 5.87 \text{ seconds}$$

Now assume you are erasing EPROMs and the recommended erasure dosage is 15W.sec/cm^2. Assume the intensity of the light source is 18,000W/cm^2. The equation would be:

$$\frac{15\text{Wsec/cm}^2 \times 1{,}000{,}000}{18{,}000\mu\text{W/cm}^2 \times 60} \quad \text{You get} \quad \frac{15{,}000{,}000\mu\text{Wsec/cm}^2}{18{,}000\mu\text{W/cm}^2 \times 60} =$$

$$\frac{833.33 \text{ sec.}}{60} = 13.89 \text{ minutes}$$