

# EXAMINING THE LIFE-SPAN OF YOUR CDs and DVDs

**Beginners' Kaffee Klatch**  
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*Aside from Physical Breakage and Splitting, What conditions can contribute to data loss in CDs and DVDs?*

The first step in ensuring a long life for a CD or DVD is to obtain a good recording. Many people assume that since the recording is “digital,” it is either perfect, or bad, and that there are no degrees of quality.

When you record data on a CD, the drive places your data in non-adjacent locations. For example, this sentence might be spread over several different spots on a CD. Then the drive uses a logical step-by-step procedure to error check and auto-correct if a piece of data is wrong. With these techniques, the drive can reconstruct your data, even if some pieces are missing.

A good quality recording results in very little error correction by the drive itself. A poor quality recording means that from day one, the drive has to do a lot of error correcting to play or read your disc. If the disc is marginal to begin with, and ages or degrades at all, you can have an unreadable disc within six months.

Here are a few tips for how to properly store and handle a CD or DVD for maximum life:

- Avoid temperature and humidity extremes and large variations.
- Store away from light sources.
- Store your commercially pressed CD/DVDs in a jewel case, which will hold the disc **vertically**. The little clip in the middle of the jewel case actually holds the disc away from both sides of the case so the recording surface only contacts air. A commercial CD/DVD is far more forgiving when flexed or bent while being removed from the jewel case.
- Even better than using a jewel case, particularly when storing a “burned” CD or DVD, is a disk carrier with soft acid-free mylar storage sleeves.
- Avoid flexing, bending or scratching, and bringing the disc in contact with dirt, dust and chemicals.
- Never write on the top of a disc with a pencil or ballpoint pen. Use a Sharpie felt tipped marker for best results. Never use a paper label.

*What sort of testing is done to disk media to gauge longevity? Is this testing actually a reliable determiner, or just a best guess of how to reproduce the effects of time and other contributing factors to data loss?*

There is an organization in Switzerland, the International Standards Organization (ISO), which is responsible for developing and publishing standards and tests. They have a special test for determining the life of data on optical media. This test is used by media manufacturers to determine data life. The test itself takes approximately 18 months to run and uses cycles of heat and humidity to accelerate aging on recorded discs. This same type of testing has been done for many years to determine the life of photographic prints, for example.

*How long can you expect a standard consumer-grade CD or DVD to reliably hold data (assuming proper care and storage)? How long can you expect an archival-grade CD or DVD to reliably hold data (assuming proper care and storage)?*

Assuming a good initial recording and proper care, consumer grade media can last from **one to five years**. Professional or industrial-grade media can last from five to 75 years. True archival-grade media, often with a reflective layer of gold, can last 75 to 200 years.

*How can you determine whether the CD/DVD you are buying is archival grade? What information should you look for?*

Archival grade media are only made by a few companies, often has a gold reflective layer and is usually identified as such. The Internet is a good source to purchase these media, since the average office store does not carry them.

Well-known brand names are usually not an indication that a disc is archival grade. Many of these companies buy media from several sources and often buy budget media when a manufacturer has an oversupply, and then put their brand name on it. For example, you will often see the HP name on media, but HP does not own or operate any media manufacturing facilities.

If you spend time on Web sites devoted to CD quality, you will start to see some brands consistently appearing at the top of everyone's ratings or quality tests. These companies are **Taiyo Yuden, Maxell, Ricoh, TDK,** and **Verbatim**. Taiyo Yuden is what most people who use media for a living will buy. It is very high in quality, very consistent, and has performed very well in the bench tests mentioned earlier.

A branch of the federal government, NIST, is working on universal standards that all media manufacturers will be expected to adhere to that will label media with an estimated life. This labeling is in the future, however.

***What is blu-ray technology and what benefits does it bring?***

A CD can hold up to 700 MB of data. A DVD uses a smaller spot laser and can hold up to 4700 MB or 4.7 GB of data. A blue laser disc uses an even smaller spot laser and should hold up to 25 GB of data on one disc. When each new format comes out it usually is expensive, sometimes making adoption slow. Today, a top quality DVD may cost \$.75. A blue laser disc will hold five times as much as a DVD, but will probably cost 30 times more. Only people who really need to get all their files on one disc will be able to justify the price premium.