

Are My Videotapes Self-destructing? – How Long Will They Last? (Part 1)

Copyright 2009 - 2010 by Michael G. Voeltner

Introduction

It's true that we live in the digital age, with DVDs and other digital media, but many of us have preserved memories on god old fashioned videotapes. As a media professional, I am frequently asked something along the lines of "how long will my old videotapes last?" That's an excellent question, and one that indicates their concern for the longevity of a movie collection, or more important a repository of precious family memories. The question is a simple one and the answer is almost as simple. The answer is that, in a manner of speaking, your videotapes are self-destructing – and there's nothing you can do about it. I could stop there, but let me explain why, in a mostly non technical way, and then I'll discuss some of your options for saving your precious videos.

The Problem

Magnetic tapes, in simple terms, consist of microscopic magnetic particles imbedded in a bonding material attached to a support structure of Mylar or some similar material. The support structure is a little like the plastic part of cellophane tape and the magnetic particles and bonding agent are a little like the sticky part of the tape. When a recording is made on a tape, whether it be video, audio, or both, these magnetic particles are electronically rearranged (magnetized) as the rotating recording heads pass over the moving tape. With standard audio tape, the tape moves over a stationary recording head.

The problem is with those tiny magnetic particles. You may remember having some cheap toy magnets as a child. At first they worked great and you were amazed at how they interacted and the fun things you could do with them. Later, however, it seemed like they did not work as well, if at all. This was especially true if you left them stuck together. The problem was that the magnets lost their residual magnetism, or became de-magnetized over time. There's a technical term for that, but I'll keep it simple for this article.

In much the same way, the magnetic properties of the videotape, over time, become weaker and become slowly demagnetized, with the resulting loss of picture and sound quality. At some point the tapes will no longer be viewable. You probably want to ask, "How long that will be?" Even though it's the lead question for this article, except for my earlier response, it's a question for which there is no one specific answer. There have been many extensive studies on the longevity of the content on video and audio tapes, however the variables are too numerous for this article. The variables include such things as; the type of tape, the quality of the tape, the strength of the magnetic recording signal, how frequently the tapes are played, how the tapes are stored, the conditions under which the tapes are stored and many more. I think you can see why I can't give you a specific answer.

Most of us view our tapes a few times and then put them on the shelf and forget about them, perhaps for years and years. Yes, I'm guilty of that too. What can we do if we assume (know) that our tapes are literally self-destructing? The best option is to convert them to a less volatile medium. We'll get to our options for that later. But first let's look at a number of things we can do to at least mitigate the damage and loss of information, before we go on to a more permanent solution.

What can we do? – Some Solutions

So what's the answer, what can we do to mitigate these problems? A first step is to store your tapes in a dry, relatively controlled environment. For most of us that will be somewhere in the living quarters of our home or at

our office, unless you just happen to have a scientifically climate controlled room. Surely you wouldn't pile them in a box in the basement or attic, would you?

Heat and humidity are two of the biggest enemies of tapes. With age, the backing material of the tape, which supports (carries) the magnetic particles used to create the recording, will become brittle and may break easily. The breaks can occur anywhere along the length of the tape, rendering videocassette tapes useless, that is unless you have the knowledge and tools necessary to repair them. A related problem is that in some cassette tapes, typically less costly ones, the tape may be glued to the tape reel hubs, without a good mechanical connection. With age and constant changes in temperature and humidity the glue dries up and hardens, releasing the tape from the reel hub. This too will render the tape useless.

The more you can do to keep the tapes at a relatively constant room temperature and humidity the better. Keep the tapes in some sort of container, one for each individual tape. This can be in the form of individual tape boxes (plastic, cardboard, etc.), as long as they are kept dry. It's also a good idea to rotate the tapes around occasionally.

Another problem, even if tapes are stored in a proper environment, is that if the tapes are stored unused for extended periods of time, the magnetic properties print through (transfer) from one layer of tape to another, resulting in the transfer of the "image" from one layer onto the next. When the tape is later viewed, you will see the result in a sort of ghosting effect in the image (echo in the case of audio), where one image is superimposed over another. Given a long enough period of time, this print-through can become intolerable, perhaps eventually rendering the tape un-viewable. This is true for professionally produced videotapes as well as consumer (home video) tapes. Although you can't totally eliminate this problem, you can minimize it by cycling your tapes periodically. This can be done by playing the tape through, or, assuming the tape is in otherwise good condition, by fast forwarding the tape from beginning to end.

I won't go into an explanation of why, but it is best to leave the tape in the played position, that is at the end. Fast forwarding to the end works, and it's better than nothing, but it is better if it is just played through to the end. The playing method is especially preferred if the tape is old, or the condition is unknown, as fast forwarding and rewinding generally places the tape under much greater physical stress and increases the risk of breakage. Of course if you leave the tape in the played position you will need to rewind it before the next use. You can see that between magnetic losses and print-through your tape is literally self-destructing.

Another thing you can do to prevent the loss of your precious videotapes is to make new copies (duplicates) on new tape stock. This is what is done in professional tape vaults such as where valuable computer data tapes are stored. It is true that with analog tapes, such as VHS or Betamax, that there will be some loss of quality with "second generation" tapes, but this is better than totally losing the tape content. Just make sure that you use fresh high quality tapes for this process, and of course you will need two machines or a machine with two drives that is used for duplication. The use of extra high quality "metal particle" tape stock will improve quality, if your machine is capable of handling that type of tape.

Also, make sure you use the video and audio cables and connections for the duplication, not the coax (F-type/Antenna) cable. The use of the F-type connector method will result in double conversion (between video and RF signals) and even more loss of quality. I have intentionally omitted the technical details of this process. Incidentally, if you're using digital video, significant losses are much less likely, if at all.

A Better Solution

So what's a better solution to all these problems? Fortunately today, in the digital world, we have a solution to the problem. Simply transfer those videotapes to digital storage on DVD, and perhaps hard drives, where the information will be retained for many decades and longer, perhaps a hundred years or more. One caveat is that hard drives do eventually go bad.

In part two of this article we'll go through the methods and tools for transferring your tapes to DVD, along with some alternate solutions.