

Manager's guide to care and handling of magnetic and audiovisual media

These guidelines are for all formats of magnetic media, commonly referred to as audio or video tape. This includes audio recordings on cassettes or reels, as well as all video recordings such as VHS, U-Matic, Betacam, and ¼" or ½" open reel videotapes. Disks including "vinyl" records and compact and laser disks are also included since they are often present in media collections. This guide is for people managing collections for long-term preservation. The **Technician's Guide to Care and Handling of Magnetic and Audiovisual Media** provides handling instructions to be used during digitization projects.



Handling

General—all formats	<ul style="list-style-type: none">• Wash and thoroughly dry hands before handling and/or wear lint-free cotton or nitrile gloves.• Do not touch tape/playing surfaces without gloves.• Keep food and drink away from all media.• Return media to containers when not in use.
Transportation	<ul style="list-style-type: none">• Pack magnetic media snugly on edge in bubble wrap.• Avoid shipping—deliver or courier when possible.
Magnetic tape—cassettes	<ul style="list-style-type: none">• Handle by the outer cassette shell only.• Do not touch the spools unless replacing shell or reels.
Magnetic tape—reel to reel or open reel	<ul style="list-style-type: none">• Handle by the edge of the plastic or metal reel (flanges) and centre hub only.• Do not squeeze the flanges together or crush the tape pack.
Disks—optical (CDs, DVDs, LaserDisc)	<ul style="list-style-type: none">• Handle by the edge and centre hole only.• Do not write directly on disc, even with a special pen.<ul style="list-style-type: none">○ Write in hole area or on label case.
Disks—grooved (78s, 45s, LPs)	<ul style="list-style-type: none">• Handle by the edge and label areas only.

Storage

Always store and handle materials in a clean environment. Your media storage area should be dry and cool. Improving the environmental conditions in your storage is the single most important thing you can do to preserve your media until it can be digitized. Unlike film, freezing is not recommended for magnetic media since the plastic and metal present in cassettes and reels can be damaged by freezing and there are also moisture and condensation issues.

Even if it is difficult to control the temperature and humidity in your building or your part of a building, it may be possible to improve the conditions in a small room with the use of portable dehumidifiers and/or air conditioners. If you cannot maintain ideal or even acceptable storage conditions, avoiding dramatic fluctuations is the most

important thing to consider. A stable temperature or humidity that is slightly above or below the recommendations is far better than trying to achieve ideal conditions that may not be possible and could overwork your HVAC system. Very few institutions have the capability to maintain ideal storage conditions, so just do the best that you can within your own limitations.

It is worth investing in a temperature and humidity datalogger or a hygro-thermometer to monitor the conditions in your storage area. The cost of these has significantly dropped in recent years. Temperature and humidity indicator cards can also be an inexpensive way to alert you to changes in your environmental conditions or a need to take action. Once the media has been digitized to archival standards, the storage conditions are not quite as important since the content will not be lost. However, Indigitization recommends retaining all original tapes and storing them in the best conditions possible within reason.

Storage considerations	
<i>General—all formats</i>	<ul style="list-style-type: none"> • <i>Avoid attics, basements, trailers, or anywhere with a higher risk of leaks or temperature and humidity extremes.</i> • <i>Do not store in direct or intense UV light (by a window).</i> • <i>Do not store media or boxes of media directly on the floor.</i> <ul style="list-style-type: none"> ○ <i>Raise at least on risers or boards to prevent them from sitting in pooling water in the event of a flood.</i> • <i>Store media away from heating and cooling vents.</i> • <i>Avoid storing media directly below fire sprinklers.</i> <ul style="list-style-type: none"> ○ <i>Place in plastic bins/boxes or cover with plastic sheeting if this is the only option.</i> • <i>Ensure shelving is strong enough.</i> • <i>Store tapes on end—not flat.</i> • <i>Keep storage area dry and cool, but not too cold (above 8° C).</i>
<i>Temperature</i>	<ul style="list-style-type: none"> • <i>Ideal: 8–10 °C.</i> • <i>Acceptable: 10–21 °C with minimal fluctuations.</i>
<i>Humidity</i>	<ul style="list-style-type: none"> • <i>Ideal: 30%–40% RH.</i> • <i>Acceptable: 45%–50% RH with minimal fluctuations.</i>
<i>Containers</i>	<ul style="list-style-type: none"> • <i>Original containers are fine if in good condition.</i> • <i>If replacing containers, or putting tapes in boxes, use acid- and lignin-free paper stock products or inert plastic housings made from polyester or polypropylene.</i> <ul style="list-style-type: none"> ○ <i>These can be purchased from archival suppliers.</i> • <i>Use only containers that will not retain a static charge.</i>
<i>Magnetic tape—cassettes</i>	<ul style="list-style-type: none"> • <i>Store on long edge.</i> • <i>Store “tails out” (not rewound).</i>

	<ul style="list-style-type: none"> Do not use high-speed fast forward or rewind for final storage wind. Store immediately after digitization at playback speed when possible.
Magnetic tape—reel to reel or open reel	<ul style="list-style-type: none"> Store tape on reels with unslotted hubs—reels with slotted hubs may be used as take-up reels. Store “tails out” (not rewound). Do not use high-speed fast forward or rewind for final storage wind. Store immediately after digitization at playback speed when possible.
Disks—optical (CDs, DVDs, LaserDisc)	<ul style="list-style-type: none"> Jewel cases are acceptable—replacement cases should also secure the disk by the centre hub.
Disks—grooved (78s, 45s, LPs)	<ul style="list-style-type: none"> Can be especially heavy—may need to reinforce shelving.

Recovery and remediation

Mould or other contamination

Any tapes that are suspected to have mould or any other contamination should be separated from your other media as soon as the contamination is discovered. This can be done by simply sealing the tapes in a heavy-duty sealable bag such as a freezer bag and placing the tapes in a separate box. Indigitization is developing a guide for basic mould removal, and the Conservation Lab at the Museum of Anthropology may be able to assist with mould removal from magnetic media in some circumstances. Other types of contamination will require different approaches. If you suspect you have contaminated tapes, contact Indigitization or another conservation professional for advice and assistance. Do not play any tapes suspected of having any contamination—this could contaminate the deck and subsequently spread the contamination to other tapes.

Sticky-shed syndrome—humid storage conditions

Long-term storage in poor conditions that are too moist can result in something called sticky-shed syndrome. This is when the binders holding the layers of tape together separate, causing the tape to stick to itself and for small bits of the magnetic media itself to shed off when it is played. Playback of a tape in this condition can result in irreversible damage to both the tape and the playback equipment—the bits of media and whatever was on them will be lost forever. They also have the potential to clog the heads of a playback unit. Signs of sticky-shed syndrome include sluggish tape behaviour, squealing or squeaking noises on playback, dusty debris left on the guides or heads of the playback unit, and even just dropouts for some digital tape. The good news is that this condition can be reversed by removing the excess moisture from the tape. Three methods for doing this are outlined below.

Improve storage conditions: Often, just moving the tapes to improved storage conditions as outlined above for a few months to years will be enough to reverse the condition to the point where playback and digitization can be safely performed. This is not a quick fix and patience is required.

Desiccation: If it is difficult for you to achieve ideal storage conditions in your space or if you are hoping to do this with more control, placing the affected tapes in microenvironments (sealed plastic bags) with a safe desiccant (silica gel packs) will also dry them out enough to play and digitize them. Humidity indicator cards should also be

placed in the bags with the tapes to ensure you are hitting your target humidity and to alert you when you need to refresh the desiccant.

Baking: Placing the tape in a special oven or food dehydrator at a relatively low temperature (50 °C) for a long time (8 hours) will also dry it out. Tape should be digitized within a few days of being baked. If not done properly, baking can also cause damage to the tape, so this should only be done when there is not time for the gentler methods above or when those have failed. A professional should also be consulted before undertaking any tape baking. This method is fast, but not without risk to the tape.

Disasters—fires, floods, and so on

If tapes have been damaged in a fire, flood, or other disaster, act as soon as possible. If tapes are already wet and have been in dirty water, rinse them in clean, preferably distilled, water and allow them to dry in a cool, dark place. A fan may aid with air circulation. Do not spread them out in the sun or place them near a heat source to dry. If tapes are dirty, but not already wet, do not rinse or get them wet—gently remove debris with a dry cloth. If labels have separated from the tapes, try to figure out which ones came from which tapes during salvage and keep them together. Do not freeze any audio or video tapes, although freezing damaged film, other photographic materials, and paper documents may be recommended. Contact a professional for advice or assistance on salvaging the specific tape formats and any other materials that were damaged. The British Columbia Heritage Emergency Response Network ([BCHERN](#)) or a similar network in your area may be able to offer assistance in the event of a disaster.