

# Mixing for Mastering Tips

## Plug-ins on the Master Output

If you are using plug-ins on the master output during mixing, then export two versions: A) one version with plug-ins enabled on the master output, and B) one version with plug-ins bypassed on the master output. Limiting or clipping should be avoided on mixdowns for mastering.

Having two mix versions gives me a choice in case you over-processed the mix. Check that your mix does not exceed the headroom when bypassing the plug-ins. If the master bus is overloading after bypassing the plug-ins, simply lower the master fader.

## Headroom

Your 24 bit mix should have its highest peak between -12 dBFS and -3 dBFS. This translates to between 12 and 3 dB of headroom before exceeding the digital ceiling of 0 dBFS. If your mix is too loud then simply lower the output fader until the highest peak is within the recommended range. Sound quality will not be affected when you lower the fader. With 24 bits you can go as low as -48 dBFS and still have full CD quality (16 bit). However, once you exceed the digital ceiling, distortion will occur, and it will not be possible to restore the original quality. There is no reason to maximize the volume during mixdown. I will make sure your song reaches its maximum loudness potential later in the mastering process.

## Tips for Mixing - From a Mastering Point of View

The following issues can be fixed with greater success in the mixing process than in the mastering process.

## **Noise**

With analog recordings (guitar, drums, etc.) or completely analog mixes, use the mute automation function in your sequencer or on your mixer to eliminate hiss noise. Mute individual channels or groups when they are not active. This is particularly important in the intro, breakdown, and outro since it will reduce the level of noise in the parts of the song where it is most audible.

## **Phase and polarity**

Check to see if recorded drums are out of phase. Other common problems are pianos and synthesizer sounds with too much anti-phase and applying a fake stereo spreader. Check your mix in mono playback to see if sounds almost or entirely disappear because of inverted polarity.

## **Sub frequencies**

Loud or unnecessary sub frequencies (below 40 Hz) in individual tracks can cause problems with the sound quality and the final volume of the master. Make sure you low cut all tracks that do not contain meaningful sound in the sub frequencies. For instance, a vocal can be cut at around 80 Hz to avoid pops or rumble. Using a gentle 12 dB/Octave slope will sound more natural than a steep filter. Do not cut the entire mix though as this could lead to a thin sounding mix if you are not careful.

## **Sibilants and other sharp sounds**

Sibilants and other sharp whistling or clicking sounds from the mouth or string instruments are a serious challenge when mastering. Make sure the vocalist controls his or her sibilants. Use a de-esser if necessary, preferably a broadband de-esser to avoid lisping artifacts. Use volume automation on very loud sibilants, plosives, or click sounds. Also pay attention to other sharp sounds that stick out, i.e. crash cymbals and hi-hats.

## **Vocal levels**

An uneven vocal is difficult to fix in the mastering process.

Sometimes two compressors with a low ratio is better than one compressor with a high ratio. Even with correct vocal compression you often still need to do volume automation. Turn individual passages or words up or down until everything is smooth and clearly audible. Try listening at a low volume while adjusting the volume automation on the vocal track.

## Alternative Versions

It is common practice to provide alternative versions of the mix with vocals up (or down), e.g. +/-1dB, as well as an instrumental and an A Capella version.

Use clearly labeled file names to avoid confusion.

## Start/End of Song

Export your mix at least one bar before it actually starts. Include a couple of extra bars at the end to ensure reverbs, delays, and instrument decays have tapered off completely.

Include empty space at the start and the end of the song

## Fades

Do not fade out the end of the mix. Instead, tell me where the fade should begin and end. Write down the fade times in absolute or relative terms, i.e. “fade out from 3:15 to 3:30” or “fade the last 15 seconds of the song”.

## File Format

In general I would advise that you should send me your files in whatever format they were recorded at. So, if you recorded at 24bit/48k, that's what you send.

## Bit Resolution

### **24 bit.**

All professional sequencers are able to export in 24 bit so please record at this bitrate if possible. 32 bit floating point is not used for mixdowns for mastering. The actual sound contents of a 32 bit float file is identical to that of the 24 bit fixed format, it takes up more space, and is slower to data transfer.

## Sample Rate

### **44.1 kHz or higher.**

Only export in higher sample rates than 44.1 kHz if your project is actually recorded and processed at that rate. The advantages and disadvantages of using higher sample rates are debatable. If your project contains songs with different sample rates then do not convert sample rates yourself, let me do it. If you need to put your master in a video or film or you require a different target sample rate than 44.1 kHz, then tell me in advance.

## Dithering and Noise Shaping

Do not use noise shaping or colored dither, e.g POW-r when exporting your mixdown for mastering.

In all circumstances dithering and noise shaping on a 24 bit file has very little effect on the sound, so leave it off if you are uncertain. The final bit reduction to 16 bit (audio CD format) is performed by me as the last step of the mastering process.

## Normalizing

Do not use any kind of normalizing on your mixdown.

Normalizing raises the signal level in an unnecessary fashion, and it will change the amount of headroom left in the mix. The final volume

level of the mix will be optimized by me.

## Realtime or Offline Bouncing (bounce to disc)

In theory a realtime and offline bounce are identical. However, sometimes track automation and unsynchronized LFO's are not identical due to small timing differences. If you decide to do an offline bounce then listen through the bounce before sending it to me.

## Listen to Your Mixdown

Always check back your mix after bouncing it down.

## Sending Files Over the Internet

You can upload your file to me by using <https://www.yousendit.com> or Dropbox.

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## Delivering Files on a CD

Burn your CD as a data CD and not as an audio CD. An audio CD will reduce your 24 bit files to 16 bit files. Data CDs also have better error correction.

 Check that your burned data CD is readable on your own computer and that the data can be copied to your hard disk without errors. Doing this before sending the CD to me save a lot of time.

## Projects With More Than One Song

If your project contains more than one song then send the first mix to me as soon as it is finished - before continuing with the next mix. In this way I can alert you to general mixing errors before you repeat them in the next mix.

## Song Order and Other Notes

Let me know about problems in the mix and your wishes for the end result. However, rest assured, I will notice any problems automatically and enhance the sound in the right places. If your songs are part of an album or an EP then write down the song order in an email or attached document. If you have special wishes for pauses between tracks, segues or bonus tracks then let me know in advance.

## Red Book Master CD or DDP

Let me know if you need a Red Book master CD or a DDP image/disc for mass production. If not, you will simply received a download link to your mastered WAV file.

The Red Book is a standard for commercial audio CDs as defined by Sony and Philips. The average CD burning software does not burn Red Book CDs, and does not live up to the commercial standard that ensures maximum compatibility. If you intend to mass produce your CD or include ISRC then you need a Red Book master CD. The master CD can be played in a regular CD player or on your computer but it should be handled with great care. Preferably you should order a separate reference CD for playback, and only let the production plant handle the actual master disc.

Another option is making a DDP disc. Unlike a Red Book audio CD, a DDP disc contains an error corrected data version of the Red Book master. If the production plant is able to use DDP, this is the safest solution. DDP also has the advantage of being downloadable as a DDP image by the production plant.

## ISRC - International Standard Recording Code

If you need ISRC on your master CD or in your MP3, please send the codes to me by email or in an attached document. ISRC can not be embedded into a WAV or AIFF file, only on a physical audio CD or a DDP disc/image - or in an MP3.

ISRC is necessary if your music is to be sold on iTunes. If your music is being played on the radio, ISRC is an advantage for identification purposes. You can get these by contacting PPI (email:

[isrc@ppimusic.ie](mailto:isrc@ppimusic.ie) or ph: 01 2805977.

The codes must have twelve digits as in the example below (not counting hiphons).

IE-ABC-09-001-01 (country code-record label-year of registration-release-track)

## MP3

It is possible to order a high quality MP3 version of your master. ISRC can be embedded in the ISRC ID3 meta tag. Let me know what bitrates you would like to have your MP3s in.

## Gracenote Database

If you want iTunes and similar software to show the correct title and track names automatically, you need to submit your CD to Gracenote (formerly known as CDDB). You can read more about how to submit your CD to the Gracenote Database here: <http://www.gracenote.com/about/FAQs/>

## CD-Text

CD-Text is a late addition to the Red Book format and is only read by CD players that support CD-Text. Many car CD players display CD-Text on a small LED but it is not universally supported. CD-Text can hold information such as the name of the artist, album title and track title. CD-Text is often confused with the information used by the Gracenote Database. iTunes and most other software does not read CD-Text but instead gets the information about the CD from the Gracenote Database.

Even if you include CD-Text on your CD it is often removed automatically by production plants unless you specifically tell them to use it. This is done as a safety precaution to avoid manufacturing CDs with random characters in the CD-Text fields.

## UPC/EAN

The Universal Product Code (UPC) is the barcode attached to products you buy in a shop in the United States and Canada. The barcode decimal data can be embedded in the CD, too. The European Article Number (EAN) is the European equivalent but it is also being used in other parts of the world.

You can buy a UPC/EAN code by contacting EAN International.

<http://www.officialeancode.com/?engine=adwords&match=exact&keyword=ean+international+barcode&gclid=CIK6vMr-y7MCFZA54QodBUQAQw>

You can buy an EAN code by contacting EAN International (also known as GS1). They will refer you to your local department.

## Evaluating Your Master

Listen to your master in the same places where you normally listen to your music: in your living room, in your studio, in your car, on your iPod or on your computer (do not use the internal speakers of your iMac or laptop for evaluation as they have a built-in limiter on the output).

Use the same volume level as you normally do. If you like to play loud in the studio, then play your master loud. If you play at low levels in your living room then set the volume low. This will give you the best grounds for comparison. A well rounded mix and master will work at all levels.

## Loudness Potential

Each mix has its own loudness potential. The final loudness of a master is not only determined by the mastering process but is a matter of arrangement, production, recording and mix quality.

Various degrees of dynamic processing

A simple arrangement with few, but well-chosen sounds, has more loudness potential than a big arrangement with a lot going on

simultaneously. I can let you know when your song has reached its loudness potential. Pushing the envelope beyond that limit will gradually deteriorate the sound quality, causing audible distortion and squashed dynamics.

A dynamic master sounds coherent, pleasant, and has plenty of the original dynamics retained, but it will not compete with most commercial pop music in terms of loudness.

A loud master is a compromise between a great sounding song and competitive loudness. It will sound good while being approximately as loud as most other pop music.

A squashed master will sacrifice sound quality and dynamics in order to sound extremely loud - the side effects being distortion and a complete lack of dynamics.

## Important Information About the Sound in iTunes

iTunes can sound identical to your sequencer or any other neutral media player. However, first you need to turn off certain preferences. If not, iTunes can make your master sound lower or different in terms of frequencies.

Go into the menu: iTunes > Preferences > Playback. Make sure Sound Enhancer and Sound Check are not activated. Quit and restart iTunes.

Happy Mixing!

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