

Distinguish, differentiate, compare and explain what is the Difference between Light and Sound Waves. Comparison and Differences.

Sound Wave

A sound wave is a mechanical wave produced by a vibrating object. When the object vibrates, it causes the molecules around it to compress (come together) and expand (separate back out). This is called a longitudinal wave. This compression and expansion pattern travels through the medium (solid, liquid or gas) until it reaches your ear. Remember, sound cannot travel through empty space or a vacuum. Sound travels faster through solids than through liquids and gases.

Light Wave

Visible Light Waves: This is the only part of the electromagnetic spectrum that our eyes can see. It is the kind of waves we are most familiar with, but in the grand scheme of the electromagnetic spectrum it is only a very narrow band of wavelengths, from about 0.35 micrometers to 0.9 micrometers.

Difference between Light and Sound Waves

1. Light waves are electromagnetic waves. Sound waves are mechanical waves.
2. Light waves can travel in vacuum. Sound waves require a material medium for propagation.
3. The speed of light waves is very high propagation. ($= 3 \times 10^8$ m/s in air). The speed of sound waves is low ($= 330$ m/s in air)
4. The wavelength of the light waves. (visible) is very small, of the order of 10^{-6} m. The wavelength of sound waves is in the range of 10^{-2} m to 10m.
5. Light waves are transverse. Sound waves are longitudinal waves.