

How Long Do Your CD's Last? – Or Do They?

by Stuart Lynn

So your CD's will last forever. Right?

Wrong?

It is not known exactly how long a CD-R (that is, one you create yourself) will last. What is known is that it will not be terribly long, perhaps a matter of years if you are lucky. What is also known is how long they last is a function of many factors: the initial quality of the CD-R, how you treat them, and how you store them.

I have created several CD-Rs that failed. That is why I always make two backups of anything I care about. It's unwise to assume that one backup will do the job – and even two can fail eventually.

The federal government's National Institute of Standards and Technology (NIST), in collaboration with the Council for Library Resources, has recently completed an extensive study on the "[Care and Handling of CDs and DVDs](#)". This is a detailed document that is well worth reading for those who care about the life of their CDs. Its findings are far from encouraging.

*Only look after the CDs you want to keep!
You may as well throw the rest away!*

Did you know, for example, that the layer of a CD-R used for recording data is actually made of an *organic* dye, sandwiched between a polycarbonate layer and a metal layer? And that this layer is vulnerable to many external effects, including extreme environmental conditions?

CD-Rs, CD-RWs (not designed, by the way, for long-term storage), CD-ROMs, DVDs and other optical media are all made differently and present different longevity issues. But they all require careful handling and storage if they are to be readable for some time. For example, using a pen, pencil, or solvent marker to write on the "label" side of a CD-R is a bad idea and could easily damage the data layer.use a non-solvent felt tip permanent marker. And don't leave your CD-Rs in the hot rooms of your unattended home over a desert summer: they will be data toast by the time you return! In fact, any temperature above 68° Fahrenheit is potentially destructive (or below 39° Fahrenheit). Wow!

Those of you who always opt for the cheapest CD-Rs might want to think again and dig deeper into your pocketbook (although higher price does not necessarily mean higher quality). Gold discs are the best, but even silver will generally outlast the vulnerable organic dye layer that holds the data. See also an interesting article in the U.K.'s Independent Newspaper on this subject: http://news.independent.co.uk/world/science_technology/story.jsp?story=513486 (you have to pay for it!).

In the attached table, NIST summarizes the "do's and don'ts" of the care and handling of CDs and DVDs. It is worth a study. It can also be found at <http://www.itl.nist.gov/div895/carefordisc/discare.html>. The full report also recommends storing CDs upright and in jewel cases.

After all, only look after the CDs that you want to keep! You may as well throw the rest away!

Thanks to Marty Fields for putting me in touch with this study! – MSL

**Digital Data Preservation Program
CD and DVD Archiving
Quick Reference Guide for Care and Handling**

Do:

1. Handle discs by the outer edge or the center hole.
2. Use a non solvent-based felt-tip permanent marker to mark the label side of the disc.
3. Keep dirt or other foreign matter from the disc.
4. Store discs upright (book style) in plastic cases specified for CDs and DVDs.
5. Return discs to storage cases immediately after use.
6. Leave discs in their packaging (or cases) to minimize the effects of environmental changes.
7. Open a recordable disc package only when you are ready to record data on that disc.
8. Store in a cool, dry, dark environment in which the air is clean.
9. Remove dirt, foreign material, fingerprints, smudges, and liquids by wiping with a clean cotton fabric in a straight line from the center of the disc toward the outer edge.
10. Use CD/DVD cleaning detergent, isopropyl alcohol or methanol to remove stubborn dirt or material.
11. Check the disc surface before recording.

Do not:

1. Touch the surface of the disc.
2. Bend the disc
3. Use adhesive labels.
4. Store discs horizontally for a long time (years)
5. Open a recordable optical disc package if you are not ready to record.
6. Expose discs to extreme heat or high humidity.
7. Expose discs to extreme rapid temperature or humidity changes.
8. Expose recordable discs to prolonged sunlight or other sources of UV light.
9. Write or mark in the data area of the disc (area where the laser “reads”).
10. Clean in a circular direction around the disc.

For CDs especially do not:

1. Scratch the label side of a CD.
2. Use a pen, pencil, or fine tip marker to write on the disc.
3. Write on the disc with markers that contain solvents.
4. Try to peel off or re-position a label.

General recommendations for long-term storage conditions

For archiving recordable (R) discs, it is recommended to use discs that have a gold metal reflective layer.

Archival Storage Facility - Recommendation for storing CDs and DVDs together

Media	Temperature	Relative Humidity (RH)
CD, DVD	Less than 20°C (68°F)	20% to 50% RH
	Greater than 4°C (39°F)	

A temperature of 18°C and 40% RH would be considered suitable for long-term storage. A lower temperature and RH is recommended for extended-term storage.

Taken from National Institute of Standards and Technology (NIST): “[Care and Handling of CDs and DVDs](http://www.itl.nist.gov/div895/carefordisc/discare.html)”.
See <http://www.itl.nist.gov/div895/carefordisc/discare.html>.

And Your Prints Won't Last Forever Either....

by Stuart Lynn

Not just your CDs (see previous article), but also your prints have a relatively short life. But your initial choice of inks and papers, and how you look after them will have everything to do with how long they last.

For an excellent summary of the good and the bad, see "A Consumer Guide to Traditional and Digital Print Stability" (http://www.rit.edu/~661www1/sub_pages/8contents.htm). This 8-page document is a gem. A 5-minute read will pay great dividends. This publication, by the way, is produced by the Image Permanence Institute of the Rochester Institute of Technology (<http://www.rit.edu/ipi>), a site that is well worth a visit.

When it comes to inkjet printers, take the predictions of manufacturers on print life with a huge grain of salt. Their predictions are usually only based on the effects of light exposure, and ignore all the many other factors that affect life expectancy, including high temperatures, humidity, and air pollution.

**.....take the predictions of manufacturers on
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Prints from pigment inkjet printers will far outlast those from dye-based inkjet printers. Some authors, including yours truly, believe that transparent dyes produce greater sparkle and subtlety of colors than pigments, but the difference – if any – might not be worth the penalty paid in print life.

Photographic papers for inkjet printers come in two basic flavors: "swellable" and "porous". Without going into detail, the swellable papers are generally slow-drying while porous papers dry instantly. But porous papers have no protective polymer coating, so they are very susceptible to air pollution, particularly ozone (don't take your prints to Los Angeles!). On the other hand, swellable papers fare worse in humid conditions because the inks tend to spread.

How do you tell them apart. Drying time is a clue, porous papers having a short drying time. Swellable papers generally have a higher gloss. Most porous papers feel slightly sticky, swellable papers feel smooth. Another way is the "rub" test: a drop of water rubbed across the surface of swellable paper will "melt" the surface layer and form a slippery film; it will simply be absorbed by the porous paper.

Storage is key to print longevity. Avoid exposure to direct light. If you hang your prints on the wall, protect them with glass, Plexiglass® or Lucite®. Or keep them in albums that meet International Standards Organization (ISO) standards that pass the Photographic Activity (PAT) Test and are acid-free and lignin-free.

Or you can just print it again when your print fades. That is, if your CD is still readable (see previous article)! And guess what: carefully produced and stored inkjet prints will probably outlast your CDs!