



ARIZONA STATE  
LIBRARY, ARCHIVES AND PUBLIC RECORDS

A DIVISION OF THE ARIZONA SECRETARY OF STATE

Joan Clark, State Librarian & Director



## STANDARDS FOR PERMANENT RECORDS

*(This standard replaces prior version dated April 23, 2013.)*

1. **Scope:** This standard is established by the Director, Arizona State Library, Archives and Public Records pursuant to A.R.S. §39-101. It is published by the Secretary of State's - Library, Archives and Public Records division (SOS/LAPR).

Standards for Permanent Records are necessary for all records required by law to be kept permanently per applicable retention schedule and those records determined by the SOS/LAPR to possess enduring or historical value, whether the record is in paper, microfilm or electronic format.

Permanent preservation refers to those standards required to maintain permanent records in perpetuity (i.e. for all time).

This document outlines the minimum preservation actions and is not intended to outline all legal and/or technical responsibilities for government records. Consult with your office or public body's legal counsel, records officer or manager and information technology staff for further information.

2. **Authority:** This standard is approved pursuant to Arizona Revised Statutes §§39-101, 41-151.09, 41-151.12, 41-151.14, 41-151.15, 41-151.16, 41-151.17, 13-2407.

Joan Clark

Director, Arizona State Library, Archives & Public Records

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STATE CAPITOL

1700 W. Washington – Room 200 • Phoenix, Arizona 85007 • Home Page: <http://www.azlibrary.gov>  
Phone: (602) 926-4035 • FAX: (602) 256-7983 • E-Mail: [services@azlibrary.gov](mailto:services@azlibrary.gov)

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**3. Responsibility:**

- A. Officer, public body and other persons or custodians of public records (A.R.S. §§39-101, 39-121.01): To preserve and protect permanent public records in accordance with these standards and to maintain documentation as evidence that these standards are being met.
- B. Library, Archives and Public Records (A.R.S. §39-101): To periodically monitor and audit these standards.

**4. Change Notice:**

- A. These standards have been updated to incorporate clarifications requested during the 2013 feedback period.

## 5. **Requirements:**

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# All Permanent Records

## 5.1 For all permanent records

### A. Permanent Storage Plans

1. If the officer or public body plans to transfer a record series to the State Archives at a future date, after that record series is no longer active, the officer or public body will take the necessary steps to ensure the records are organized and preserved in a format and media that is approved by SOS/LAPR for permanent records. Supporting data is to be transferred with the records to include any information or data necessary to locate and access individual records, security requirements, personal privacy and confidentiality requirements, definitions of all data fields, codes, abbreviations and acronyms, valid at time of creation of the record in order to ensure continued preservation and accessibility.
2. If the officer or public body does not transfer the records to SOS/LAPR, the officer or public body will take the necessary steps to ensure continued preservation, accessibility (readability) and authentication of the record permanently (i.e. in perpetuity) within the officer or public body's organization to include the record and any information or data necessary to locate and access individual records, as well as definitions of all data fields, codes, abbreviations and acronyms, valid at time of creation of the record.
3. If the officer or public body is terminated, sunsetted or privatized, the officer or public body is required to notify Records Management Center immediately upon notice of termination, sunset or privatization, and to initiate the transfer of records per the sunset/privatized policy. (A.R.S.§41-151.17.B)
4. If the officer or public body is using contractor, vendor or any other entity to house, store, process or in any way handle public records:

The officer or public body must ensure the records are preserved and protected according to this standard. The officer or public body will include a provision in the contract or agreement that requires the contractor, vendor or other entity to preserve and protect the records from inadvertent or intentional alteration, disposal, deletion or destruction and meet the requirements of this standard. The contractor, vendor or other entity must also agree to return the records to the officer or public body or provide other appropriate disposition consistent with this standard and performance under the contract or agreement should the contractor, vendor or other entity go out of business or is sold, or the contract ends for whatever reason.

The officer or public body will ensure through provisions in the contract or agreement that a contractor, vendor or other entity will preserve and protect the confidentiality, integrity and availability of public records consistent with section 5.1.C and with all other parts of this standard. The contractor, vendor or other entity shall promptly notify the officer or public body of unauthorized access or disposition, loss of integrity or unavailability of the records, including any loss or theft of the records.

## **B. Records Identification**

In order to preserve permanent records the officer or public body needs to be able to clearly identify record series, file format, storage media type, physical storage location and other information, such as:

1. Officer or Public Body:
2. Officer or Public Body Division:
3. Name of Record Series:
4. Records retention schedule reference, date of current schedule and retention period:
5. Location of supporting data to include any information or data necessary to locate and access individual records, security requirements, definitions of all data fields, codes, abbreviations and acronyms, valid at time of creation of the record:
6. Records series access restrictions, confidentiality, personal privacy data content and other security requirements:
7. Date range of records by media and file format (paper, silver master microfilm, electronic, etc.):
8. Description of record within officer's or public body's system, to include file format and storage media (example: paper, silver microfilm or scanned images @300dpi, TIFF format, with associated metadata in SQL relational database):
9. Physical location of the records:
10. Are the records born digital or imaged? If imaged, the date of scanning request approval (A.R.S. §41-151.16):  
Note: Scanning records does not constitute permission to destroy original record.
11. List any known Arizona State Statutes that govern the specific record series (excluding A.R.S. §39-101 and A.R.S. §41-151(s) as they apply to all record series):
12. Inventory of off-site or off-line records must be available to all staff handling public records requests:

**Note:** Please contact the Records Management of SOS/LAPR for assistance in identifying the record series, retention schedule reference or scanning approvals (602-926-3815 or [records@azlibrary.gov](mailto:records@azlibrary.gov) ).

## **C. Security & Privacy**

1. To maintain the authenticity, integrity and trustworthiness of government records over time, records must be protected from inadvertent or intentional alteration. Records must also be

protected from inadvertent or intentional disposal, deletion or destruction in order to maintain individual and agency privacy and legal rights. (A.R.S.§39-121.01.C)

2. Refer to Statewide Information Security P800 and Privacy P900 policies, (<http://aset.azdoa.gov/node/8>) and related statewide security and privacy standards for information on identifying and maintaining the confidentiality, integrity and availability (CIA) of data in records.
3. The officer or public body will ensure the security and privacy of government records by using a data sharing agreement and data exchange matrix to identify the record series and safeguards that should be applied to the records by a contractor, vendor or other entity. Refer to Statewide Standard: Classification and Categorization of Data, P900-E901 (<http://aset.azdoa.gov/node/8>).

#### **D. Disaster Recovery**

All records formats are susceptible to degradation, corruption and destruction during emergencies, disasters and environmental changes. Steps must be taken to ensure all essential and permanent records are protected during these events.

1. Disaster recovery and continuity of operations plans must specifically include permanent and essential record series in order to safeguard and preserve the record series.
2. Steps must be taken as soon as possible to recover and mitigate damage to the records.

# Micrographics

(Microfilm, Microfiche, Microforms and All Other Micrographic Formats,  
including Computer Output Microfilm-COM)

## 5.2 For Permanent Records on Micrographics

### A. Accepted Micrographics Standards

1. There are presently thirty-two (32) American National Standards Institute (*ANSI*), Association for Information and Image Management (*AIIM*), and International Organization for Standards (*ISO*) standards that detail the standard recommended practices for micrographics. All officers and their offices and public bodies in Arizona that are filming and/or processing and/or duplicating and/or storing microfilm shall strictly adhere to all thirty-two (32) standards in order for their microfilm to be classified as permanent. Additionally, any vendor that is being utilized by any officer or their offices or any public body to film and/or process and/or duplicate and/or store microfilm for the officer and their offices or public body shall also adhere to these thirty-two (32) standards.
2. A complete list of these thirty-two (32) standards follows in the appendix. From time to time, these standards are updated, so the year listed after the standard number may differ from those below. As of the publication of this Standards of Permanent Records, the years listed with each standard are current. Every officer and their offices and every public body, to include any vendor(s) utilized, shall adhere to the most recently published *ANSI*, *AIIM* and *ISO* standards.
3. Copies of referenced standards are available for review or loan from Professional Collection at the State Library of Arizona (<http://www.azlibrary.gov/>). This material is copyrighted. Therefore we are unable to provide copies of the reference standards. Recommendation: If a public body is only able to purchase one or two of the standards at the beginning, MS 23 is the single best standard for first generation microfilm, and MS 43 is the single best standard for duplicated microfilm.

### B. Filming Original Source Documents on Micrographics

(ANSI/AIIM MS23 / ANSI/AIIM MS14)

1. Source Document Size / Film Width = Reduction Ratio  
The larger the source document is, the more times it will need to be reduced to fit on microfilm. The resulting ratio is expressed in a numerical value. For example, a 1:24 reduction means that the image on the film is 24 times smaller than the original source document.
2. As the reduction ratio is increased, the quality of the microfilm is decreased. A 1:32 reduction means the quality is going to be poorer than a 1:24 reduction.
3. When choosing the degree of reduction, you will need to carefully consider the following important factors:
  - a. The alphanumeric characters being microfilmed;
  - b. Size and shape of original, source documents;
  - c. Number of generations that will need to be produced;
  - d. Resolution capability of the camera, lens and film system;
  - e. Film size being used;

- f. Capabilities of available viewing equipment;
  - g. Microfilm viewer screen;
  - h. Film being used for duplicates of microfilm, if any.
4. If one is considering only the reduction ratio of the film, your end result will be better image quality and better duplicate microfilm if using lower reduction ratios.
  5. If one is considering only the quality of image, larger images are better than smaller ones. Larger images are more forgiving of poor quality paper source documents, and variables related to microfilming, including fluctuations in density, camera vibrations and losses experienced whenever microfilm is duplicated.
  6. 16 mm film width should be used with the following sizes of original, source documents: letter and legal-size document. Records filmed in 16 mm format should not exceed 11" x 14" with a 1:32 reduction.
  7. 35 mm film shall be used for the following original, source documents: larger than 11" x 14" size originals; bound documents up to 24" x 36" with a 1:24 reduction; architectural, engineering and topographical drawings not exceeding 36" x 48.6" with a 1:30 reduction.
  8. Oversized documents larger than 11" x 14", including maps, drawings, schematics, and the like shall not be filmed with 16 mm microfilm.
  9. 35 mm film shall be used for original, source documents larger than 36" x 48". For documents of this size and larger, they will probably need to be filmed in segments /clauses, with a minimum of 1" overlap of the original material. See ANSI/AIIM MS32-1996 for requirements on filming these super-sized engineering drawings, and the like.
  10. Targets are an essential part of the microfilm and provide the viewer with information about the source documents filmed and conditions during filming.
  11. Targets should provide the following information about the original source documents and the microfilm itself:

Beginning targets should be in the following recommended order:

- a. Start of roll;
- b. Identification of project, including year microfilm created;
- c. Roll identification, including roll number and storage, if known;
- d. Statement regarding copyright;
- e. Title of microfilm;
- f. Uniform density-specific target;
- g. Resolution-specific target;
- h. Resolution target;
- i. Any special targets needed, including notice of restriction or privacy, bibliography, errors or irregularities, information sheet, etc.

Concluding targets should be in the following recommended order:

- a. Roll identification;
- b. Title of microfilm;
- c. End of roll;
- d. Retake notices, if needed;

- e. Indexes needed to interrupt the documents on microfilm;
- f. Appendix notice, if needed.

## 12. Use of Resolution Test Charts

The Resolution test chart that shall be used is the ISO Resolution Test Chart No. 2.  
(ANSI/AIIM MS23 / ISO 3334)

### C. Processing Permanent Micrographics (LE-500) (ANSI/AIIM MS23)

1. Given the extensive nature of the thirty-two (32) standards referenced in appendix, what follows in section 5.2 of this particular Standards for Permanent Records, is a **brief summary** of some of the more important aspects of microfilm as a Permanent record. In order to be compliant with these Standards for Permanent Records, however, all officers and their offices and all public bodies and the vendor(s) they utilize, if any, shall strictly adhere to all thirty-two (32) standards listed in Appendix A.
2. Film must be conventional silver halide (master copy) type manufactured for use as microfilm. This is the permanent version of the micrographics. Only microfilm that has been rated LE 500 (Life Expectance 500 years) is acceptable for use as a permanent microfilm. At present, only black and white silver halide film on a polyester base which is properly processed and stored according to the various standards referenced will qualify as LE 500.  
(ANSI/AIIM MS23)
3. Processing shall be accomplished using a processor which provides a separate fixing stage and washes the film thoroughly following fixing. Processors, like all equipment, have specified processes that need be followed, and variables that can affect the physical and photographic characteristics of the end product. It is the officer's and their office's and the public body's responsibility, and those of any vendor they utilize, to be aware of, understand, and know how to control these variables to produce an end product that will meet this Permanent Records Standard. (See ANSI/AIIM MS23, Section 9 – 9.5.2 for processor and film processing requirements.)
4. Residual ammonia thiosulfate is the single most damaging chemical compound in processed microfilm. LE 500 films shall contain no more than 1.4 micrograms per square centimeter of residual thiosulfate. (ANSI/AIIM MS23)
5. Regular testing of processed film using the methylene blue method shall be followed. The methylene blue test is the most sensitive, accurate and widely used method of determining residual thiosulfate in processed microfilm, and must be administered within 14 days. Regardless of whether the officer and their offices and a public body are processing their own microfilm or whether they are using a vendor for processing, the methylene blue testing shall be performed not less than once per week and the testing shall indicate that the film falls within the tolerable range of the test. If the film does not meet the standard it must be rewashed and retested within 14 days of initial processing. (ANSI/AIIM MS23 / ISO 18917)
6. All micrographics shall be certified as meeting the processing requirements for permanent records by use of the Certificate of Compliance with State Standards for processing of permanent micrographics form.

#### **D. Duplication of Permanent Micrographics**

1. The first generation of micrographic is the film produced by the camera when the source documents are filmed. Even though maximum protection must be given to the first generation microfilm, a small number of copies (**fewer than five**) may be produced from it. These copies will be second generation films. Handling of this first generation silver halide master film must be minimal and limited to producing duplicate use copies (second generation). (ANSI/AIIM MS23)
2. If more than four copies are needed of a first generation silver halide master film, then an intermediate (second generation) Silver Duplicate use copy film should be produced from the first generation master. Multiple copies can then be duplicated from this second generation use copy film. (ANSI/AIIM MS23)
3. If microfilm needs to be scanned to produce an electronic/digital copy of the film, the first generation microfilm can only be used one time for this purpose. If more scans are required, then a duplicate use copy of the first generation film will need to be created and used for this purpose. (ANSI/AIIM MS23)
4. Each successive generation of films duplicated from the first generation master film or second generation use copy film will cause the image clarity to deteriorate and contrast to increase rapidly. (ANSI/AIIM MS23)
5. The first generation silver halide master film shall not be used for public access.

#### **E. Storage for Permanent Micrographics**

1. Providing a suitable storage environment for microforms should be a key element in the design of any micrographic system. See ISO 18911 for detailed information and requirements on storage.
2. Microform enclosures (containers) include all items that are used in direct contact or close proximity to microfilm while in storage. Storage enclosures shall meet the requirements of ANSI/AIIM MS23, and ISO 18902)
3. When deciding on which enclosures, plastic reels, microfilm cartridges, storage boxes, microfiche envelopes and jackets, labels, adhesives, inks, string and button ties, vinyl strips, splicing tapes and opaque photosensor tapes to use, public bodies and their vendors, if any, shall adhere to section 6.3.1 – 6.3.3, of ANSI/AIIM MS23.
4. The value of permanent microfilm requires a separate storage room or vault from medium-term storage facilities, temporary storage facilities, offices or work areas. Storage rooms for films shall be essentially free from acid or shall have a separate circulating-air system.
5. Original microfilm (silver halide reel) of permanent records shall be stored in a secure and fire resistant vault, room or storage facility. No flammable materials or chemicals are to be used or stored in this area. This vault, room or storage facility must also be free of steam or

water sources including drains, except that any sprinkler or humidifier plumbing must have a shut-off valve located outside the storage area. (ISO 18911)

6. Film storage used shall adhere to section 15 – 15.6, of ANSI/AIIM MS23.
7. Storage area environment must be maintained with minimal fluctuation (temperature  $\pm 5^{\circ}\text{F}$  and relative humidity  $\pm 5\%$  in a 24 hour period).

**NOTE:** *The stability of the environment is, within reason, more important than specific numbers. For example, a stable temperature, maintained constantly at 69°F, is preferable to one that fluctuates from 60° to 70°F. The same is true of relative humidity.*

8. Microfilm should be stored in a constant cool environment with temperatures not exceeding 69° F. (ISO 18911)
9. The relative humidity in microfilm storage areas shall be maintained between 20% and 30%. All forms of microfilm deterioration increase with high humidity levels. (ISO 18911)
10. Film stored at a relative humidity below 30% or a temperature lower than 60<sup>0</sup>F (16<sup>0</sup>C) must be sufficiently warmed (gradually brought to room temperature, minimally 24-48 hours) before use to avoid damage. (ANSI MS23 / ANSI/NAPM IT9.11, 7.1.2)
11. Storage areas must be kept clean and relatively dust free. Frequent dusting and vacuum cleaning is advised. Area must be free of rodents, insects and active fungi.
12. Film should be handled at edges only and hands should be covered with soft clean cloth gloves.

## F. Quality Control Standards for Permanent Microforms

### 1. Background Densities (ANSI/AIIM MS23)

Classification	Description of documents	Density
Group 1	High quality, high contrast, printed books and periodicals; black type face; fine-line originals; black opaque pencil writing; and documents with small, high-contrast print.	1.00-1.30
Group 2	Pencil and ink drawings; faded and very small print (for example, footnotes at the bottom of a printed page); scenic checks; documents with printed pictorial images; and newspapers.	0.90 - 1.10
Group 3	Low-contrast manuscripts and drawings; graph paper with pale, fine-colored lines; letters typed with a worn ribbon; and poorly printed, faint documents.	0.80 – 1.00 (1:24 reduction or less)
Group 4	Very low-contrast (worst case) documents can require extremely low background densities.	0.75 – 0.85 (1:24 reduction or less)
When microfilming documents of mixed qualities, image background densities between 0.90 – 1.10 should initially be used. Density (image density)		
a. Background		0.70 to 1.30
b. Base + Fog		0.00 to 0.10

### 2. Resolution (minimum acceptable) - Minimum quality index level of 8

- a. 16mm Rotary Camera                      90 lines/mm
  - b. 16mm Planetary Camera                125 lines/mm
  - c. 35mm Planetary Camera at 24:1        120 lines/mm
  - d. 35mm Planetary Camera at 30:1        135 lines/mm
- (ANSI/AIIM MS48)

### 3. Splicing microfilm:

- a. Only ultrasonic weld splices are acceptable.
- b. When splicing two pieces of microfilm, film sections shall be the same generation and shall have emulsion surfaces facing the same direction.
- c. When using a microfilm duplicator (silver film or diazo) that is sensitive to splices and prone to separation or slippage, splices need to be kept near zero, or more blank film must be added on either side of the splice to avoid these issues.
- d. The current acceptable maximum allowable number of splices per reel ranges from six – ten. Splices weaken film over time, so consider the cost of splicing today but increasing

the possibility of brittle film further down the road. It may be cheaper in the long run to create a separate appendix roll of microfilm and avoid splicing altogether.  
(ANSI/AIIM MS 23)

4. Micrographics must be able to reproduce an exact representation of original documents, to include, but not limited to, size, detail, readability and color (if color is meaningful in interrupting record information, for example in graphs and maps) following inspection, re-filming and splicing of appendix. (Color microfilm does not meet the LE 500 standard.) Any indexing or supporting documentation, which includes, but is not limited to, all field descriptions, codes, abbreviations and acronym definitions at time of record creation is filmed with the records.
5. Container or box labeling must adequately represent the contents of the film. As a minimum list: Office or public body originating film, division/department originating film, record series, date span and unique roll number.
6. Inspection must include quality control checks to ensure all records have been filmed without distortion, blurriness, unclear, out of focus, or items covering the record or any other issues that would prevent reproduction of original document.

## **G. Privacy and Security**

1. To maintain authenticity, integrity and trustworthiness of government records over time, records must be protected from inadvertent or intentional alteration. Records must also be protected from inadvertent or intentional disposal, deletion or destruction in order to maintain individual and agency privacy and legal rights. (A.R.S.§39-121.01.C)
2. Refer to Statewide Information Security P800 and Privacy P900 policies, (<http://aset.azdoa.gov/node/8>) and related statewide security and privacy standards for information on identifying and maintaining the confidentiality, integrity and availability (CIA) of data in records.
3. Notify the government body's privacy or security officer of any change to the confidentiality, integrity or availability of the information for remediation of the damage or loss of information.

## **H. Annual Review**

1. Officers and their offices and all public bodies must inspect their permanent silver master microfilm records whether they are stored at the public body and/or at a commercial or private records storage facility. If a storage vendor inspects film for an officer and their office or public body, the vendor shall strictly adhere to all the requirements.
2. It is best to use the following timetable for inspecting microfilms:

All films should be inspected when they are 2 years old. After the initial 2-year inspection, unless there is a catastrophic event, the films shall be inspected as follows:

For microfilm that is/was produced after 1990, inspect the microfilm every 5 years. For microfilm that was produced prior to 1990, inspect the microfilm every 2 years.

For public bodies with large microfilm collections this will neither be practical nor cost effective. The public body will need to develop a sampling procedure, prior to the annual inspection process, which will help ensure that a true representative sample of microfilm is inspected annually. Developing your sampling procedure prior to inspections will ensure the microfilm inspector is not unconsciously injecting a bias in the sampling process / results. The annual sample should be 1/1000<sup>th</sup> of your permanent microfilm holdings or at least 100 rolls of microfilm (or the equivalent jackets, aperture cards, microfiche), whichever is greater.

With microfilm created prior to 1990 there is a greater chance of the microfilm developing some form of deterioration. If the public body's microfilm is a mixture of film produced before 1990 and film produced after 1990, the public body will need to ensure that 70% of the sample film, selected for inspection, was produced prior to 1990.

3. To facilitate inspection, the officer and their offices and all public bodies must maintain an inventory of microfilm listing each microform series/publication by production date, producer, processor, format, and results of previous inspections.
4. The elements of the inspection shall consist of:
  - a. An inspection for aging blemishes following ANSI/AIIM MS45–1990;
  - b. A rereading of resolution targets;
  - c. A re-measurement of density; and
  - d. A statement of the environmental conditions under which the microforms are stored.
5. The officer and their offices and public body must prepare an inspection report. The inspection report must contain:
  - a. A summary of the inspection findings, including:
    - i. A list of batches by year that includes the identification numbers of microfilm rolls and microfiche in each batch;
    - ii. The quantity of microforms inspected;
    - iii. An assessment of the overall condition of the microforms;
    - iv. A summary of any defects discovered, e.g., redox blemishes or base deformation; and
    - v. A summary of corrective action taken.
  - b. A detailed inspection log created during the inspection that contains the following information:
    - i. A complete description of all records inspected (title; roll or fiche number or other unique identifier for each unit of film inspected; security classification, if any; and inclusive dates, names, or other data identifying the records on the unit of film);
    - ii. The date of inspection;
    - iii. The elements of inspection (see paragraph (a)(4) of this section);
    - iv. Any defects uncovered;
    - v. The corrective action taken.

6. If an inspection shows that a master microform is deteriorating, the agency must make a silver duplicate to replace the deteriorating master with a new silver master.
7. Inspection must be performed in an environmentally controlled area in accordance with ANSI/AIIM MS45–1990.
- 8. If damage is noted:**
  - a. Perform an in-depth inspection of a larger sampling of the holdings to determine extent of damage. Damage to some reels will usually indicate wider spread damage to the holdings.
  - b. Damage such as redox and vinegar syndrome will spread rapidly throughout a collection. Move damaged film to a separate location away from all other records, regardless of the media on which the other records are held.
  - c. Damage and infestation of insects, mold and fungus will spread rapidly throughout a collection. Move damaged film to a separate location away from all other records, regardless of the media on which the records are held.
  - d. Move entire collection if needed to protect it from source of infestation.
  - e. Take immediate action to remediate the problem.
  - f. Investigate and fix source/cause of infestation or problem causing damage to records.
  - g. Take conservation actions to save damaged records, in accordance with A.R.S. §41-151.15A.
  - h. Create new silver master copy of damaged film.
9. Annual inspections must be documented and that documentation maintained as a permanent record and produced during review of records. (A.R.S. §41-151.11)
10. Contact the State Archives for consultation on remediation.

# Paper

## 5.3 For permanent records on paper

### A. Paper Composition

**(All papers used for permanent records shall conform to the most recent version of ANSI/NISO Z39.48-1992(R2002)).**

1. The fiber content shall be cotton or linen, fully bleached wood pulp, or a mixture. The paper shall be free of unbleached wood pulp, ground wood, and contain no more than 1% lignin.
2. The pH shall be from 7.5 to 10.0.
3. The paper shall contain a minimum of 2%, by weight, of calcium or magnesium carbonate, or both as an alkaline reserve.
4. The paper shall be internally and surface sized with a neutral or alkaline agent.
5. Paper weight shall be 16 lbs. (60/M<sup>2</sup>), 20 lbs. (75g/M<sup>2</sup>), 24 lbs. (90g/ M<sup>2</sup>) or 32lbs. (120g/ M<sup>2</sup>).
6. File folders for storage of permanent records shall conform to the same standards as above 1 through 4, but shall have a minimum thickness of .010 inches (.254mm).

### B. Storage Containers for Permanent Paper Records

1. File cabinets shall be constructed of steel with a smooth, baked enamel or powder-coated finish.
2. Non-corrugated document boxes shall conform to permanent paper standards 5.3A and shall be of a weight, stability and thickness to assure adequate protection of the enclosed records.
3. Corrugated and Solid Core Document Boxes:
  - a. The paper plies shall be free of lignin, ground wood, and unbleached wood pulp.
  - b. The pH of the interior lining paper shall be from 7.5 to 10.0.
  - c. The interior lining paper shall contain a minimum of 2%, by weight, of calcium or magnesium carbonate, or both as an alkaline reserve.
  - d. All adhesives shall be formulated to prevent acid migration to the interior of the box.
  - e. The paper shall be internally and surface sized with a neutral or alkaline agent.
4. Container or box labeling must adequately represent the contents. As a minimum list Office or public body, originating division/department, record series name, date span of records, and unique box number.

### C. Storage Environment for Permanent Paper Records

**NOTE:** *The stability of the environment is, within reason, more important than specific numbers. For example, a stable temperature, maintained constantly at 70°F, is preferable to one that fluctuates from 60° to 70°F. The same is true of relative humidity.*

1. Storage environment must be maintained with minimal fluctuation (temperature  $\pm 5^{\circ}\text{F}$ ; relative humidity  $\pm 6\%$ )

Temperature: 70°F (22°C) maximum, 55°F (12.78°C) minimum

Relative Humidity: 60% maximum, 30% minimum

**NOTE:** *Ideal temperature variation is no more than  $\pm 2^{\circ}\text{F}$ ; Ideal Humidity variation is No more than  $\pm 2\%$ .*

2. Ultraviolet radiation from either sunlight or fluorescent lighting shall be kept at minimum by the use of window shades or paint, ultraviolet filters, the use of lights only during retrieval or filing, or a combination of such methods. Preferably, indirect or incandescent lighting should be used only during retrieval or refilling.
3. Air circulation shall be adequate to prevent stagnant air. As a minimum, incoming air shall be mechanical filtered through fiberglass filters. Electro-static filters shall not be used. Filters will be serviced at manufacturer's recommended intervals.
4. The storage area shall be free of rodents, insects, and active fungi.
5. Records must be stored at least three inches above the floor of the storage area.
6. Storage area must be secure and fire protected. No flammable materials or chemicals are to be used or stored in this area. It must also be free of steam or water sources including drains except that any sprinkler or humidifier plumbing must have a shut-off valve located outside the storage area.
7. Storage area must be kept clean and relatively dust free.

### D. Privacy and Security

1. To maintain authenticity, integrity and trustworthiness of government records over time, records must be protected from inadvertent or intentional alteration. Records must also be protected from inadvertent or intentional disposal, deletion or destruction in order to maintain individual and agency privacy and legal rights. (A.R.S.§39-121.01.C)
2. Refer to Statewide Information Security P800 and Privacy P900 policies, (<http://aset.azdoa.gov/node/8>) and related statewide security and privacy standards for information on identifying and maintaining the confidentiality, integrity and availability (CIA) of data in records.
3. Notify the government body's privacy or security officer of any change to the confidentiality, integrity or availability of the information for remediation of the damage or loss of information.

## **E. Annual Review**

1. Annually, all permanent paper records shall be inspected by the Officer's or public body's staff. A statistically significant random sample, representative of all holdings, must be taken and inspected for:
  - a. Water damage;
  - b. Infestation by insects, mold or fungus;
  - c. Discoloration, fading, brittleness, rust due to metal fasteners, etc.;
  - d. Other deterioration, problems with accessibility, readability or storage conditions.
2. **If damage is noted:**
  - a. Perform an in-depth inspection of a larger sampling of the holdings to determine extent of damage. Damage to some paper will usually indicate wider spread damage to the holdings.
  - b. Damage such as insects, mold, and fungus will spread rapidly throughout a collection.
    - i. Move damaged paper to a separate location away from all other records, regardless of the media on which the records are held.
    - ii. Move entire collection if needed to protect it from source of infestation.
  - c. Take immediate action to remediate the problem.
    - i. Investigate and fix source/cause of infestation or problem causing damage to records.
    - ii. Take conservation actions to save damaged records (A.R.S. §41-151.15A).
  - d. If necessary, create preservation copies of original records.
3. Annual inspections must be documented and that documentation maintained as a permanent record and produced during review of records. (A.R.S. §41-151.11)

The officer and their offices and public body must prepare an inspection report. The inspection report must contain:

A summary of the inspection findings, including:

- a. A list of record series by year.
  - b. The quantity of records inspected.
  - c. An assessment of the overall condition of the records.
  - d. A summary of any defects or damage noted.
  - e. A summary of corrective action taken.
4. Contact the State Archives for consultation on remediation.

## **Electronic/Digital formats & Analog formats** (Formats and media not paper or micrographic)

### **5.4 For permanent records in electronic/digital formats and analog formats**

**Note:** Currently, there is not an “enduring” analog or electronic format or storage media other than paper or micrographics. Due to the inherent instability, no file format or storage media is durable or lasting. Permanent records stored in electronic and analog formats and media (not in paper or microfilm) require constant migration of file formats and storage media, comprehensive descriptive metadata, as well as adherence to strict compliance and security processes.

#### **A. Security & Privacy**

To maintain the authenticity, integrity and trustworthiness of government records over time, records must be protected from inadvertent or intentional alteration or deletion. Records must also be protected from inadvertent or intentional disposal or destruction in order to maintain individual and agency privacy and legal rights.

1. Adherence to Statewide Policies for IT Enterprise Architecture, P700 series (<http://aset.azdoa.gov/node/8>): access shall be securely implemented with regard to confidentiality, integrity and availability (CIA) of the data as established in *Data Classification Matrix* P900-E901 and in accordance with *IT Security*, P800 series and *Privacy* P900 series Policies and related statewide security or privacy standards.
  - a. Adhere to the above statewide policies, standards or procedures to control physical security and user access to systems containing records.
  - b. Establish procedures to track and audit changes in the record.
  - c. All system security patches are up to date, and virus checking is routinely completed.
  - d. Audit trail and system logs are reviewed routinely to ensure no unauthorized access to the records.
  - e. The record’s chain of custody is documented and maintained.

#### **B. Permanent Storage Plans**

1. If the officer or public body plans to transfer a record series to State Archives at a future date after record series is no longer active:

The system must include the ability to export permanent records to an open format approved by SOS/LAPR that is appropriate for long-term preservation and sufficient for public access to the records, including any metadata necessary to locate and access individual records, relationship to other records, as well as definitions of all data fields, codes, abbreviations and acronyms, valid at time of creation of record. Notification of transfer must be made in advance in order for State Archives to ensure capabilities to ingest the record series, secure server storage and other requirements for the preservation and continued access of records not in paper or microfilm formats may be met. The State Archives requests that the Officer or public body maintains and ensures public access to the records until SOS/LAPR secures the necessary resources to preserve the records.

2. If the officer or public body does not transfer the records to SOS/LAPR, the officer or public body will take the necessary steps to ensure continued preservation, accessibility (readability) and authentication of the record permanently (i.e. in perpetuity), within the Officer or public body's system to include the record and any metadata necessary to locate and access individual records, as well as definitions of all data fields, codes, abbreviations and acronyms, valid at time of creation of record.

### C. Disaster Recovery & Backups

As with all records formats, those stored electronically are very susceptible to degradation, corruption and destruction during emergencies, disasters and environmental changes. Steps must be taken to ensure all vital and permanent records are protected.

1. Disaster recovery procedures as a minimum should adhere to Statewide IT Disaster Recovery Planning (DRP) Standard P800-S865 <http://aset.azdoa.gov/node/8>.
2. Disaster recovery and continuity of operations plans must specifically include this record series and the system it resides on in order to safeguard and preserve the series.
3. Backup procedures must be in place and adhere to Statewide IT Backup Standard P800 – S870 <http://aset.azdoa.gov/node/8>. If using a safe, the safe must specifically be rated for electronic records and media.

**Note:** Backups are disaster recovery tools. Backups do not provide adequate ability to retrieve, access or manage records for preservation.

### D. Storage of Media

1. Storage Media
  - a. Due to inherent instability, no file format or storage media is durable or lasting. All media devices will fail, meet end of life and/or become obsolete. Records must be duplicated and/or transferred to a new media device prior to obsolescence or media reaching end of life, to include digitization of analog records if necessary for continued access and preservation of the record.
  - b. Due to short life span and high failure rate, off-line media, such as, CDs, DVDs, Blue-Ray and devices such as flash drives, thumb drives, personal devices, USB drives and other small personal storage devices, are not acceptable media for long term and permanent records storage. Records will be maintained on longer term storage media, such as server storage.
  - c. Media labeling must adequately represent the contents on the media. As a minimum list; Office or public body, originating division/department, record series name, date span of records, number of records and file format of the records. Labels shall be written in pencil and prior to application onto media.
2. Environmental Controls
  - a. Storage media is highly susceptible to damage due to exposure to temperature (too hot or too cold), humidity (too high or too low) and light. Fluctuations in temperature and humidity will

damage media as well. Storage media that contain long term or permanent records must be stored within the manufacturer's optimal guidelines with no or minimal fluctuation.

**NOTE:** *The stability of the environment is, within reason, more important than specific numbers. For example, a stable temperature, maintained constantly at 70°F, is preferable to one that fluctuates from 60° to 70°F. The same is true of relative humidity.*

- b. Storage rooms or units must be environmentally controlled and monitored for optimal and stable temperature, light and humidity.
  - c. Refer to *Media Storage and Handling of Long Term and Permanent Records Guidelines* at [http://www.azlibrary.gov/archives/services\\_to\\_government.aspx](http://www.azlibrary.gov/archives/services_to_government.aspx) if unable to discern manufacturer's optimal storage.
3. The storage area shall be free of rodents, insects, and active fungi.
  4. Records/media must be stored at least three inches above the floor of the storage area.
  5. Storage area must be secure and fire protected. No flammable materials or chemicals are to be used or stored in this area. It must also be free of steam or water sources including drains except that any sprinkler or humidifier plumbing must have a shut-off valve located outside the storage area.
  6. Storage area must be kept clean and relatively dust free.
  7. Storage areas must be free from electromagnetic fields. Do not store near power grids, small unit air conditioners, transfer units, speakers, magnets or other power devices that can create electromagnetic fields.

## **E. Accessibility & System Architecture**

1. Migration of systems, storage media and formats

Storing permanent records in electronic formats will require the agency to maintain, upgrade and migrate the systems and records on a regular basis and keep systems up to date.

Electronic records are very susceptible to file corruption or degradation at any time, even during times of system stability. Records are especially susceptible during system change.

- a. Records must be validated and verified (review for any check sum errors) after every change to the system, storage media and format by opening and viewing, within each calendar year of the record series, a statistically significant, random sample of the records to insure there has been no data corruption or media failure. Any corruption or issues with the validation, access and readability to any record or corresponding metadata must be corrected prior to deletion or removal of access to the previous version of the record. All verifications will be documented and the documentation retained permanently with the records.
- b. System must be able to export all records, including all corresponding metadata, with the relationships of metadata to the record maintained and the record relationship to other records maintained, into an application neutral and commonly used open format, which can

be ingested into another system. Export must not contain any intellectual property information from a proprietary software or hardware system.

A test export must be completed to ensure all records, including all corresponding metadata, with the relationships of metadata to the record maintained and the record relationship to other records maintained, into an application neutral and commonly used open format, which can be ingested into another system.

## 2. Public Access

- a. To ensure the security of the record from incidental or intentional alteration, the public should not have the ability or access to modify the original/preservation copy or only copy of the record.

Access copies or second copies will be made for public access.

- b. If records are stored on a near-line or an off-line system, the Officer's or public bodies' staff must be able to locate, retrieve, and provide public records request copies of the records in a non-obsolete, commonly used format for public access. Pointers must be left when records are moved to an offline or near line system.

## 3. File Format

- a. Proprietary file formats

The use of proprietary file formats can cause access and preservation issues with records in complying with public records requests, and migration/conversion to different or newer systems or for other reasons. Some examples include cases such as the contracting or licensing companies going out of business (with or without notice), change in format (version), moving to a new system or a change application that reads current format.

Procedures must be in place to export records, including all corresponding metadata, with the relationships of metadata to the record maintained and the record relationship to other records maintained, into an application neutral and commonly used open format, which can be ingested into another system. Export must not contain any intellectual property information from a proprietary software or hardware system.

A test export must be completed to ensure all records, including all corresponding metadata, with the relationships of metadata to the record maintained and the record relationship to other records maintained, into an application neutral and commonly used open format, which can be ingested into another system.

- b. File Format migration

All file formats change over time (Example: Word Star, Word Perfect, MS Word 3.0, MS Word 95, MS Word 2002, MS Word 2007, MS Word 2010, etc.). There is no permanent file format. All records must have formats, with corresponding and embedded metadata, and relationships converted and migrated as necessary, without change to the information in the record, to ensure permanent accessibility.

Existing versions will be maintained, readable and accessible until the validity, readability and accessibility of the migrated records has been established by opening and comparing, within each calendar year of the record series, a statistically significant, random sample of the original and converted records to include corresponding and embedded metadata and records relationships.

Any corruption or issues with the validation, access and readability to any record or corresponding metadata must be corrected prior to deletion or removal of access to the previous version of the record. All conversion verifications will be documented and the documentation retained permanently with the records.

#### 4. Metadata and indexing

- a. The use of electronic record keeping systems can cause access and preservation issues with records in the following instances, but not limited to: the contracting or licensing company goes out of business (with or without notice), completing program and system updates, or the agency decides to transfer to a different system. Procedures must be in place to export records, including all corresponding metadata, with the relationship to the record maintained, in a commonly used or open format, which can be ingested into another system.
- b. Metadata and indexing data are the information or field keys used to find the corresponding record. It also includes, but is not limited to, all field descriptions, codes, abbreviations and acronym definitions at time of record creation. Changes to this information must be documented, including the date of the change. All reference and supporting documentation and data must be kept, preserved and associated with the corresponding records.

#### 5. Record Version Control

- a. The use of electronic record keeping systems may cause issues with records (e.g. data fields within a database, previous or multiple versions of a file, using non-unique file names, relying on the agency's website for preservation or version control) when during the process of being updated or changed, the permanent version of the record is overwritten or deleted by the newer version of the record.
- b. Procedures and assessments must be established to specify when a record is "fixed" for permanent retention, including all corresponding metadata and relationships with other records as necessary. The Officer or public body will preserve that permanent copy in the "fixed" time version as well as sequential versions over time.

### **F. Annual Review**

1. Annually, all permanent electronic/digital and analog records shall be inspected by the officer's or public body's staff. A statistically significant random sample, representative of all holdings, must be taken and inspected for:
  - a. Carrier damage and stability, such as rust, corrosion, cracks, breakdown of plastic;
  - b. Separation of media layers or other physical damage to media;
  - c. Water damage;
  - d. Infestation by insects, mold or fungus;
  - e. Availability of operational playback machine and drive;

- f. All software (including operating system, drivers, and applications) needed to access and/or read the record;
  - g. Access (open, view, read) the record to ensure record is completely accessible (viewable, readable) with no deterioration of the record. You must be able to render bit streams into a human readable format.
  - h. Other deterioration, problems with accessibility or storage conditions.
- 2. If damage is noted:**
- a. Perform an in-depth inspection of a larger sampling of the holdings to determine extent of damage. Damage to some media or files will usually indicate wider spread damage to the holdings.
  - b. Damage such as insects, mold, fungus, rust will spread rapidly throughout a collection.
    - i. Segregate or move damaged media to a separate location away from all other records, regardless of the media on which the records are held.
    - ii. Move entire collection if needed to protect it from source of infestation.
  - c. Take immediate action to remediate the problem.
    - i. Investigate and fix source/cause of infestation or problem causing damage to records.
    - ii. Take conservation actions to save and retrieve damaged records (A.R.S. §41-151.15A).
    - iii. Any corruption or issues with the access, viewing and readability to any record or corresponding metadata must be corrected.
  - d. Move records to new media if availability of playback machine and drive is at risk of obsolescence.
  - e. Move records to a new media or format if necessary software is at risk of obsolescence.
  - f. Create new master copies of the records, if necessary.
3. Annual inspections must be documented and that documentation maintained as a permanent record and produced during review of records. (A.R.S. §41-151.11)

The officer and their offices and public body must prepare an inspection report. The inspection report must contain:

A summary of the inspection findings, including:

- a. A list of record series by year.
  - b. The quantity of records inspected.
  - c. An assessment of the overall condition of the records.
  - d. A summary of any defects or damage noted.
  - e. A summary of corrective action taken.
4. Contact the State Archives for consultation on remediation.

# Appendixes

## 5.5 Appendixes

### a. Accepted Standards for Micrographics as reference in 5.2 A.2

Note: These standards are part of the State Library's Professional Collection and are available through inter-library loan. More information is available regarding the State Library of Arizona's Professional Collection at <http://www.azlibrary.gov/>.

- (1) **ANSI/AIIM MS1-1996**, *Standard Recommended Practice for Alphanumeric Computer-Output Microforms--Operational Practices for Inspection and Quality Control.*
- (2) **ANSI/AIIM MS5-1992** (R1998), *Standard for Information and Image Management--Microfiche.*
- (3) **ANSI/AIIM MS8-1988** (R1998), *Image Mark (Blip) Used in Image Mark Retrieval Systems.*
- (4) **ANSI/AIIM MS11-1997** (R1999), *Microfilm Jackets.*
- (5) **ANSI/AIIM MS14-1996**, *Standard Recommended Practice--Specifications for 16mm and 35mm Roll Microfilm.*
- (6) **ANSI/AIIM MS 18-1998**, *Splices for Imaged Film – Dimensions and Operational Constraints.*
- (7) **ANSI/AIIM MS19-1993**, *Standard Recommended Practice--Identification of Microforms.*
- (8) **ANSI/AIIM MS 23-2004**, *Standard Recommended Practice--Production, Inspection, and Quality Assurance of First- Generation, Silver Microforms of Documents.*
- (9) **ANSI/AIIM MS24-1996** (R2002), *Test Target for Use in Microfilming Source Document Engineering Graphics on 35-mm Microfilm.*
- (10) **ANSI/AIIM MS26-1990** (A1999), *35-mm Planetary Cameras (Top-Light) - Procedures for Determining Illumination Uniformity of Microfilming Engineering Drawings (includes supplements).*
- (11) **ANSI/AIIM MS32-1996**, *Standard Recommended Practice--Micro recording of Engineering Source Documents on 35mm Microfilm.*
- (12) **ANSI/AIIM MS34-1990**, *Dimensions for Reels Used for 16-mm and 35-mm Microfilm (revision and redesignation of ANSI PH5.6-1968).*
- (13) **ANSI/AIIM MS35-1990**, *Original Black-and-White Documents that May Be Microfilmed, Requirements and Characteristics of.*
- (14) **ANSI/AIIM MS39-1987**, *Recommended Practice for Operational Procedures, Quality Control & Inspection of Graphic Computer-Output Microforms.*
- (15) **ANSI/AIIM MS41-1996**, *Dimensions of Unitized Microfilm Carriers and Apertures (Aperture, Camera, Copy and Image Cards).*
- (16) **ANSI/AIIM MS42-1989**, *Recommended Practice for the Expungement, Deletion, Correction or Amendment of Record on Microforms.* (Also, ISO/TR 12036:2000)
- (17) **ANSI/AIIM MS43-1998**, *Recommended Practice for Operational Procedures/Inspection and Quality Control of Duplicate Microforms of Documents and from COM (includes supplement ANSI/AIIM MS43a-1991).*
- (18) **ANSI/AIIM MS45-1990**, *Recommended Practice for Inspection of Stored Silver-Gelatin Microforms for Evidence of Deterioration.*
- (19) **ANSI/AIIM MS48-1990**, *Recommended Practice for Microfilming Public Records on Silver-Halide Film.*
- (20) **ANSI/ISO 3334-1991**, **ANSI/AIIM MS51-1991**, *Micrographics--ISO Resolution Test Chart No. 2-- Description and Use.*
- (21) **ANSI/AIIM/ISO 10198:1994**, *Rotary Cameras for 16 mm Microfilm – Mechanical and Optical Characteristics.*
- (22) **ISO 18901:2002**, *Imaging Materials--Processed silver-gelatin type black-and-white films-- Specifications for stability.*

- (23) **ISO 18902:2007** and **Cor1:2009**, *Imaging materials - Processed imaging materials - Albums, framing and storage materials.*
- (24) **ISO 18911:2000**, *Imaging materials--Processed safety photographic films--Storage practices.*
- (25) **ISO 18916:2007**, *Imaging materials -- Processed imaging materials -- Photographic activity test for enclosure materials.*
- (26) **ISO 18917:1999**, *Determination of residual thiosulfate and other related chemicals in processed photographic materials -- Methods using iodine-amylose, methylene blue and silver sulfide.*
- (27) **ANSI/AIIM TR2-1998**, *Glossary of Document Technologies.*
- (28) **ANSI/AIIM TR13-1998**, *Preservation of Microforms in an Active Environment – Guideline.*
- (29) **ANSI/NAPM IT2.18-1996**, *American National Standard for Photography--Density Measurements--Part 3: Spectral Conditions.*
- (30) **ANSI/NAPM IT2.19-1994**, *American National Standard for Photography--Density Measurements--Part 2: Geometric Conditions for Transmission Density.*
- (31) **ANSI/PIMA IT9.2-1998**, *Photographic Processed Films, Plates, and Papers-Filing Enclosures and Storage Containers.*
- (32) **ANSI/NISO Z39.32-1996 (R2002)**, *Information on Microfiche Headers.*