Relationship Amongst Various Measures of Damping

(valid for small values of damping: tan $\phi < 0.1$)

$$Q^{-1} = \frac{\Psi}{2\pi} = \eta = \frac{\delta}{\pi} = \tan \phi = \phi = \frac{E''}{E'} = 2\zeta = \frac{\Delta W}{2\pi W} = \frac{\lambda\alpha}{\pi}$$

- Q = Quality Factor
- Ψ = Specific Damping Capacity
- η = Loss Factor
- δ = Logarithmic Decrement
- ϕ = Phase Angle by which Stress Leads Strain
- E'' = Loss Modulus
- E' = Storage Modulus
- ζ = Damping Ratio or Damping Factor
- ΔW = Energy Loss Per Cycle
- W = Maximum Elastic Stored Energy
- λ = Wavelength of Elastic Wave
- α = Attenuation