



**What's the Difference between
DVD-R and DVD+R**

The truth is that the two competing technologies use different formats. No single company "owns" DVD and both technologies have their "champions".

The difference between the -R and +R DVDs is so simple that everyone has completely missed it!! The -R uses a single horizontal dash line, while the +R uses intersecting horizontal and vertical lines in the shape of a cross.

Duuuuhhh!!!!

DVD's and CD's

And naturally the DVD+RW CD+RW difference can be explained by the □
DVD or CD prefix.

DVDs, on average, can store up to 4.7 GB of data, while a CD can only store about 700 MB of data, or about **15% of a DVDs capacity.**

While CDs are slightly cheaper the benefits of DVDs are much greater.

DVD-R

The DVD-R format was developed by Pioneer in the autumn of 1997. It is supported by most DVD players, and is approved by the DVD Forum.

DVD-R/RW is supported by the DVD Forum, an industry-wide group of hardware and software developers, and computer peripheral manufacturers.

The DVD-R format has been standardized in ECMA-279 by the Forum, but this is a private standard, not an 'industry' ISO standard like the CD-R/RW Red Book or Orange Book standard.

DVD-R:

Benefits: Better [DVD playback](#) compatibility within home DVD players.

Drawbacks: Older technology and less money behind the format means that they come out with faster media and burner technology slower. You will frequently see DVD burners that will support (for instance) 16X DVD+R and only 8X DVD-R.

DVD+R

DVD+R/RW is also based on CD-RW technology. DVD+R/RW is supported by Sony, [Philips](#), HP, Dell, Ricoh, Yamaha, and others, and has recently been endorsed by Microsoft.

DVD+R/RW is not supported by the DVD Forum, but the Forum has no power to set industry standards, so it becomes a market-driven issue.

DVD+R is a dvd disc that **allows multiple layers for one disc where as DVD-R only allows one layer**. They will not compete to become the de Facto standard, because they are both here to stay. Multi layer DVD+R can allow extra capacity per disc than DVD-R hence its high cost!

DVD+R:

Benefits: Faster speeds, more inovations like Double Layer discs (8.5 GB)

Drawbacks: Will not play is some home DVD players. If you know your home DVD player will play DVD+Rs then there is no reason to not use them.

B A C K U P

+R discs have newer and better error correction schemes than **-R disks**.

The tracker line on an empty DVD+R has better signal-to-noise ratio than DVD-R.

You should select +R discs for backup.

How Long will they LAST ???

Why archival media is hard to produce

Unlike pressed CDs/DVDs, “burnt” CDs/DVDs can eventually “fade”, due to five things that effect the quality of CD media:

- Sealing method
- Reflective layer
- Organic dye makeup
- Where it was manufactured

... and *your* storage practices (please keep all media out of direct sunlight, in a nice cool dry dark place, in acid-free plastic containers; this will triple the lifetime

How Long will they LAST ???

-The silver and aluminum alloys used in virtually all blank CD/DVD media has one major issue, requiring the manufacturer to lacquer a protective seal over the entire disc:

-Silver and aluminum oxidize when they hit air, turning the normally reflective layer into silver or aluminum rust.

-Some (very expensive) media uses gold instead which doesn't oxidize, however DVD media cannot use gold due to design issues (not true anymore, see update below).

-Today, only the cheapest of the cheap media has severe issues with sealing practices (as such, avoid any media made outside of Japan and Taiwan; especially avoid media made in India).

How Long will they LAST ???

Assuming that the protective seal and reflective layer are manufactured correctly, the next issue is the organic dye.

The first organic dyes were Cyanine-based and, under normal conditions, had a shelf life of around ten years; simply, that was simply unacceptable for archive discs.

Taiyo Yuden, Mitsubishi Chemicals, Mitsui Co., and Ciba Specialty Chemicals spent the next ten years trying to produce the best organic dyes, eventually reaching archive-quality CD media.

Taiyo Yuden produced 'Super Cyanine', a chemically stabilized version of the original Cyanine dye designs, while TDK offers media that uses 'metal-stabilized Cyanine' dye, leading to similar shelf lives as Taiyo Yuden's media.

Taiyo Yuden states their **Super Cyanine dye is chemically stable for at least 70 years, and TDK states their metal-stabilized Cyanine is also stable for 70 years.**

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