

Magnetic media, video cassettes, tapes, hard drives

As with CDs and computer hard drives, [Magnetic media](#) such as [audio](#) and [videotapes](#) have a very limited life span.

According to digital storage experts, media such as [zip disks](#), [CDs](#), or [DVDs](#) last only a definite period before they begin to degrade, although the fact that these media formats are recent inventions combined with a high rate of change and improvements in these technologies makes it difficult to determine how long digital media will last. Manufacturers claim minimum lifetimes of 50 years for CD-Rs and 25 years for CD-RWs. These experts suggest that digital images be transferred as new media are developed to ensure that they are preserved.

Audio and video tapes require specific care and handling to ensure that the recorded information will be preserved. For information that must be preserved indefinitely, periodic transcription from old media to new ones is necessary, not only because the media are unstable but also because the recording technology may become obsolete.

The magnitude of the problem of magnetic tape deterioration is just starting to be realized. According to some research, there is a good chance that magnetic tape older than 10 years will deteriorate. The threat comes from several sources, but the largest threat is chemical in nature, coming from the breakdown of the [binder](#), or glue, that holds the magnetic particles to the polyester base of the tape. As this occurs, the tape often gets coated with a tenacious adhesive that makes it extremely difficult to play. Tape which has been stored in hot, humid conditions is particularly vulnerable to this phenomenon. In some cases the problem can be so severe that the magnetic material literally falls off or sheds from the base, leaving a pile of dust and clear backing. Before the problem becomes so advanced, [archivists](#) can [bake the tape](#) and make a new copy. Alternately, a digitally encoded copy of the tape can be made, so that its content can be preserved indefinitely as a digital data file.

This problem has been known for some time, but the extent of both the problem and the catastrophic effect it has on magnetic media is just now gaining visibility. It is also common for computer floppy disks to degrade over time, as the lubricants inside the plastic jackets of many older floppies promote the decay of the magnetic medium. Also, the alignment of the magnetic particles of the disk substrate may gradually degrade, leading to a loss of formatting and data. Early laserdisk media were prone to degradation as the layers of the disk substrate were bonded with an adhesive that was vulnerable to decay and would crumble over time. This would lead the different layers of the disk to peel apart, damaging the pitted data surface and rendering the disk unreadable.

Media at risk include recorded media such as [master](#) audio recordings of symphonies and videotape recordings of the news gathered over the last 40 years. Threats to media that must be considered when archiving important record media include accidental erasure, physical loss due to disasters such as fires and floods, and media degradation.

Along with the actual media being degraded over the years, the machines that are available to play back or reproduce the audio sources are becoming archaic themselves. Manufacturers and

their support (parts, technical updates) for their machines have disappeared throughout the years. Even if the medium is vaulted and archived correctly, the mechanical properties of the machines have deteriorated to the point that they could do more harm than good to the tape or disc being played.

Many major film studios are now backing up their libraries by converting them to electronic media files, such as .AIFF or .WAV-based files via digital audio workstations. That way, even if the digital platform manufacturer goes out of business or no longer supports their product, the files can still be played on any common computer.

There is a detailed process that must take place previous to the final archival product now that a digital solution is in place. Sample rates and their conversion and reference speed are both critical in this process.