

## **Audiotapes and Videotapes**

**Such as audiocassette tapes, videocassette tapes, and reel-to-reel tapes**

### **Identification and General Information**

Sound and video recordings range from the earliest wax cylinders to today's most advanced digital formats. The most common types in your collection, however, are probably audiotapes and videotapes. These are two types of what are referred to as magnetic media or magnetic tapes.

Magnetic tapes first appeared in North America just after World War II. Most types of magnetic media are made of a plastic film coated with a magnetic material that has an iron-containing compound. The tapes used in audiotapes and videotapes are made of identical materials but are different widths. Usually, magnetic tapes are easily identified by their appearance. They are brown or almost black in color, sometimes with a slight metallic sheen. They are stored on reels, which are usually in a cassette or occasionally loose and exposed.

Frequently, information identifying the origin of the recording on a magnetic tape may be sparse, if present at all. For this reason, it is especially important to retain and preserve any original written information about the tapes in your care. Any additional information about these tapes that you gather over the years should also be carefully documented. If you need to make marks for identification, ownership, classification, or tracking purposes, you should make these on the recording's housing, not on the tape itself, as this can interfere with playback.

You may find in your collections old movie film or photographic negatives, or even plastic objects that are made with cellulose nitrate. Cellulose nitrate is one of the oldest and most unstable forms of plastic. It releases noxious nitric acid vapors as it degrades, which can be harmful to people and collections. Additionally, the plastic is a fire hazard and may spontaneously combust when exposed to a heat source. A later type of plastic, cellulose acetate,

is not as unstable as cellulose nitrate, but can release acetic acid vapors and smell like vinegar if stored improperly. If you suspect that you have items made out of these types of plastics, you should contact a conservator.

### **Basic Care and Storage**

Audiotapes and videotapes are not as permanent as many of the materials found in collections. Most types of magnetic media cannot be expected to last more than approximately thirty years, even when stored under the best of conditions. Today the standard preservation recommendation for magnetic tapes is to make at least two copies of the original tape, a master copy and a use copy. The master copy should be played only to make an additional use copy or when it needs to be exercised (see below). The master copy should be made to the highest standards possible. The use copy should be used for listening or viewing instead of the original or the master. It is wise to store the master copy in a different location from the original and the use copy so that if a fire or other disaster occurs, it is less likely that all copies will be destroyed.

Some people believe that transferring the information stored on magnetic media to a digital format (such as an optical disk or digital tape) is the best way to preserve this information. Most preservation professionals, however, disagree. Although digital recordings provide access to the material, concerns about lack of standards, data compression, and software obsolescence make these recordings unsuitable for preservation.

When making copies of magnetic media, use the highest-quality magnetic tape you can find, as usually this is the thickest, making it less prone to breakage. Use the highest recording speed available on your equipment, as this will result in the best-quality recording. Of course, recording information in this manner adds to the cost. After making a copy, be sure all of the tabs from the cassette are broken off to prevent accidentally recording over the tapes in the future.

Carefully keep track of all copies of magnetic media; take careful notes as to which “generation” any particular copy is from the original.

Some experts recommend a practice referred to as exercising: rewinding the tape reels periodically to release tension on the tape and to prevent the transfer of magnetic information from adjacent areas of tape. When magnetic tape is tightly rolled, areas of magnetic material lay next to each other in many successive layers. With time, these magnetic materials sometimes start to affect each other, and the magnetic information passes from one area of tape to another, resulting in faint sounds in the background when the tape is played. Exercising magnetic tapes will help prevent this. Exercising a tape is simply done by slowly rewinding or playing the reel. Recommendations vary on how often tapes should be exercised, ranging from once every three years to once every ten. The master tape should only be played when it is being exercised or copied. When copying a master, it is a good idea to listen to the audiotape, and watch and listen to the videotape. At that time, you can assess the quality of the tape’s preservation.

Eventually magnetic recordings may no longer be produced commercially. Even if magnetic tape is available, the device needed to playback the information may no longer be manufactured or available. Eight-track tapes are an example. Decades ago these were common recording media. Today, eight-track tapes are difficult to find, and their players are even more difficult to obtain. If a collection contains many types of magnetic media, the equipment necessary to play all of them must be regularly maintained to insure that playing these tapes will be possible. This equipment should be regularly cleaned according to the manufacturer’s recommendations. Dustcovers are advisable for all such equipment. When you decide to copy the information on a tape to a more current format, this equipment will be needed to play the tape. Thus, the information will be preserved, although the recording media itself may not be.

Reels of tape should be stored upright and on their narrow edges, rather than flat, to prevent the tape from slipping from the reels around which it is wrapped. Dirt, dust, and particulates can cause abrasion to the magnetic media and subsequent loss of recorded information, so store tapes in as clean and dust-free an area as possible. Avoid dropping magnetic media as the shock can disorient the magnetic particles on the tape and cause a loss of recorded information. Excessive heat can cause the film to fuse together and make it impossible to unwind the tape from the reel. For this reason, magnetic tape should never be left inside a hot car. Additionally, the information on magnetic tape can be altered by radiation from the sun, so it should not be exposed to direct sunlight. Excessive humidity encourages tapes wound on reels to stick together and can cause the tape to undergo decay at a faster rate.

Magnetic media are best stored in cool, dry conditions. The American National Standards Institute has established a standard for the storage of polyester-based magnetic tape (ANSI/NAPM IT9.23 – 1996). Store tapes that are in continual use at 65 to 70 degrees Fahrenheit, and at a relative humidity of 40 to 50 percent. Tapes in long-term storage, such as master tapes, should be at as low a temperature as possible but not under 50 degrees Fahrenheit and 30 percent relative humidity. If tapes are stored at low temperatures, however, they must be allowed to acclimate for several hours at room temperature before they are used.

Access to master copies of magnetic media should be restricted. The master copy should be in the most restricted storage area to decrease the chance that it will be used for anything other than making a copy or being exercised. Use copies can be more accessible, depending on how often they are requested.

It is also important to store magnetic media away from strong magnets and magnetic fields such as television sets, computers, high-tension power lines, and anything with electric

motors. Magnets and magnetic fields can permanently alter the magnetic recording on a tape and effectively erase the information recorded on it. If magnetic media are stored on metal shelving, it should be grounded. Magnetic media are believed to be safe to pass through airport walk-through metal detectors and x-ray machines, but this should still be avoided if possible.

### **Special Pest Concerns**

Insects and rodents are not a problem for magnetic media. Mold, however, can grow on magnetic tape in humid conditions. If you find magnetic media in your collections that are moldy, immediately contact a conservator or a magnetic media recovery service for advice.

### **Routine Handling**

The magnetic tape that is most subject to damage from handling is reel-to-reel tape. Since the roll of tape is not protected by a cassette, it is relatively easy for dirt, dust, and fingerprints to damage the tape. Magnetic tape should never be handled with bare hands. Always wear clean, lint-free white cotton gloves. Ideally, these reels should be stored inside a paper or plastic box that protects the roll from dirt. Many varieties of these containers can be purchased through conservation suppliers. Cassette tapes, for the most part, do not need a container because the cassettes protect the magnetic tapes stored inside of them, preventing them from being touched and from getting dirty and dusty. Videocassette tapes usually have an added layer of protection in that the tape itself is protected behind a plastic shield, which is only lifted away by the videocassette player during playback of the tape. Many cassette tapes come with a paper or plastic case designed to further protect the tape from dust and dirt. Generally, the tapes should be stored in these cases. Paper or plastic cases are available from conservation suppliers.

Avoid pausing tapes during play, as this places stress on the tape. When finished playing

the tape, rewind it to the beginning tape leader and only then eject it, as this protects the tape from potential damage.

### **Display Issues**

Magnetic tapes are rarely used for display since their value is the information they contain rather than their appearance. If it is necessary to display a cassette or magnetic tape, a prop tape can be used instead of the actual tape. If, however, a sound or video recording is going to be played as part of an exhibit, great care should be taken to make several high-quality copies from the master tape for use in the display.

### **Cleaning and Minor Repairs**

Cleaning and repair of magnetic tapes is an area of conservation that is still emerging. Typically, the best people to help you with problems are electronics experts who specialize in recovering lost information from magnetic media. Consult a conservator for the names of commercial companies that specialize in this area.