



SOUND BASIC FORMULAS AND CONSTANTS

- VELOCITY** — 331 met/sec } air at 0°C (32°F) and 1 atm.
1086 ft./sec }
1433 met/sec } water at 15°C (59°F)
4700 ft./sec }
1600 to 4000 met/sec } earthquake surface waves
5250 to 13120 ft./sec }
 - RANGE** — Subaudible 0 to 16 cycles/sec
Audible 16 to 22,000 cycles/sec
Supersonic 22 to 5 x 10¹⁰ kilocycles/sec
 - SENSATION LEVEL IN DECIBELS** —
 $S = 20 \log \frac{p}{p_0}$
where p = sound pressure
p₀ = threshold pressure (2 x 10⁻⁴ dyne/cm.²)
 - RANGE OF AUDIBLE INTENSITIES** —
132 db (-7 to 125 db)
 - SOUND POWER** — $J = 2.4 \times 10^{-3} p^2$
where J = microwatts/sq. cm.
p = pressure in dynes/sq. cm.
- Representative Sound Powers**
Minimum Audible 2 x 10⁻¹⁷ watts/sq. cm.
(between 3000-4000 cycles/sec)
- | | |
|------------------------------------|-----------------------|
| Speech | Orchestra (75 pieces) |
| Average 1 x 10 ⁻⁵ watts | Average 15 watts |
| Peak 2 x 10 ⁻³ watts | Peak 65 watts |

SOME FUNDAMENTALS OF SOUND

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