

Decibel (loudness) comparison chart

Here are some interesting numbers collected from a variety of sources that help us to understand the volume levels of various sources and how they can affect our hearing.

Environmental Noise

Weakest sound heard	0dB
Whisper Quiet Library at 6'	30dB
Normal conversation at 3'	60-65dB
Telephone dial tone	80dB
City Traffic (inside car)	85dB
Train whistle at 500', Truck Traffic	90dB
Jackhammer at 50'	95dB
Subway train at 200'	95dB
Level at which sustained exposure may result in hearing loss	90 - 95dB
Hand Drill	98dB
Power mower at 3'	107dB
Snowmobile, Motorcycle	100dB
Power saw at 3'	110dB
Sandblasting, Loud Rock Concert	115dB
Pain begins	125dB
Pneumatic riveter at 4'	125dB
Even short-term exposure can cause permanent damage - Loudest recommended exposure WITH hearing protection	140dB
Jet engine at 100'	140dB
12 Gauge Shotgun Blast	165dB
Death of hearing tissue	180dB
Loudest sound possible	194dB

OSHA Daily Permissible Noise Level Exposure

Hours per day	Sound level
8	90dB
6	92dB
4	95dB
3	97dB
2	100dB
1.5	102dB
1	105dB
0.5	110dB
0.25 or less	115dB

NIOSH Daily Permissible Noise Level Exposure

Hours per day	Sound level
8	85dB
6	86dB
4	88dB
3	89dB
2	90dB
1.5	92dB
1	94dB
0.5	97dB
0.25 or less	100dB
0	112dB

Perceptions of Increases in Decibel Level

Imperceptible Change	1dB
Barely Perceptible Change	3dB
Clearly Noticeable Change	5dB
About Twice as Loud	10dB
About Four Times as Loud	20dB

Sound Levels of Music

Normal piano practice	60 -70dB
Fortissimo Singer at 3'	70dB
Chamber music, small auditorium	75 - 85dB
Piano Fortissimo	84 - 103dB
Violin	82 - 92dB
Cello	85 -111dB
Oboe	95-112dB
Flute	92 -103dB
Piccolo	90 -106dB
Clarinet	85 - 114dB
French horn	90 - 106dB
Trombone	85 - 114dB
Tympani & bass drum	106dB
Walkman on 5/10	94dB
Symphonic music peak	120 - 137dB
Amplifier, rock music at 4-6'	120dB
Rock music peak	150dB

NOTES:

- One-third of the total power of a 75-piece orchestra comes from the bass drum.
- High frequency sounds of 2 - 4,000 Hz are the most damaging.
- The uppermost octave of the piccolo is 2,048 - 4,096 Hz.
- Aging causes gradual hearing loss, mostly in the high frequencies.
- Speech reception is not seriously impaired until there is about 30 dB loss; by that time severe damage may have occurred.
- Hypertension and various psychological difficulties can be related to noise exposure.
- The incidence of hearing loss in classical musicians has been estimated at 4-43%, in rock musicians 13-30%.
- Recent NIOSH studies of sound levels from weapons fires have shown that they may range from a low of 144 dB SPL for small calibre weapons such as a 0.22 calibre rifle to as high as a 172 dB SPL for a 0.357 calibre revolver. Double ear protection is recommended for shooters, combining soft, insertable ear plugs and external ear-muffs.

Statistics for the Decibel (Loudness) Comparison Chart were taken from a study by Marshall Chasin, M.Sc., Aud(C), FAHA, Centre for Human Performance & Health, Ontario, Canada. There were some conflicting readings and, in many cases, authors did not specify at what distance the readings were taken or what the musician was actually playing. In general, when there were several readings, the higher one was chosen.

This information was also published on gcaudio.com