

Speed of Sound

We have been using 340 m/s as the speed of sound in air.

However, the speed of sound in air depends on temperature because as the temperature of the air changes, the density of the air changes. This is changing the medium in which the sound wave is propagating through, which changes the sound wave's velocity.

As temperature increases, the velocity of sound increases.
As temperature decreases, the velocity of sound decreases.

The speed of sound in air can be calculated by:

$$v = 331.5 + 0.6T$$

where: v = velocity of sound (m/s)
 T = temperature ($^{\circ}\text{C}$)

ex. What is the speed of sound in air when the temperature is:

(a.) 10°C

(b.) 0°C

(c.) -5°C

(d.) 16.2°C