

## Measuring Sound

[What is a Decibel? \(youtube.com\)](#)



**Decibels** - a measure of how loud a sound is. It measure amplitude.

Damage to the eardrum depends on 2 factors:

1) How loud the sound is

2) How long we are around the sound.

Sounds greater than 85 decibels can lead to damage.


(Take 8 hours of listening to the sound)

Sounds 140 decibels can cause instant damage.

Source	Decibels
Breathing	10
Gentle Rain	50
Traffic	70
Hair Dryer	90
Helicopter	100
Fireworks	140



 <https://youtu.be/UgE2GIQwUCw> [Speed of Sound | Mechanical waves and sound | Physics | Khan Academy - YouTube](#)

 <https://youtu.be/yF4cvbAYjwI> [Relative speed of sound in solids, liquids, and gases | Physics | Khan Academy - YouTube](#)



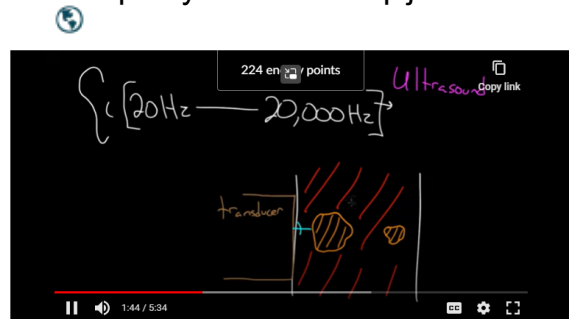
Why do sounds get softer? | Mechanical waves and sound | Physics | Khan

<https://youtu.be/46V8qqVRirk>  
[Why do sounds get softer? | Mechanical waves and sound | Physics | Khan Academy - YouTube](#)

## Ultra Sonic

- Greater than 20 000 Hz
- Dog whistle
- But Ultra sounds use this to provide an image of inside the body.

<https://youtu.be/sTcqtljxLOk>



[How diagnostic ultrasound systems work \(Canon Official\) - YouTube](#)



Animals also use ultrasound to find their prey and to recognize objects and obstacles. Some birds, bats, dolphins, whales, moths, mice, frogs, insects and even grasshoppers will use ultrasonic waves!

# Infrasonic

Infrasonic waves are sound waves that have a frequency below 20Hz.

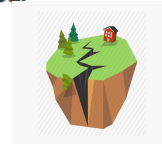
(Recall 20 Hz - 20 000 Hz is audible range for humans)



Whales, elephants, hippopotamuses, rhinoceroses, giraffes, octopus, pigeons and alligators use infrasound to communicate over long distances. Crickets can hear an infrasonic sound so they can hear footsteps from dogs or people from a long way away. We can hear some of their sounds but not their infrasound.



Natural causes of infrasonic waves can be from: earthquakes, volcanos, icebergs or avalanches.



[Do animals have language? - Michele Bishop \(youtube.com\)](https://www.youtube.com/watch?v=...)

