Sound Terms

Sound Wave

A pattern of compressions and rarefactions (decompressions) of a medium—usually air.

Frequency

The rate at which compressions and rarefactions occur in a sound wave; the higher the frequency, the higher the pitch we perceive. Measured in Hertz.

Hertz

1Hz (one Hertz) represents a single compression/rarefaction cycle per second. 1kHz = 1,000 cycles per second. Named for Heinrich Rudolf Hertz, the scientist who discovered electromagnetic waves.

Frequency Response

The maximum frequency range that can be heard or produced by a given device. For the human ear, this is said to be 20Hz-20kHz, though this varies with hearing ability.

Amplitude

The strength of compression/rarefaction. When looking at a graphical representation of a sound wave, this is the height and depth of the curve. Measured in decibels.

Decibel

In practice, dB appears to mearure volume level. Really, decibels compare two levels of sound intensity to each other, with 6dB representing a quadrupling of intensity; this is the same change you can expect from doubling or halving the distance from a sound source. Due ot how our ears work, four times the intensity doesn't mean we hear it four times louder.

The Speed of Sound

The constant rate at which sound waves travel, regardless of amplitude, frequency or wavelength. This speed varies with the medium itself, but is usually referred to as 1130 feet per second through normal air. Though it's hardly applicable to us Earthlings, sound travels at about 787 f/s on Mars.