

DID YOU KNOW?

NO: 246

FEBRUARY 5, 2014

COMMON STEAM STERILIZER EQUATIONS AND DEFINITIONS - PART 1

This is the first in a series of Did You Know? that will cover common terms and basic equations useful in understanding steam sterilizer theory and operation.

Weight/Mass Conversions

One gallon of fresh water weighs approximately 8.3 lbs.

One pound of water will generate exactly one pound of steam (law of conservation of mass)

One pound is approximately 453.6 grams

Ohm's Law

Ohm's Law states that the current through a conductor between two points is directly proportional to the potential difference or voltage across the two points, and inversely proportional to the resistance between them.

$$V = IR \quad \text{or} \quad I = V/R \quad \text{or} \quad R = V/I$$

V = Volts

I = Amps

R = Ohms

Electric Power

Electric power is defined as the rate at which electrical energy is transferred by an electric circuit.

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COMMON STEAM STERILIZER EQUATIONS AND DEFINITIONS - PART 1 (continued)

Electric Power (Continued)

In direct current resistive circuits, electrical power is calculated using Joule's law:

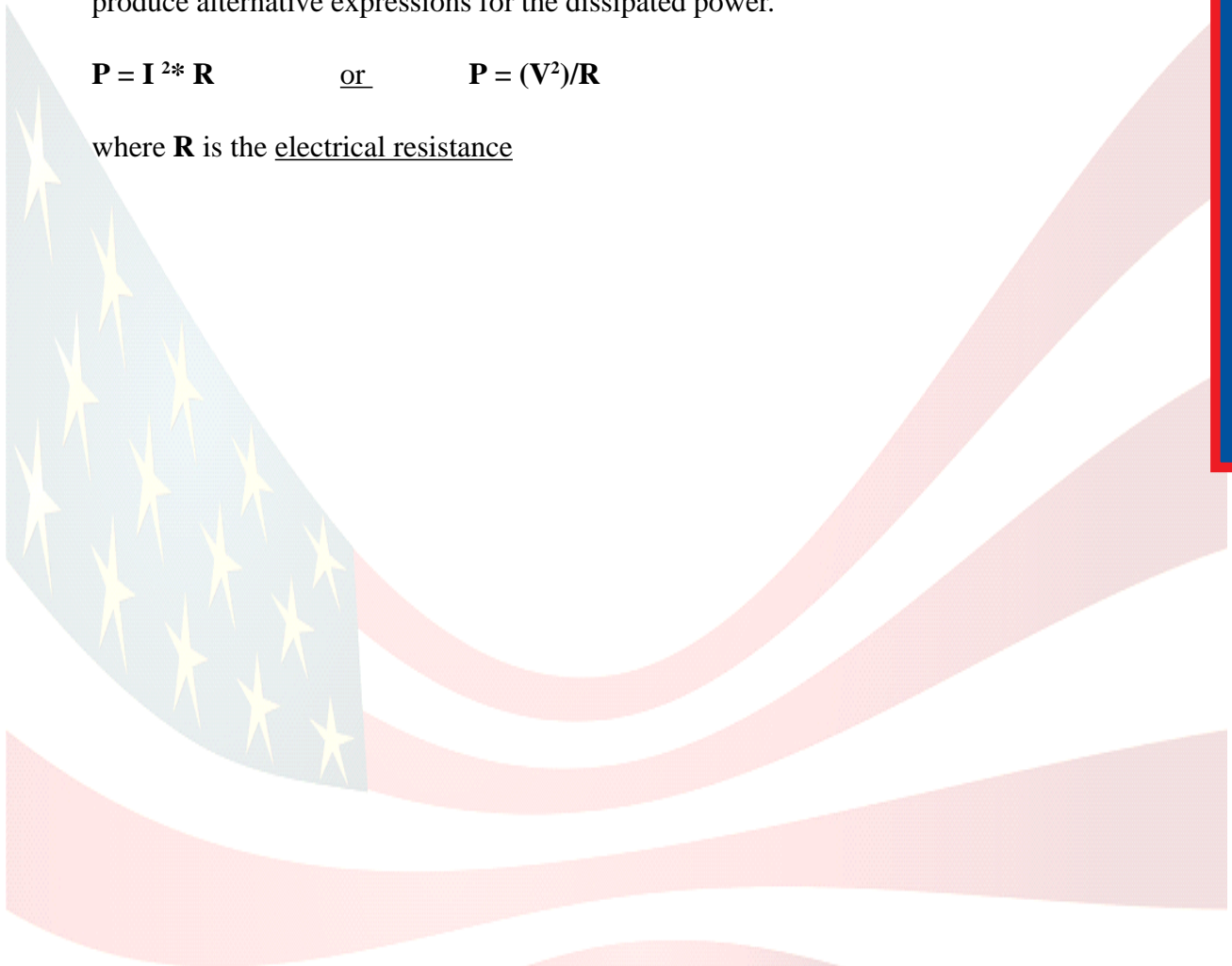
$$P = VI$$

where **P** is the electric power, **V** the potential difference, and **I** the electric current.

In the case of resistive loads, Joule's law can be combined with Ohm's law ($I = V/R$) to produce alternative expressions for the dissipated power.

$$P = I^2 * R \quad \text{or} \quad P = (V^2)/R$$

where **R** is the electrical resistance



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