
Untangling the CD/DVD “Alphabet Soup”

Going to the store to purchase a new “burning” drive, software and media can be a daunting experience. What is the difference between DVD-R and DVD-RAM? What is the best drive, format, media for a video, text file or audio tracks? In this article, we’ll try to untangle the CD/DVD “alphabet soup” used by drive, software and media manufacturers - and help you to make the “right” purchasing choice for your specific “burning” needs.

Compact Disc’s

Commercial Compact Disc technology has been around since 1982. Basically, CD’s are created by changing the reflectivity of an organic dye layer in the CD. The dyes are photosensitive compounds like those used in photography and manufacturers use different dyes, dye thicknesses, reflectivity thicknesses and groove structures to offer products in varying recording speeds, power and media longevity. CD technology was introduced to consumer markets through the good old:

- *CD-ROM*: (Compact Disc-Read Only Memory) CD-ROM technology can store up to 1GB of data, however the most common implementation is the standard 650MB disc. CD-ROM’s are “stamped” by their manufacturer (think of the music CD from your favorite artist) and cannot be erased and refilled with new data.

In 1993, Philips introduced the first writable CD products for businesses and consumers. This was the:

- *CD-R*: (Compact Disc Recordable) CD-R discs come in 74 or 80 minute formats and hold 650 or 700MB of data. The biggest thing to remember about CD-R’s is that once they are written the process is permanent. You can’t erase the data and start over and it is difficult to incrementally add data to the disc (you have to leave the session “open” and not record on the entire disc).
- *CD-RW*: (Compact Disc Re-Writable) Unlike CD-R’s, CD-RW discs use a special dye material that can be melted, “erasing” old data and preparing the dye for “new data”. This process can be performed thousands of times. CD-RW’s come in 80minute, 700MB formats.

But hold on, it’s important to not only consider the physical properties of the disc, there are “writing” formats to consider as well. The most prevalent (and important in your purchase of a burner and burning software) are:

- *CD-DA*: (CD-Digital Audio) Think of the music CD you purchased at the record store from your favorite artist - the original format for digital recording and playback of music.

- *CD+G*: (Also known as Karaoke CD) A CD format for storing simple graphics and text in sub channels on the disc.
- *CD-MIDI*: (CD-Musical Instrument Digital Interface) Provides musicians the ability to work with MIDI instructions including reading musical scores and editing and displaying sound characteristics.
- *CD-TEXT*: Provides the ability to store information about the artist as well as title and music track information (i.e. track length).
- *CD-ROM XA*: (CD-ROM Extended Architecture) Includes the ability to read and display data, graphics, video and audio simultaneously.
- *CD-I Bridge or Multi-Session*: (CD-Interactive) is designed for interaction with your TV. Bridge format provides a way to combine two CD formats (i.e. CD-ROM XA and CD-I) on a disc, while multi-session provides the means to “add” new data to an existing disc (i.e. add a new photo to your existing photo disc).
- *Mixed-Mode CD*: Places read only data in track one followed by up to 98 audio tracks.
- *VCD*: (Video CD) Is just what it says it is - a video CD - that uses MPEG compression to store up to 74/80 minutes or 650/700MB on a CD
- *SVCD*: (Super Video CD) Holds 35 to 60 minutes of much higher quality video than VCD discs. It can also play up to 2 stereo audio tracks and 4 selectable subtitles.

CD's also come in two write speeds (1x-4x and 4x-10x), so make sure that the speed of your drive and the CD's you purchase “match up”. If you don't, you'll be taking that second trip back to the store to purchase compatible media!

Digital Versatile/Video Disc's

DVD's come in four basic formats and capacities of 4.7 and 9.4GB (single-sided, double-sided) and write speeds of 4x and 8x. DVD's can store up to 2 hours of DVD-Video including Dolby Digital or DTS audio tracks as well as menu systems, subtitles and still photos. The basic standards you'll need to keep in mind are:

- *DVD-R/DVD-RW*: (DVD-Recordable or Rewritable) Like CD's DVD-R's are one time writable discs, DVD-RW's are rewritable and support single side 4.37GB DVD's (also known as DVD-5) and double-sided 8.75GB DVDs (also known as DVD-10).
- *DVD+R/DVD+RW*: Offer some “improved” features that include lossless link and CAV (Constant Angular Velocity) and CLV (Constant Linear Velocity) writing. As above, the “R” format is a one-time use disc, the “RW” format provides multiple erasing and writing capability.
- *DVD+R DL*: (DVD+R Dual Layer) The double-sided implementation of the DVD+R (also known as DVD-18).
- *DVD-RAM*: (DVD-Random Access Memory) DVD-RAM discs are attractive in that they can be re-written 100,000 times (versus 100 times for DVD-RW or DVD+RW discs) and also provide the capability to run programs from them. DVD-RAM discs come in double-sided

9.4GB formats.

Ready to Buy?

Whew! Have all that? Even if you don't here's what is important to remember:

- Make sure that the drive, "burning software" and media all match up (support the same standards/speeds/formats).
- Keep in mind that the drive, software and media must also meet your application needs - photos, video, audio, text, data back up.
- Finally, consider the capabilities of the folks (and their systems!) that you intend to share your CD's or DVD's with. Do they too, have the "right" burner/software to read your media?

The ability to "burn" CD's and DVD's is a wonderful business asset for home-based businesses - data backup, marketing, information distribution - once you get the hang of it, burning is a simple, yet very effective business tool. Just remember to keep the "alphabet soup" of standards in order, and you won't have to waste time and money struggling with incompatible CD or DVD hardware, software and media.

Drives		DVD-R	DVD-RW	DVD+R	DVD+RW	DVD-RAM	CD-R	CD-RW	CD-ROM	CD-R Music
DVD-R	Read	✓	✓	✓	✓		✓	✓	✓	✓
	Write	✓					✓	✓		✓
DVD-R/RW	Read	✓	✓	✓	✓		✓	✓	✓	✓
	Write	✓	✓				✓	✓		✓
DVD-R/RAM	Read	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Write	✓				✓				
DVD+R/RW	Read	✓	✓	✓	✓		✓	✓	✓	✓
	Write			✓	✓		✓	✓		✓
DVD+RW	Read	✓	✓	✓	✓		✓	✓	✓	✓
	Write				✓		✓	✓		✓
DVD±R/RW	Read	✓	✓	✓	✓		✓	✓	✓	✓
	Write	✓	✓	✓	✓		✓	✓		✓
CD-ROM	Read						✓		✓	✓
	Write									
CD Audio	Read						✓		✓	✓
	Write									
Multi-Read	Read						✓	✓	✓	✓
	Write									
CD-R	Read						✓		✓	✓
	Write						✓			✓
CD-RW	Read						✓	✓	✓	✓
	Write						✓	✓		✓
Audio CD-Recorder	Read						✓		✓	✓
	Write									✓