

# Arranging For Singers B – Week 9 – Audio File Format Basics

## WHAT IS AN 'AUDIO FILE FORMAT'?

There are many different kinds of sound files, or 'audio files'. 'Format' is the word used to describe what type of file it is – what company developed it, what applications or programs can play it or use it, what has been done to it since it was originally recorded.

If you have ever used a computer for music, you have heard of an .mp3, but you might not have known exactly what that means – to most people, it's just a name for something you listen to on iTunes or an iPod.

An .mp3 is an audio file that has been *compressed*, or had parts taken out of it, so that it can be small enough to send by email, or so that you can have room to store more of them on your drive or music player. It's kind of like a trash compactor – the file is kind of squished down so it can fit into a smaller space. The parts that are removed to do this are mostly parts that you don't miss – you *can* hear the difference between a compressed and a non-compressed file, but for casual listening purposes you're choosing lower quality so you can have smaller files which are easier to store and send.

There are dozens and dozens of audio file formats, but we're not going to get into them here. We're going to discuss the formats that are used in GarageBand, which also are used by other audio recording programs and players.

## UNCOMPRESSED AUDIO:

**Uncompressed audio** is audio that is kept the way it's first recorded – not squished down. The two basic kinds we deal with in computer music are AIFF and WAV files. They are identified by their **extensions** – the three letters that come after the dot in the name of a file. For instance, a Word document's **extension** is .doc. An Adobe Portable Document File's **extension** is called a .pdf, which is a file type that can be read by almost any computer and program. The file extension is how programs can recognize whether they can use a file or not. Sometimes, all you have to do to get a program to be able to read a file is by just manually changing the letters of the extension!

A WAV file and an AIFF file are both uncompressed. The WAV extension is .wav, and the AIFF extension is .aif or sometimes .aiff. There is a slight difference in quality – overall, WAV files are a little better quality – but they can both be used to burn to CD. WAV is a format that is PC-Windows-based, and AIFF is Apple's own CD-quality format. Most music programs (both Windows and Mac) now recognize both, but in the

past, Mac programs would only recognize AIFFs so you would have to convert a WAV to an AIFF in order for a Mac to use it.

The reason to use WAV or AIFF files is for both quality of sound and ability to burn to CD.

## COMPRESSED AUDIO:

The reason we compress audio is to make the file smaller. The goal is to get a file as small as you can without compromising the audio quality too much. An uncompressed audio file – AIFF or WAV – is roughly 10 megabytes (MB) for each minute of audio. A four-minute song, for example, runs around 40 MB.

This can take up a lot of space on your hard drive or your portable audio player. But if an audio file is compressed using the .mp3 format, it shrinks to about 10% of its original size, with only a slight loss of quality to the ear. So, if you have room for 10 songs uncompressed, you have room for 100 if you compress them!

Apple uses the compression format called AAC (Advanced Audio Coding) for its iTunes songs. The extension for an AAC file is .m4a. These can be copy-protected, which is why they use it. It is a slightly higher quality compression but takes up the same amount of space. However, you can have AAC files that are not copy-protected as well.

The most popular compression method is, of course, .mp3. You can choose to export your GarageBand songs either as uncompressed AIFF (CD-burn-ready) or compressed .mp3 (standard) or AAC (iTunes standard). When you choose a compression type, you can also choose the **quality of the compression** – the less compression, the better the sound quality, but the bigger the file.

So, when you choose a compression quality, you are balancing which is more important – small file size or sound quality. For instance, compression at 64kbps will give you a very small file, but lower quality; 192kbps will give you a larger file but better quality. It totally depends upon your needs for that file.

## GARAGEBAND AUDIO EXPORTS:

- AIFF – MAC UNCOMPRESSED, CD-QUALITY, 10 MB PER MINUTE OF SONG – .AIF
- MP3 – STANDARD COMPRESSION, 10% OF AIFF OR WAV – 1 MB PER MINUTE OF SONG – .MP3
- AAC – ITUNES STANDARD COMPRESSION, 10% OF AIFF OR WAV – 1 MB PER MINUTE OF SONG – .M4A