

CDs and DVDs

CDs (Compact Discs) are familiar to everyone. They first appeared as music CDs in the mid '80s. The Audio CD format, co-created by Sony and Philips, is called **Red Book**. The main parameters of the Redbook standard are...

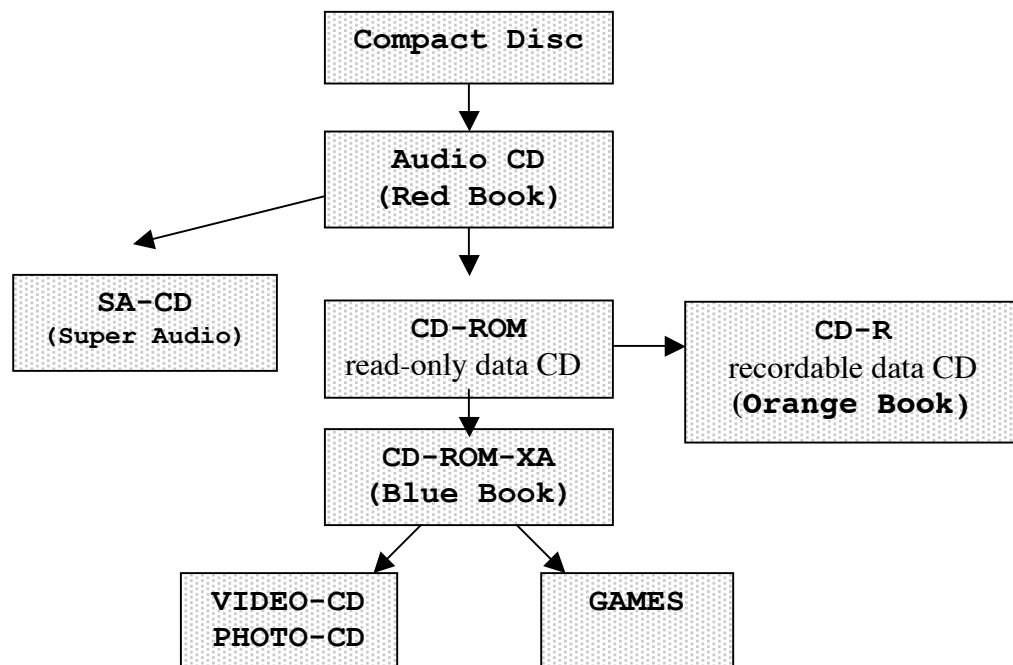
- about 80 mins of music maximum;
- 99 tracks;
- 2 channels (stereo);
- 44.1kHz / 16 bit;

Another parameter is *PQ coding*. This tells the CD player where each tracks starts and ends on the disc, and it can store a table of contents, song titles, etc.

CDs aren't just for audio. They're great for data storage too. The first popular data format was **CD-ROM**. CD-ROM is a popular way to distribute games, programs, images and other media files.

Now we're accustomed to burning our own CD's without a problem. The ones we can burn at home are called **CD-R** (CD recordable). CD-R's fall conform to the **Orange Book** standard.

Once CD-ROMs became popular, someone hit on the bright idea of combining Audio CD's with data CD's, to provide a multimedia experience through images, text and videos plus the music. This format is called **CD-ROM-XA**. It is also called Enhanced CD. The Enhanced CD spec is **Blue Book**.



Speed and Data Capacity of CD

Modern hard drives are able to handle large amounts of data at once, with high spin rates (5400 RPM and higher). CD, on the other hand, is quite slow (only about 500 rpm). It outputs data at a much slower speed. The minimum rate of a CD-ROM player is sometimes called 2X, or 2 times. It's enough to output a stereo music stream without falling behind, but that's about all. The technology has improved, and CD-ROM can now work at speeds up to about 48X.

Another limitation of the CD format is the data capacity. It's limited to about 800MB of data. But it's not a big deal, now that DVD has come along!

DVDs

DVD (Digital Video Disc) has a 4.7 GB capacity. It is most commonly used for movies, and for data storage. There's also DVD Audio, which gives you the capacity of a DVD with various sample rates and resolutions.

Dual Layer DVD, has an 8.5 GB storage capacity. Most of the movies you watch are on Dual Layer –you can tell when the DVD player switches layers because you'll notice a brief pause in the playback.

Blu-Ray, uses a blue laser instead of red to make much finer markings on the disc. This expands the storage capacity to about 25GB single layer, or 50GB dual layer, on the same size disc as regular DVD. Much higher video quality is possible, because the video data doesn't have to be as compressed as with conventional DVD. Blue-Ray players are backwards compatible – you can play conventional DVDs on a Blu-Ray machine.