

30.2: Introduction

All waves begin as a vibration. For the vibration to produce sound, there must be a material through which the vibration may travel. The vibrations of atoms and molecules in air create compressions and rarefactions in the air.

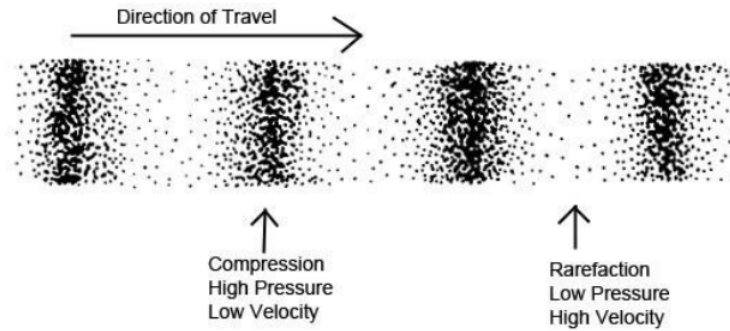


Figure 30.2.1: Copy and Paste Caption here. (Copyright; author via source)

Sound travels at an average speed of 343 m/s in air; this speed varies because it depends on the atmospheric pressure and temperature of the air. It takes time for the sound wave to travel. Light travels at a speed of 299,702,547 m/s in air. Light waves also take time to travel.

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

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