

RESEARCH INTO THE SIMULATION OF SHOCK WAVES

Shock Wave Physics Reference

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Calculating Force of a Shock Wave

p_0 = shock pressure

p_1 = atmospheric pressure

γ = heat capacity ratio of medium

M = Mach number (speed) of shock wave

Mach number

$$M = \frac{\text{wave speed}}{\text{speed of sound}}$$

Shock wave in any medium

$$\frac{p_0}{p_1} = \frac{2\gamma M^2 - (\gamma - 1)}{\gamma + 1}$$

Shock wave at sea level

$$p_0 = 116,777 * M^2 - 16,777$$

Pressure

$$p = \frac{F}{A}$$

Shock Waves Reference Links

The Physics Hypertextbook "Shock Waves" <http://physics.info/shock/>

NASA "Normal Shock Wave" <https://www.grc.nasa.gov/www/k-12/airplane/normal.html>

Wikipedia "Shock wave" https://en.wikipedia.org/wiki/Shock_wave

Wikipedia "Blast wave" https://en.wikipedia.org/wiki/Blast_wave

Wikipedia "Properties of explosions"

https://en.wikipedia.org/wiki/Explosion#Properties_of_explosions