

Mississippi Department of Archives and History

Reformatting Standards

STANDARDS FOR DIGITAL IMAGING

MDAH approves the following standards for reproduction of public records using digital imaging systems:

1. OPEN SYSTEM ARCHITECTURE

The design of the system shall permit future system upgrades with minimal effect on system operation. The system architecture shall allow flexibility in exporting and importing data to other non-proprietary systems.

2. STORAGE

Steps must be taken to ensure that archival and long-term original records are not disposed of until the digital images are securely preserved. Prior to disposal of originals, images of long-term or permanent records must be stored either on non-rewritable storage media or in a system with a backup/redundancy routine that includes multiple copies of the images with at least one copy stored off-site. If the records being imaged are scheduled for permanent retention at MDAH, the originals can be disposed of once the images have been received and verified by MDAH.

Non-rewritable media include write once read many (WORM), compact disc-read only memory (CD-ROM), digital versatile disc \pm recordable (DVD \pm R), and microfilm produced in accordance with standards approved by MDAH.

a. Use of these storage media shall be in accordance with the following standards:

WRITE ONCE READ MANY (WORM). Standards for WORM optical discs may be found in the WORM portion of ISO/IEC 13346 - Volume and file Structure of Write-Once and Rewritable Optical Discs Using Non-Sequential Recording for Information Interchange - Universal Disc Format.

COMPACT DISC - READ ONLY MEMORY (CD-ROM). ISO 9660 - Volume and File Structure of CD-ROM for Information Interchange.

DIGITAL VERSATILE DISC - RECORDABLE (DVD-R). Universal Disc Format (UDF) - file system developed by the Optical Storage Technology Association and based on ISO/IEC 13346/ECMA 167.

DIGITAL VERSATILE DISC + RECORDABLE (DVD+R). Universal Disc Format (UDF) - file system developed by the Optical Storage Technology Association and based on ISO/IEC 13346/ECMA 167.

b. The use of digital optical discs with a guaranteed minimum shelf life of five years and a minimum post-write life of twenty years is required and a plan to refresh and migrate as necessary should be in place.

3. NON-PROPRIETARY IMAGE FILE FORMAT

TIFF (ISO 12639:2004) and PDF (ISO 32000-1:2008) are acceptable standards for alphanumeric and graphic documents. Alternative file formats are acceptable only if complete documentation of the digital image file format, including tested procedures and techniques for the conversion of images and data is maintained. Because of variation in the structure of file formats among vendors and to increase the likelihood of accessibility to permanent records stored in this method, comprehensive documentation of the image file format must be maintained with other system documentation.

4. COMPRESSION ALGORITHM

ITU-T (formerly CCITT) Group 3 and 4 shall be used.

5. SCANNING RESOLUTION

300 ppi or greater

6. MEDIA ERROR DETECTION AND CORRECTION

ANSI/AIIM MS 59-1996, Media Error Monitoring and Reporting Techniques for Verification of Stored Data on Optical Digital Data Discs is the required standard for reporting the error rate data to the operating system for user evaluation.

7. INDEXING SYSTEM

The indexing system used to retrieve images shall be a relational database. Alternative indexing systems must be approved in writing by MDAH. Information on establishing index fields in an electronic imaging system may be found in ANSI/AIIM TR40-1995, Suggested Index Fields for Documents in Electronic Image Environments.

8. QUALITY CONTROL

Information regarding the establishment and use of procedures for the ongoing control of quality within an electronic imaging system may be found in ANSI/AIIM MS44-1988 (R1993), Recommended Practice for Quality Control of Image Scanners.

9. TEST CHARTS AND PATTERNS

Information regarding appropriate use of test charts and patterns in document imaging applications may be found in AIIM TR38-1996, Compilation of Test Targets for Document Imaging Systems.

10. OPTICAL DISC STORAGE

Information regarding optical media storage may be found in ISO 18925:2013, Imaging Media - Optical Disc Media - Storage.

11. EXPUNGEMENT/REDACTION/ENCRYPTION CAPABILITIES

Explanation of procedures for expunging information on WORM optical systems may be found in ANSI/AIIM TR28-1991, The Expungement of Information Recorded on Optical Write-Once-Read-Many (WORM) Systems.

12. LEGALITY

- a. The legal admissibility of reproductions of state and county records is addressed by *Mississippi Code Annotated (MCA)* Sections 25-59-29 and 19-15-3, respectively.
- b. Requirements for the legal acceptance of records are outlined in ANSI/AIIM's TR-31-2004, Legal Acceptance of Records Produced by Information Technology Systems, and the Mississippi Rules of Evidence.

STANDARDS FOR MICROFORMS

MDAH approves the following standards for reproduction of public records on microforms:

ANSI/AIIM MS18-1992 (R1998), "Splices for Imaged Film—Dimensions and Operational Constraints"

ANSI/AIIM MS19-1993, "Recommended Practice for Identification of Microforms"

ANSI/AIIM MS23-2004, "Practice for Operational Procedures/Inspection and Quality Control of First-Generation, Silver Gelatin Microfilm of Documents"

ANSI/AIIM MS26-1990 (A1999), "35mm Planetary Cameras (top-light)—Procedures for Determining Illumination Uniformity of Microfilming Engineering Drawings"

ANSI/AIIM MS42-1989, "Recommended Practice for the Expungement, Deletion, Correction, or Amendment of Records on Microforms"

ANSI/AIIM MS43-1998, "Recommended Practice for Operational Procedures/Inspection and Quality Control of Duplicate Microforms of Documents and from COM"

ANSI/AIIM MS45-1990, "Recommended Practice for Inspection of Stored Silver-Gelatin Microforms for Evidence of Deterioration"

ANSI/AIIM MS111-1994, "Recommended practice for Microfilming Printed Newspapers on 35mm Roll Microfilm"

ISO 18901:2010, "Imaging Materials—Processed Silver-Gelatin Type Black-and-White Film—Specifications for Stability"

DEFINITIONS

1. AIIM - the Association for Information and Image Management, a standards-setting body affiliated with the American National Standards Institute (ANSI), which is the principal developer of standards for microforms and information storage technologies involving images, such as optical discs and scanners.
2. ANSI - the American National Standards Institute, a private national standards organization in the United States, which coordinates the development and maintenance of various industry standards.
3. CCITT - International Telegraph and Telephone Consultative Committee - predecessor of the International Telecommunication Union (ITU).
4. CD-ROM (Compact Disc - Read Only Memory) - a data storage system using compact discs as the medium.
5. ECMA International - an international, private, membership-based standards organization for information and communication systems. Known prior to 1994 as the European Computer Manufacturers Association.
6. IEC - International Electrotechnical Commission.
7. ISO - the International Organization for Standardization, which coordinates national standards worldwide.
8. ITU-T - Telecommunication Standardization Sector of the International Telecommunication Union.
9. Open System - a system with characteristics that comply with specified, publicly maintained, readily available standards and that therefore can be connected to other systems that comply with those same standards.
10. Optical Disc - an electronic data storage medium that can be written to and read using a low-powered laser beam.
11. Original Record - a public record in the format as created or received, or in the format as reproduced in accordance with standards approved by the Mississippi Department of Archives and History.
12. PDF (Portable Document Format) - a file format used to represent documents in a manner independent of application software, hardware, and operating systems, officially released as an open standard on July 1, 2008 and published by the International Organization for Standardization as ISO 32000-1:2008.

13. PPI (Pixels Per Inch) - the number of pixels displayed in an image. Pixel is short for picture element - a single point in a graphic image.

14. Public Records - all documents, papers, letters, maps, books, tapes, photographs, films, sound recordings or other materials regardless of physical form or characteristics made or received pursuant to law or ordinance or in connection with the transaction of official business by any agency or by any appointed or elected official. Books, periodicals and other published material normally found in a library are excluded from this definition. (as defined in *Mississippi Code Annotated* §25-59-3).

15. TIFF (Tagged Image File Format) - a family of bitmap file formats for describing and storing color and grayscale images.

16. WORM (Write Once, Read Many) - storage media (usually recordable CD-ROM or optical disc) that is not rewritable. Information can only be written to the disc once. It is permanently stored on the disc.