

## First Nations Media Australia Archiving Resources



### Some common types of VIDEO & FILM archival media, their storage requirements and preservation risks

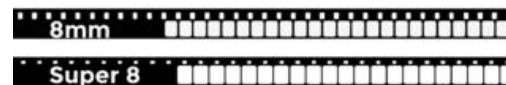
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<sup>1</sup> The level of risk is a general assessment only. Situations of poor storage conditions, tape or recording surface damage, lack of access to players all change the risk assessment for individual media or a range of media. The risk level given here is an estimate based on good storage, the quality of the tape's or recording medium's physical condition and the market availability of players.

### 8mm 1932-present; Super 8mm 1965-present

8mm plastic acetate backing, gelatin binder, silver particles (b&w) or yellow, magenta and cyan dyes (colour); Super 8mm as for 8mm with acetate or polyester backing.

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable. Mouldy, damaged, and dirty containers must be replaced.



**HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Handling & Care
<p>The 8mm format consists of B&amp;W and colour photochemical emulsions on translucent plastic (acetate) backing with sprocket holes running down one side. The film strip may also contain a magnetic soundtrack running down one side. The width of this film format is 8mm (0.31 inches). The</p> <p>The Super 8MM film format can be distinguished from regular 8mm film by its larger image area, smaller sprocket holes and the option of polyester backing.</p>	<p>8mm and Super 8mm films are both prone to the following problems: acetate breakdown / "vinegar syndrome" (if cellulose acetate is the base), mould, and physical damage (e.g. torn sprocket holes, damaged splices, scratches, and mag stock breakdown). In the case of Super 8mm with the more stable polyester backing, films with this base can have a long archival life if stored properly.</p> <p><b>Due to storage requirements, this format should be considered at high preservation risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> -18-0 degrees Celsius</p> <p><b>Acceptable</b> 1-12 degrees Celsius</p> <p><b>Humidity</b> 30-50% relative humidity</p>	<p>Film should be stored stacked horizontally. It is best to store film flat and on an inert plastic core because of its considerable weight and the way that it is wound. Doing so will allow the film to maintain an even, rounded shape. Stacking film on reels without a film canister of some kind is not recommended because the reels will, over time, be compressed and can press into the film itself.</p>	<p><b>Container:</b> Film is ideally stored in a vented inert plastic can. Vents allow the film to "breathe" an even air exchange (crucial for acetate). The enclosure may be plastic, non-corrosive metal, or archival quality paperboard. Dirty, rusty, non-vented, or dented metal containers will only heighten the potential for film damage.</p> <p><b>Core:</b> Film should be stored on a core, which is ideally made of inert plastic, rather than on a reel.</p>	<p>Film incurs the most physical wear through playback, typically at the beginning and end of the film. For film in poor condition, projecting a film can pose a significant risk, since projectors will inflict additional damage to films already weakened by shrinkage, tears, or decay.</p> <p><b>Playback Equipment</b></p> <p>A projector that corresponds to the film gauge is needed for play back. A skilled technician is needed for playback.</p>

## 16mm 1923-present but usage declining

Plastic acetate or polyester backing, gelatin binder, silver particles (b&w) or yellow, magenta and cyan dyes (colour)

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable.

Mouldy, damaged, and dirty containers must be replaced.



**HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Handling & Care
<p>This format consists of B&amp;W and colour photochemical emulsions on translucent plastic (acetate) backing with sprocket holes running down one side. The film strip may also contain a magnetic soundtrack running down one side. The width of this film format is 16mm.</p>	<p>16mm film is prone to the following problems: acetate breakdown / "vinegar syndrome" (if cellulose acetate is the base), mould, and physical damage (e.g. torn sprocket holes, damaged splices, scratches, and mag stock breakdown). 16mm film with a polyester backing is more stable and longer lived.</p> <p><b>Due to storage requirements, this format should be considered at high preservation risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> -18-0 degrees Celsius</p> <p><b>Acceptable</b> 1-12 degrees Celsius</p> <p><b>Humidity</b> 30-50% relative humidity</p>	<p>Film should be stored stacked horizontally. It is best to store film flat and on an inert plastic core because of its considerable weight and the way that it is wound. Doing so will allow the film to maintain an even, rounded shape. Stacking film on reels without a film canister of some kind is not recommended because the reels will, over time, be compressed and can press into the film itself.</p>	<p><b>Container:</b> Film is ideally stored in a vented inert plastic can. Vents allow the film to "breathe" an even air exchange (crucial for acetate). The enclosure may be plastic, non-corrosive metal, or archival quality paperboard. Dirty, rusty, non-vented, or dented metal containers will only heighten the potential for film damage.</p> <p><b>Core:</b> Film should be stored on a core, which is ideally made of inert plastic, rather than on a reel.</p>	<p>Film incurs the most physical wear through playback, typically at the beginning and end of the film. For film in poor condition, projecting a film can pose a significant risk, since projectors will inflict additional damage to films already weakened by shrinkage, tears, or decay.</p>
					<p><b>Playback Equipment</b></p> <p>A projector that corresponds to the film gauge is needed for playback. A skilled technician is needed for playback.</p>

## U-matic 1971-around 2000; U-matic SP 1986-around 2000

### Polyester magnetic tape enclosed in a plastic cassette

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable.

Mouldy, damaged, and dirty containers must be replaced.



**HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
U-matic is a magnetic tape-based analog video cassette format. The tape is composed of magnetic particles, a binder, and a polyester base. Full-size cassettes are 8 <sup>5</sup> / <sub>8</sub> " × 5 <sup>3</sup> / <sub>8</sub> " × 1 <sup>1</sup> / <sub>2</sub> " and can record up to 60 minutes of content; small cassettes are 7 <sup>1</sup> / <sub>4</sub> " × 4 <sup>5</sup> / <sub>8</sub> " × 1 <sup>1</sup> / <sub>2</sub> " and can hold up to 20 minutes of content. U-matic SP cassettes are brown and maroon, and they generally have "SP" printed on the side.	Older tapes are susceptible to signal loss, while more recent tapes tend to fare a bit better. Tapes are also susceptible to damage from mould, binder deterioration, and other physical and biological issues. The biggest concern for the format, however, is media and hardware obsolescence. <b>Due to media and hardware obsolescence, this format should be considered at high preservation risk.</b>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.	Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use	U-matic cassettes require format-specific equipment for playback. U-matic SP's picture quality is superior to the standard U-matic; the improvement in picture quality is lost, however, if the SP tapes are played back in a standard deck. Standard U-matic tapes cannot be played back on an SP deck at all.

## Betamax 1975 - late 1980s

### Polyester magnetic tape enclosed in a plastic cassette.

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Mouldy, damaged, and dirty containers must be replaced.



**HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
<p>Betamax is a magnetic tape-based analog video cassette format. It was a capture format and a commercial release video format. The tape is composed of magnetic particles, a binder, and a polyester base. Cassette dimensions are: 6<math>\frac{1}{8}</math>" x 3<math>\frac{3}{4}</math>" x 1" with a tape width of <math>\frac{1}{2}</math>".</p>	<p>Betamax tapes are susceptible to signal loss due to their age. Tapes are also susceptible to damage from mold, binder deterioration, and other physical and biological issues.</p> <p><b>Due to media and hardware obsolescence, this format should be considered at high preservation risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	<p>The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack.</p> <p>Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.</p>	<p>Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing.</p> <p>Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.</p>	<p>Betamax cassettes require format-specific equipment for playback. Betamax tapes are played back using Betamax VCRs. However, depending on the speed that the tape was recorded at, some Betamax tapes may not be readable by all Betamax VCRs.</p>

**VHS 1976 – less common after around 2000; S-VHS 1987 – late 1990s**

**Polyester magnetic tape enclosed in a plastic cassette.**

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Mouldy, damaged, and dirty containers must be replaced.



**INCREASINGLY  
HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
<p>VHS is a magnetic tape-based analog video cassette format. The tape is composed of magnetic particles, a binder, and a polyester base. Cassette dimensions are: 187mm wide, 103mm deep, 25mm thick, with a tape width of ½" (12.7mm) for both VHS and S-VHS. A VHS (or S-VHS) logo is usually imprinted on the cassette in the upper right-hand corner, while the manufacturer's name is imprinted in the upper left. S-VHS tapes have an additional hole on the back of the cassette.</p>	<p>Older VHS tapes are susceptible to signal loss due to age. Tapes are also susceptible to damage from mould, binder deterioration, and other physical and biological issues. <b>Due to media and hardware obsolescence, this format should be considered at an increasingly high preservation risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	<p>The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.</p>	<p>Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.</p>	<p>VHS tapes require format-specific VCRs for playback. S-VHS has a superior picture quality compared to VHS and is "upwardly compatible." This means that S-VHS tapes are playable in VHS decks but VHS tapes are not playable in S-VHS decks. VCRs to play VHS tapes are becoming less and less available.</p>

## BETACAM 1982 – Present; Betacam SP 1986 – present

### Polyester magnetic tape enclosed in a plastic cassette.

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable.

Mouldy, damaged, and dirty containers must be replaced.



**MEDIUM RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
Betacam is a magnetic tape-based analog video cassette format. The tape is composed of magnetic particles, a binder, and a polyester base. Large cassette cases are 10 <sup>5</sup> / <sub>8</sub> " × 6 <sup>3</sup> / <sub>8</sub> " × 1 <sup>1</sup> / <sub>4</sub> ", and small cassette cases are 6 <sup>3</sup> / <sub>4</sub> " × 4 <sup>3</sup> / <sub>8</sub> " × 1 <sup>1</sup> / <sub>5</sub> ". Tape cassettes are generally labelled as "Betacam" or "Betacam SP" in the upper right-hand corner.	Older Betacam tapes are susceptible to signal loss due to age. Tapes are also susceptible to damage from mould, binder deterioration, and other physical and biological issues. Equipment obsolescence is not yet a concern, since both Betacam SX and Digital Betacam decks are still in production and can play back a variety of Beta cassettes. Betacam cassettes tend to be durable, so most of the format's risk is determined by its age. <b>This format would currently be considered medium risk.</b>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.	Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.	Betacam cassettes require format-specific equipment for playback. Betacam SP has technical advantages over Betacam because it is "upwardly compatible." This means that Betacam tapes are playable on Betacam SP decks, but tapes recorded in Betacam SP are not playable on Betacam decks. While decks for Betacam and Betacam SP are no longer in production, most newer decks in the Betacam family, such as Digital Betacam and Betacam SX decks, will play Betacam and Betacam SP tapes.

**Video8 1984 – 2000s; Hi8 1989 – 2007**

**Polyester magnetic tape enclosed in a plastic cassette.**

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable. Mouldy, damaged, and dirty containers must be replaced.



**HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
<p>Video8 and Hi8 are magnetic tape-based analog video cassette formats, which were chiefly used in the consumer home video market of the 1980s and 1990s. The tape is composed of magnetic particles, a binder, and a polyester base. The dimensions for both Video8 and Hi8 are 3⅜" × 2⅜" × ½". Tapes are usually labelled as Hi8mm or 8mm (for Video8) between the two reels on the bottom centre of the cassette.</p>	<p>Both Video8 and Hi8 tapes are prone to stretching. The longer the tape (i.e. longer than 60 minutes), the more susceptible it is to damage. Hi8 metal evaporated (ME) tapes are especially likely to have durability problems. Although Video8 and Hi8 are relatively new formats, they are especially fragile and are not recommended for long-term storage. Hi8 ME tapes are especially prone to durability problems. <b>This format would currently be considered high risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	<p>The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.</p>	<p>Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.</p>	<p>Hi8 has technical advantages over Video8 and is "upwardly compatible." This means that Hi8 tapes are playable on Video8 decks, but tapes recorded in Video8 are not playable on Hi8 decks. Decks for both formats are no longer being produced and are increasingly rare. Video8 and Hi8 tapes generally require format-specific decks for playback but can possibly be played using some Digital8 players. Due to their size, Video8 and Hi8 decks are not as durable as their larger format counterparts, and they are difficult and expensive to repair. These factors could affect future availability of playback equipment.</p>



## DIGITAL BETACAM 1993 – Present (also known as DigiBeta)

**Polyester magnetic tape enclosed in a plastic cassette.**

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable.

Mouldy, damaged, and dirty containers must be replaced.



**MEDIUM RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
Digital Betacam is a magnetic tape-based digital video cassette format. The cassettes are usually a light grayish blue in colour with "Digital Betacam" printed on the upper right-hand corner and "for Digital" in the upper left-hand corner. The tape is composed of magnetic particles, a binder, and a polyester base. Small cassettes measure 6 $\frac{1}{8}$ " × 3 $\frac{3}{4}$ " × 1" and are used in cameras; and, they have an available recording length of 40 minutes. Large cassettes are 9 $\frac{1}{2}$ " × 5 $\frac{2}{3}$ " × 1" and are used in recording and editing decks; and, they have an available recording length of about 124 minutes.	Digital Betacam is subject to the same physical issues as analog tapes—stretching, breaking, drop-outs, mould, binder deterioration, and unintended recording. <b>There are still players available, but with the inroads being made by digital, this format could be considered as having a medium risk level for loss.</b>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.	Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge-- this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.	Digital Betacam cassettes require format-specific equipment for playback. Some Digital Betacam players are backwards-compatible with earlier Betacam formats.

## MiniDV 1985-2000s

### Polyester magnetic tape enclosed in a plastic cassette.

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable. Mouldy, damaged, and dirty containers must be replaced.



**HIGH RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
<p>MiniDV is a magnetic tape-based digital video (DV) cassette format. It was used chiefly for consumer home video in the late 1990s and early 2000s. The tape is composed of magnetic particles, a binder, and a polyester base. Cassette dimensions are: 2½" × 1⅞" × ⅜" with a tape width of ¼". Cassettes are generally labeled either in the lower left-hand corner (Sony) or on a sticker on the right-hand side (Panasonic). Tapes are generally 60 minutes.</p>	<p>MiniDV is subject to the same physical issues as analog tapes—stretching, breaking, drop-outs, mould, binder deterioration, and unintended recording. The size and durability of MiniDV, as with any small, thin tape, is a concern.</p> <p><b>There are still players available, but with the inroads being made by digital and the tape size, this format could be considered as having a high risk level for loss.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	<p>The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack.</p> <p>Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.</p>	<p>Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing.</p> <p>Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.</p>	<p>MiniDV cassettes require format-specific camcorders for playback.</p>

## DVCPRO 1995 – Present

### Polyester magnetic tape enclosed in a plastic cassette.

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable. Mouldy, damaged, and dirty containers must be replaced.



**MEDIUM RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
<p>DVCPPro is a magnetic tape-based digital video (DV) cassette format. The tape is composed of magnetic particles, a binder, and a polyester base. Large cassettes measure 4<sup>7</sup>/<sub>8</sub>" × 3" × 1<sup>1</sup>/<sub>2</sub>", are for use in recording and editing decks, and have an available recording length of about 126 minutes. Medium cassettes measure 3<sup>4</sup>/<sub>5</sub>" × 2<sup>1</sup>/<sub>2</sub>" × 1<sup>1</sup>/<sub>2</sub>", are for use in cameras, and have an available recording length of up to 66 minutes. The DVCPPro logo is usually in the upper right-hand corner, and the tape length is generally listed on the left-hand corner.</p>	<p>DVCPPro is subject to the same physical issues as analog tapes—stretching, breaking, drop-outs, mould, binder deterioration, and unintended recording. <b>This format would currently be considered medium risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	<p>The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.</p>	<p>Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.</p>	<p>DVCPPro cassettes require format-specific equipment for playback. While the DVCPPro format uses the same tape width and compression rate as DVCam, the cassette housing is different and it is not fully compatible with other digital video (DV) products. DVCPPro decks will play MiniDV and DVCam tapes, but few DVCam decks will play DVCPPro tapes.</p>

## DVCAM 1996 – Present

### Polyester magnetic tape enclosed in a plastic cassette.

Each item should have its own PAT compliant enclosure to protect it from dust, handling damage, and changes in environmental conditions. Store the items in Inert plastic containers to protect from dust, pests and airborne contaminants. An enclosure must be truly clean in order to protect the fragile tape surface. Dust and dirt abrasions can affect sound quality and even render the tape unplayable. Mouldy, damaged, and dirty containers must be replaced.



**MEDIUM RISK OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
<p>DVCam is a magnetic tape-based digital video cassette format. The tape is composed of magnetic particles, a binder, and a polyester base. Large cassettes measure 4 7/8" x 3" x 1/2", are for use in recording and editing decks, and have an available recording length of about 184 minutes. Small cassettes measure 2 1/2" x 1 1/8" x 1/2" and are for use in cameras, and have an available recording length of up to 40 minutes. The cassettes are generally bluish gray in color with 'DVCAM' printed on the upper right-hand corner.</p>	<p>DVCAM is subject to the same physical issues as analog tapes—stretching, breaking, drop-outs, mould, binder deterioration, and unintended recording. The size and durability of DVCam is a concern. DVCam is a higher quality product than older mini formats like Hi8, and it is comparable to DVCPPro. <b>This format would currently be considered medium risk.</b></p>	<p><b>Temperature</b></p> <p><b>Ideal</b> 4.5-12 degrees Celsius</p> <p><b>Acceptable</b> 18-24 degrees Celsius</p> <p><b>Humidity</b> 35-45% relative humidity</p>	<p>The best orientation for a cassette is vertical on its end., like books on a shelf. Piling tapes one upon the other tends to stress the cassettes at bottom; and over time, this can cause the plastic housing to warp and even crack. Allowing cassettes to lean for too long in poor storage environments can lead to distortion. Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.</p>	<p>Engage the record protection mechanism if it has not already been done. Do not attempt to open a tape cassette/cartridge--this is likely to cause greater damage unless you know what you are doing. Furthermore, never touch the magnetic tape surface. Keep magnetic media away from stray electromagnetic fields and avoid devices with a motor or transformer, both of which generate an alternating magnetic field. Never leave media in a playback machine; always return to storage enclosure when not in use.</p>	<p>DVCAM cassettes require format-specific equipment for playback.</p>

## DVDs 1995 – Present

Polycarbonate plastic disc substrate coated with a thin, reflective "data layer" composed of metal (commercial DVDs) or contains dyes (recordable, rewritable DVDs). DVDs may also be dual-layered/-sided

Inert plastic containers with a non-damaging centre hub are recommended.

Original packaging for optical media, especially DVDs, can be less than desirable as the hubs may be too large or require excessive pressure to be applied in order to remove the disc. The container is acceptable if it is protecting the media from dust, pests, and other contaminants; is not shedding or introducing any contaminants through its own degradation; and, is clean and free of mould or excessive dirt.



Image courtesy of Wikimedia Commons

**MEDIUM RISK  
OF LOSS**

Description	Deterioration & Risk Level	Storage Environment	Storage orientation	Handling & Care	Playback Equipment
DVD is a digital optical disc format that can hold moving image and recorded sound material. DVDs are the same dimensions as CDs: 120mm in diameter and 1.2mm thickness. DVDs, however, can be made up of two discs of 0.6mm thickness that are bonded together. A disc may hold data on a single side or on both sides. The amount of content stored on the disc depends on how the content is compressed; if the data is heavily compressed, more data will fit on the disc. Some discs are recordable (DVD-/+R), and some discs can be written, erased, and recorded multiple times (DVD-RW).	Most DVD damage is incurred through poor storage and handling. Surface scratches, gouges, and smudges can inhibit playback of the disc. Scratches on the label side of commercially produced DVDs are less damaging than they are to CDs, as DVDs have an extra layer of polycarbonate that protects the metallic recording layer within the disc. Data on DVDs, especially non-replicated, recordable/rewritable DVDs, is subject to loss over time.  <b>This format would currently be considered medium risk.</b>	<b>Temperature</b>  <b>Ideal</b> 7-12 degrees Celsius  <b>Acceptable</b> 13-20 degrees Celsius  <b>Humidity</b> 30-50% relative humidity  Wood cabinets should be avoided. Enamelled steel, stainless steel, or anodized aluminium are preferred.	Like other types of discs, optical media should be stored vertically on end, inside a case, like books.	Avoid touching the surface of the information side—what may be thought of as the underside of the disc; handle through the core hub and at the edge. Never leave media in a playback machine; always return to storage enclosure when not in use.	Commercial DVDs may contain region code information. Discs with this encoded information require playback equipment that corresponds to the discs' region code. Recordable/rewritable DVDs can be recorded at varying speeds. Since the recording speed of more recent players has increased, older DVD players may not be able to handle discs recorded at higher speeds.