



Magnetic Tape Storage and Handling

A Guide for Libraries and Archives

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4. Life Expectancy: How Long Will Magnetic Media Last?

Unfortunately, media life expectancy (LE) information is largely undocumented, and a standard method for determining magnetic media lifetimes has yet to be established. The need for this information fuels the ongoing NML media stability studies, which have incorporated accelerated temperature/humidity and corrosion environments to measure performance over time and to develop models to forecast extended media lifetimes. A simple example as to how LEs can be determined is provided in the Appendix under Estimation of Magnetic Tape Life Expectancies (LEs).

According to manufacturers' data sheets and other technical literature, thirty years appears to be the upper limit for magnetic tape products, including video and audio tapes. LE values for storage media, however, are similar to miles per gallon ratings for automobiles. Your actual mileage may vary.

Recently, articles have been appearing which suggest that the life expectancy of magnetic media is much shorter than originally thought. For example, an article in the January 1995 Scientific American (Jeff Rothenberg, "Ensuring the Longevity of Digital Documents") conservatively estimated the physical lifetime of digital magnetic recording tape at one year. Because of the confusion that can result from such a statement, NML officially responded with a letter to the editor that appeared in the June 1995 issue of Scientific American. The letter states that the "physical lifetimes for digital magnetic tape are at least 10 to 20 years."

4.1 Tape Costs and Longevity

Some people assess storage media solely in terms of media cost. This view assumes that the sound, images, or information stored on the media have no intrinsic value. However, a storage

medium should be evaluated in terms of the cost of losing the recorded information in the event that the storage medium degrades irreversibly.

The value of the tape cassette must be equated with the cost of preserving the data. When the cost of losing the information is considered, it may be economically justified to invest more in a medium/system of proven reliability. It may also warrant the cost of making and keeping replicated copies of original data and stockpiling systems to play back the data at future times.

When purchasing media of a specific format, some archivists are required to deal with a procurement bidding process. In most cases, the archivist will end up with the lowest bidder's media, which may not be the best media. Tape manufacturers' products differ in coating thickness, magnetic particle stability, and durability. Procurement specifications should exclude the poorer media. The vendor should be asked for experimental proof of the stability of the media if the tape is to be used for archival storage.

4.2 Practical Life Expectancies

Those accustomed to storing paper and microfilm may be annoyed by the relatively short life expectancies (ten to thirty years) of magnetic tape materials. Some gold plated/glass substrate digital optical disc technologies promise 100-year lifetimes. However, a 100-year life expectancy is irrelevant when the system technology may be in use for no more than ten or twenty years (or less).

Audio and video recording technologies are advancing at a much faster rate than printing and microfilming technologies. We are fortunate if a recording technology stays current for more than twenty years. In the case of a magnetic recording media with a fifty-year life expectancy, the media would undoubtedly outlive the recording system technology. To truly achieve a fifty-year archival life, recording systems, sufficient spare parts, and technical manuals would need to be archived along with the recorded media.

In the case of audio and video archives, transcription is inevitable. Rather than trying to preserve old, outdated recording formats and technologies, it may be more practical to transcribe on a regular basis - every ten to twenty years or even more frequently. The old copy could be preserved until the new copy is transcribed to the next generation of recording system. In this fashion, at least two copies of the material are always in existence.

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