Audio File Size Calculations

These calculations will help you to estimate the size of audio files.

NOTES:

1) "x" means "multiplied by". Forward slash (/) means "divided by".

2) Kbps means "Kilobits per second" (1,000 bits per second). KB means KiloBytes (1,000 Bytes). There are 8 bits in a byte. Note the uppercase "B" for bytes in "KB". A lowercase "b" (Kb) would indicate bits.
3) Calculations for MP3 files generally include both left and right stereo channels. Calculations for PCM files must be multiplied by 2 to allow for both left and right stereo channels.

4) We took reasonable care in computing these figures, but you may want to doublecheck them if you're working on an important project. We did a casual experiment with a one-minute PCM file, and Windows Explorer reported it to be slightly smaller (10,337 KB) than what was predicted by the calculations below (10,584 KB). This may be due to differences between binary and decimal counting systems (multiples of 2 versus multiples of 10). In addition, file header information and ID3 tags (for MP3s) will have an effect on the numbers. In general, however, we have have found the figures below to be useful for approximating audio file sizes.

MP3 File Size Calculations

Formula:

Kbps = bits per second / 8 = Bytes per second x 60 seconds = Bytes per minute x 60 minutes = Bytes per hour

	File size	File size	File size
Bitrate	per second	per minute	per hour
8 Kbps	1 KB	60 KB	3.6 MB
16 Kbps	2 KB	120 KB	7.2 MB
32 Kbps	4 KB	240 KB	14.4 MB
40 Kbps	5 KB	300 KB	18.0 MB
48 Kbps	6 KB	360 KB	21.6 MB
56 Kbps	7 KB	420 KB	25.2 MB
64 Kbps	8 KB	480 KB	28.8 MB
80 Kbps	10 KB	600 KB	36.0 MB
96 Kbps	12 KB	720 KB	43.2 MB
112 Kbps	14 KB	840 KB	50.4 MB
128 Kbps	16 KB	960 KB	57.6 MB
160 Kbps	20 KB	1.20 MB	72.0 MB
192 Kbps	24 KB	1.44 MB	86.4 MB
224 Kbps	28 KB	1.68 MB	100.8 MB
256 Kbps	32 KB	1.92 MB	115.2 MB
320 Kbps	40 KB	2.40 MB	144.0 MB

PCM File Size Calculations

Here are some file size calculations for common PCM audio settings. PCM stands for Pulse Code Modulation and commonly uses the file extensions .wav or .cda. There are quite a few other combinations of bits per sample and samples per second which may be used. We have included calculations for the most common mono (one channel) and stereo (two channel) settings.

Mono

Formula:

Bits per sample x samples per second = bits per second / 8 = Bytes per second x 60 seconds = Bytes per minute x 60 minutes = Bytes per hour of mono.

Settings	Bitrate	File size per second	File size per minute	File size per hour
16 bit, 44.1 KHz	705.6 Kbps	88.2 KB	5.292 MB	317.52 MB
16 bit, 48 KHz	768 Kbps	96 KB	5.750 MB	345.60 MB
24 bit, 48KHz	1,152 Kbps	144 KB	8.640 MB	518.40 MB
24 bit, 96KHz	2,304 Kbps	288 KB	17.280 MB	1.0368 GB

Stereo

Formula:

Bits per sample x samples per second = bits per second x 2 channels = bits per second of stereo / 8 = Bytes per second of stereo x 60 seconds = Bytes per minute of stereo x 60 minutes = Bytes per hour of stereo.

Settings	Bitrate	File size per second	File size per minute	File size per hour
16 bit, 44.1 KHz	1,411.2 Kbps	176.4 KB	10.584 MB	635.04 MB
16 bit, 48 KHz	1,536 Kbps	192 KB	11.520 MB	691.2 MB
24 bit, 48KHz	2,304 Kbps	288 KB	17.28 MB	1.036 GB
24 bit, 96KHz	4,608 Kbps	576 KB	34.56 MB	2.0736 GB