



Cover Your (Data) Bases

What musicians need to know about music metadata to get paid for their music

Digital download sales, royalties from streaming music services, revenue sharing from YouTube—in addition to physical retail and online retail sales of CDs—all hinge on coded information. It's important that artists use every means available to establish their connection to their recorded works, and to incorporate into their project all of the essential data tools for selling their recordings.

We originally wrote about metadata in 2007; Mike Petillo has done a careful update of this important topic.

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UPC, ISRC, CD Text and Online Music Databases

A lot of the information on a music recording isn't music. Digital delivery and online sales can't happen without some coded data, commonly called "metadata," which is the information about the music. The multitude of ways in which fans listen, often across various devices at home, work, in their cars and on their phones, allow artists new opportunities to share info about their music and draw listeners closer.

In this guide, we tell you what each code does, what it looks like, and where to get it.

UPC (Universal Product Code)

UPCs are the ubiquitous "bar codes" that are found on nearly every product available in physical retail stores around the world. In the case of music and film sales, they are printed onto the packaging of CDs, vinyl albums, and DVDs. Similarly, in digital stores like iTunes, a UPC is another piece of metadata attached to your music. Each product has a unique 12-digit number, encoded in the bars, which are used to track inventory and sales of physical and digital releases. UPCs are used in the U.S. and Canada but are known as EAN in Europe and other countries.

For a specific CD or vinyl release, the UPC's 12 digits are assigned as follows: the first six digits (the prefix) represent the record label or other releasing entity (more on this later), and the last six digits (the suffix) represent the artist and the release. The UPC applies to the entire release, as opposed to ISRC codes, which are attached to individual tracks. (See below for more information on ISRCs.)



What is it used for?

When you're buying a CD at a record store, the UPC is scanned at the cash register, and the inventory information linked to the UPC tells the clerk the appropriate sales price. But there is a lot more information that is contained within those unique strings of bars and digits. With a physical release (CD or vinyl), UPCs are used by stores, record companies, distributors and entities like Nielsen SoundScan to manage inventory and track sales.

Along with the traditional tracking of physical sales from retail outlets, UPCs are now used to compile sales data on digital downloads; having a UPC assigned for a new release is now mandatory before selling your music online via stores like iTunes and Amazon MP3.

Where does it come from?

Allocation of UPCs is officially managed by [GS1](#), a global, non-profit organization that governs manufacturing and supply chain standards. In order to receive their own special UPC prefix code, companies must become a member of the organization. The membership fee varies according to the number of unique products that will require a prefix code, and both initial membership and annual renewal fees differ based on the quantity of codes needed. (More information, and a link to the application, can be found on [GS1's membership site](#).) Member companies receive the first six digits of their code and the right to assign the rest of the sequence. Applying for GS1 membership may make sense for record label owners or digital music aggregators who will need to generate many unique UPCs for multiple releases. For many independent artists, however, there may be more cost effective options. For example, the online store CD Baby, which deals in both physical and digital sale, can provide individual UPCs for releases sold through their store for a small fee. Groups like [Indie Artist Alliance](#) also offer very inexpensive UPCs. (They often require membership to do so.) Other local musician advocacy organizations such as the Washington Area Music Association and the Colorado Music Business Organization include a UPC as a membership benefit as well.

Where is it, and how does it get there?

Once purchased through one of these or other outlets, the graphic designer should incorporate the UPC bar code itself into the album artwork. Generally, the UPC is located on the backside of the CD or vinyl jacket artwork in any of the four corners. (Because there are restrictions on truncating, shrinking or scaling the bars, have your source generate the actual bar graphic, to ensure that it's done properly.)

The UPC is also a part of the metadata that your mastering engineer can include onto your production master and/or can be entered manually when submitting information required by a digital distributor.

ISRC (International Standard Recording Code)

Whereas the UPC code generally identifies a particular release (which is often a collection of multiple songs, as in a typical full-length album), an ISRC is a permanent alphanumeric code assigned to each specific track of a recording (and to short form

music videos). Composed of 12 characters broken down into four subcodes, the ISRC gives an accurate description of the following:

QM-Z04-14-32243
(1) (2) (3) (4)

(1) The country of origin for the sound recording copyright owner. Due to the overwhelming demand to assign codes for recordings from the United States, a second country prefix of “QM” (in addition to “US”) was put into use in 2010.

(2) The code for the registrant or copyright owner, which is unique to the sound recording copyright owner, whether artist or record label.

(3) The year the ISRC was assigned to the sound recording track (not necessarily when the track was first released or recorded).

(4) The designation code, which is the code assigned to each track.

The ISRC is always tied to the track, not the delivery medium. So, for example, a song from a regular CD album that is later released on that artist’s “Greatest Hits” compilation in digital download format would have the same ISRC in each case. However, a remix of the same song would be considered a new track and would require a different ISRC. Additionally, new codes are necessary when a track is edited so that the length changes by more than 10 seconds, as well as when a track is modified (for example, through re-mastering for sound restoration).

What Is It Used For?

ISRCs are used to keep track of recorded works, including when and how they are used, downloaded, and sold across the digital universe. The code helps trace the royalty owner who is owed royalties when a sound recording is used by web-based streaming services like Pandora, Spotify, Google Play, Rhapsody, etc., and satellite radio stations like SiriusXM.

The ISRC is also the tool used to track sales in digital music download stores, such as iTunes, Amazon, CD Baby, or Beatport. ISRCs are included in the metadata that these companies use – and often require – to sell your content.

Remember, an ISRC is applied to the recording regardless of medium or file format, and identifies the intellectual property (the recording) not the object. It is a “forever” designation.

Where Does the ISRC Come From?

The ISRC was created by the International Standard Organization (ISO) in order to provide an electronic label to sound recordings. In each country, a national organization supplies codes to sound copyright owners. In the United States, the national administrative agency is the [U.S. ISRC Agency](#), which is part of the Recording Industry Association of America (RIAA).

If you own the rights to your own music, and/or run your own independent record label, and plan to release multiple recordings in the future, it may make sense to apply for your own codes directly. Visit the [ISRC Agency page](#) for more information and to get your registrant designation.

There are other ways to get ISRCs. Often record labels apply for status with the Agency to obtain their own 3-digit codes (the “Z04” in our example, above) so if your music is coming out on a label they will probably supply the codes. Additionally, many music business entities, including digital distributors and online music aggregators (like CD Baby or The Orchard), are officially designated ISRC “managers” and are permitted to assign codes. If you’re going to be working with one of these companies, you can often receive your ISRC information from them.

One thing to keep in mind: it’s important to keep your contact info up to date with whichever party issues your ISRCs, including aggregators as well as SoundExchange, the nonprofit organization authorized in the U.S. to collect royalties from streaming services and satellite radio on behalf of musicians. That way, you’ll be sure to receive accurate and timely payments.

Where Is It On My CD?

Mastering engineers can include the ISRCs for your songs on your final production master (production master CD and/or DDP image file) as data on a subchannel. (It cannot be encoded into the audio files themselves.) If mastering at Airshow, be sure to indicate your codes on your [Mastering Information Sheet](#).

When Do I Need My ISRC Info?

Do your best to plan ahead: spend some time deciding how you will secure codes to ensure you have all the information needed

Sales Charts and the UPC Nielsen SoundScan collects UPC sales data from over 14,000 outlets in the U.S. and Canada to compile its weekly list of music sales, which are published [online](#) and in [Billboard](#). Nielsen SoundScan’s charts are the only ones based on actual record sales. For a recording to be tracked by SoundScan, its title must be submitted to SoundScan. (Please see [instructions here](#).) In a nod to the independent music community, Nielsen has also authorized other parties to upload the submission; [Oasis CD Manufacturing](#), for example, will do this for their customers, with very little additional effort on the artist’s part.

when preparing your release for mastering, as well as having the necessary info to supply to aggregators (if they aren't already providing you with ISRCs) or anyone tracking the distribution of your content online, such as SoundExchange.

CD-Text

CD-Text is information about the release that can be encoded as a separate file on an audio CD. It contains basic information about the recording, like artist and album name as well as song titles. When playing back an audio CD containing CD-Text information on a CD-Text-enabled CD player, the listener will be able to read this information on the device's display panel. It's important to note a common misconception: CD-Text is different from the information shown when playing a disc through a music player like iTunes, as computer display of text information comes from entirely different sources, such as online music databases, which are explained below.

CD-Text has been around since the advent of CD in the 1980s and is part of the original Red Book Audio standard. Many home and car stereo devices are capable of reading and displaying CD-Text information, and many software programs enable burning discs with CD-Text information.



Where is it?

CD-Text is stored on a CD so it does not interfere with playback of the audio portion, as it's encoded on a subchannel on the disc. Many mastering studios input artist, release title and song titles as a component of the information that becomes part of the disc's "table of contents" and also the log furnished to the manufacturer. Some mastering software takes that information from the log and reformats it into a CD-Text file and creates the subchannel. A CD master from Airshow that contains CD-Text will always be labeled as such.

If you'd like your disc to display your artist name, album name, and song titles on home and car stereo systems equipped with CD-Text playback capabilities, be sure to have your mastering engineer encode CD-Text info onto your master. Mastering studios will be sure to include appropriate information for the manufacturer so CD-Text info makes it onto your replicated or duplicated discs. It's important to recall that that not all players support CD-Text capabilities.

Online Music Databases

When you want to rip a CD to iTunes, and you insert your CD into your computer with a working Internet connection, the program (almost magically) knows the names of the artist, album, and songs: you're using the services of an online music database. As opposed to CD-Text (which only functions when used in a CD-Text capable player in your home or car stereo) music databases do not rely on information encoded into the physical disc itself. Music databases and music recognition platforms are at the forefront of the modern listening experience and are becoming more and more integrated into how music is consumed and shared.

Gracenote, Inc. (formerly known as CD Database, or CDDB) is an Internet-based service that maintains a vast database of music release. When you put a CD into your laptop and open a program like iTunes, the album, artist, and track information is retrieved from the Gracenote database online, allowing for easy identification of the tracks, and saving the trouble of manually naming files before you import your disc into your music library.

Similarly, the music identification system popularized by Gracenote's original CDDB technology has now become commonplace among listeners, Internet-based technology and mobile devices. Automotive stereo systems are capable of accessing data online to pull up even more info about a release than CD-Text allows.

While Gracenote is currently the most popular and certainly the largest (with more than 130 million tracks and over a billion pieces of data), it is not the only such service; [All Music](#) and [Freedb](#) also help ID music from physical discs and have their own categorization of releases, songs and artist info. The software that's used to listen and organize your music library on your computer or mobile device have proprietary relationships with different online databases, so the specific source of the data may differ from user to user.

Music databases provide a wealth of information to listeners about a recorded work. The more that technology enables playlists to be customized and libraries to be organized, the more ways in which data plays a role in how we experience music. Album title, artist name, record label, the year a disc was released, genre (and various subgenres), credits such as guest artists and/or producers, ISRC info, URL links to the artist's website, and cover art are all typically attached at some point within the digital universe to your music by one database or another.

Where is this important info found?

Since Gracenote and other music database info is not physically attached to a CD, but rather stored and accessed through cloud-based technologies, how does the correct information get

retrieved? That's the proprietary part. Disc recognition appears to work by the statistical improbability of two CDs having tunes of exactly the same length appearing in exactly the same sequence on a disc: the very first time a CD is inserted into your computer and the Gracenote database is accessed, the database reads the (generally) unique sequence of tunes and their lengths, and stores that unique sequence. (When the statistically improbable happens, the listener may see album and content information displayed that is unrelated to the CD in the drive.)

For recognition of individual tracks, Gracenote has other software that generates a "fingerprint" of some portion of the content of the music file, and thereafter associates the information about the track with that fingerprint.

Surprising though it may sound, the information in Gracenote's database can come from anyone: a record label, the artist themselves, or fans who recently purchased a new CD can enter the pertinent information on their own and upload to the Gracenote system. To maintain the integrity of the information in its database, Gracenote enforces certain [guidelines](#).

iTunes and other digital download stores where you can purchase the track you just found.

With close to 80 million users worldwide, Shazam is the most popular music recognition software, and is said to drive about 7% of digital sales (or almost half a million downloads per day). As such, it's becoming an increasingly important tool for musicians to reach new listeners. However, in the case of Shazam, only digital distributors and record label owners with more than five hundred tracks can supply content directly. When considering whether to use services like CD Baby or The Orchard, be sure to research what services are included in digital distribution if you want to make sure your tunes can be found using Shazam.

The last word about those words and numbers

Independent-oriented mastering labs (us!), manufacturers and aggregators can provide artists with access to the entire suite of information tools that are available to record labels. Get your ISRCs early and have them embedded in your master by your mastering studio. Decide before mastering if you want your release to have CD-Text and give it to your mastering studio. Be sure you have a

YouTube *YouTube is obviously one of the most popular sites on the planet for video and music content, and artists can connect with new audiences by uploading their own material without having to go through normal distribution channels. However, just because music (and video) is seemingly free to enjoy on YouTube, it doesn't mean that money doesn't enter into the equation. It's important to understand the basics of how to explore monetizing your YouTube presence (should you wish to do so) and what resources exist to help out. CD Baby offers a valuable breakdown of some ways maximize your YouTube impact; other companies, like Audiam, provide services to hunt down videos that feature artist content in order to extract – and share – potential revenue (earned mainly through advertising on videos). There are many proprietary (and seemingly mysterious) ways in which YouTube manages its vast catalog —approximately 100 hours of content are uploaded to YouTube every minute!—but it's clear that, at the very least, some of the metadata outlined in this paper comes into play in helping ensure that creators and copyright holders remain attached to the music—and potential revenue streams.*

Gracenote allows users to easily submit release data using most popular playback software platforms like iTunes, Winamp, and QMP. Some manufacturers, like Discmakers or Oasis, automatically provide Gracenote with release info on behalf of clients. (Submitting to All Music is possible by [mailing them copies of your disc](#).)

Music Recognition Software

Using apps like Shazam and SoundHound, mobile phones are now able to record snippets of audio from any source, which can be especially handy when you come across that brand new track on the radio that you need to know, or that old song you've heard dozens of time before but for some reason just can't place. These apps use the same concept of fingerprinting when capturing a sample of a recorded song, and then apply algorithms that compare millions of spectrograms (a visual representation of a sound recording) to identify what you're hearing. Often they link you to

readable bar code and UPC attached to your disc. When you get your discs back from manufacturing, be sure that accurate information is uploaded to the online databases. Independent artists working on their release need to make decisions about manufacturer and digital distributor or aggregator early, so they can be sure they have all their (data) bases covered. Here is a [list of distributors and aggregators](#) we created in 2013 when we discussed high-resolution download services.

Information for this report was compiled by Emiliano Ferragosto, Ann Blonston and Mike Petillo.

For mastering information, please contact us!

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