

MICHIGAN DEPARTMENT OF HISTORY, ARTS, AND LIBRARIES

TECHNICAL STANDARDS FOR MICROFILMING DIGITAL RECORDS

(By authority conferred on the department of history, arts, and libraries by sections 2 and 4 of the records reproduction act, 1992 PA 116, section 2 as amended by 2004 PA 572 and section 4 as added by 2004 PA 574, MCL 24.402 and 24.404)

Section 1. Applicability and intent

Sec. 1. These standards apply to the conversion of public records from digital image to microfilm for the purpose of maintaining official records in a microfilm format. These standards focus primarily on the production of roll microfilm but also apply to other micrographic formats.

Section 2. Definitions

Sec. 2. (1) As used in these standards, the following definitions apply:

- (a) "Act" means the records reproduction act, 1992 PA 116, MCL 24.401 et seq.
- (b) "Agency" means a governmental entity or a governmental official acting in his or her official capacity, including but not limited to a state officer, employee, department, bureau, center, division, board, commission, council, authority, or other independent or dependent subunit of the executive branch of state government; an agency, board, commission, or council in the legislative branch of state government; the judiciary; and a county, city, village, intercounty, intercity, or regional governing body, council, school district, special district, or other municipal corporation, or a board, department, commission, council, or other independent or dependent subunit of a municipal corporation.
- (c) "Base-plus-fog" means film that has been processed but not exposed.
- (d) "Department" means the department of history, arts, and libraries.
- (e) "D-MAX" means the highest density achieved in an exposed and processed image.
- (f) "D-MIN" means the lowest density achieved in an exposed and processed image.
- (g) "DPI" means dots per inch.
- (h) "Expungement" means the removal or destruction of an image from a microfilm recording.
- (i) "Quality assurance" means the process by which the total product is examined to ensure that the quality criteria initially established in the pre-production test have been met.
- (j) "Quality control" means and consists of those steps that are incorporated into the production process and are designed specifically to reduce error.
- (k) "Reduction ratio" means the relationship between the dimensions of an original and the dimensions of the corresponding microcopy.
- (l) "Resolution" means the ability of a photographic system, including but not limited to the film, lens, and processing, to record fine detail.
- (m) "Standards" means the technical standards adopted in this set of technical standards.
- (n) "State archives" means the state archives of Michigan.

(2) The definitions listed in section 1 of the act apply to these standards.

Section 3. Archival records

Sec. 3. Some microfilm formats and techniques are not suitable for the long-term retention of public records. Issues that affect the permanent preservation of the records include but are not limited to organization, indexing, format, resolution, and storage media. An agency with a question about the suitability of a microfilm format or technique for archival storage may contact the state archives for information and technical assistance.

Section 4. Agency responsibilities

Sec. 4. (1) An agency is responsible for managing its records and information. An agency shall implement appropriate policies, procedures, and business practices, in order to ensure that a digital recordkeeping system selected by the agency will protect the authenticity, reliability, integrity, and usability of the records contained in the system and will address a migration path to a new system which will provide complete protection for the full retention period of the records stored in the system.

(2) If an independent contractor, a consultant, or some other party outside of government produces a reproduction of a record for an agency, the agency shall ensure that the party acts in compliance with these standards. An agency may ensure compliance through execution of a contract that contains adequate legal safeguards.

Section 5. Reduction ratio standard

Sec. 5. (1) The selection of a reduction ratio is application specific. An agency shall take into account the characteristics of the record, the tasks the system is designed to perform, and the user requirements to be satisfied when selecting a reduction ratio.

(2) The collection of imaged documents to be transferred to film shall not lose legibility or crop content.

Section 6. Resolution standard

Sec. 6. (1) Resolution for microfilm created from digital images is controlled at the time of document scanning. A device used to create microfilm from digital images shall have a self-test process to ensure that all of the available pixels are consistently available for recording purposes.

(2) Microfilm images shall exhibit a degree of legibility and readability comparable to the digital source images.

Section 7. Density standard

Sec. 7. (1) D-MAX range shall be from .80 to 1.20.

(2) D-MIN shall not be greater than .06.

(3) Base-plus-fog shall not exceed 0.06.

(4) Density measurements shall be made using a properly calibrated densitometer.

(5) An agency shall justify a different density level if the agency determines through testing that the desired results of the capture process cannot meet the agency's business needs using the standard density parameters.

Section 8. Image sequencing standard

Sec 8. An agency shall organize images on microfilm created from digital images in a manner that facilitates retrieval.

Section 9. Indexing standard

Sec. 9. (1) An agency may use any functional method to index microfilm records, if the method adequately addresses all necessary characteristics of the microfilmed records and the end-user retrieval requirements.

(2) Acceptable indexes include but are not limited to databases, spreadsheets, file naming conventions, registers or other finding aids.

Section 10. Targeting standard

Sec. 10. An agency shall use the following film targets to certify the authenticity and facilitate the quality inspection process of the records being filmed:

(a) At the beginning of roll, digital (manufacturers supplied) writer test targets manufacturer's self-test, start target/certification of authenticity

(b) Throughout roll, flash targets, correction targets, omission targets, retake targets or addition targets as necessary.

(c) At the end of roll, end target/certification of authenticity, manufacturer's self-test writer test targets.

Section 11. Film leader/trailer standard

Sec. 11. Not less than a 3-foot leader of film shall be included before the first target of the roll of film. Not less than a 3-foot trailer shall be included after the last target of the roll of film.

Section 12. Media standard

Sec. 12. (1) Original or master film shall be polyester based silver gelatin film, LE-500.

(2) An agency shall produce a duplicate for daily use, if microfilm is expected to be handled more than 10 times during the film's lifetime.

Section 13. Silver film processing standard

Sec. 13. (1) An agency shall process exposed microfilm within two weeks of capturing an image on microfilm.

(2) For more information regarding proper processing of silver film, an agency may refer to ISO 18901:2002 – Imaging materials – Processed silver-gelatin type black-and-white films – Specifications for stability and/or ANSI/AIIM MS23-1998 – Practice for Operational Procedures / Inspection and Quality Control of First-Generation Silver-Gelatin Microfilm of Documents .

(3) An agency shall perform testing for residual thiosulfates not less than once per week.

(4) LE-500 films shall contain not more than 0.014 g of thiosulfate ion per m².

Section 14. Splicing standard

Sec. 14. Films created from digital images shall not contain splices.

Section 15. Expungement standard

Sec. 15. (1) An agency shall perform expungement of microfilm images only in accordance with a court order or to satisfy an approved retention policy.

(2) Expungement shall be performed by using the abrasion method.

(3) An agency shall create and maintain an expungement certificate that details the reason for the expungement, the authority to expunge, the date of the original filming and the date of the expungement. The expungement certification shall indicate that the original and all known copies have been expunged.

Section 16. Quality control standard

Sec. 16. (1) An agency shall assemble a sample set of digital source images equivalent in characteristics to the source documents for the purposes of evaluating film results against defined quality criteria prior to production.

(2) An agency shall establish quality control criteria based upon the results of the pre-production quality sample. The production process shall take account of the quality control criteria.

(3) An agency shall produce a new sample for quality if the conditions or attributes of documents to be microfilmed change or if the equipment used to microfilm the documents change.

Section 17. Quality assurance standard

Sec. 17. (1) An agency shall adopt written quality assurance procedures for inspection of microfilm images that are produced.

(2) Quality assurance shall be conducted before the digital images are destroyed.

(3) For more information regarding quality assurance, an agency may refer to ANSI/AIIM TR34-1996 - Sampling Procedures for Inspection by Attributes of Images in Electronic Image Management (EIM) and Micrographics Systems.

APPENDIX A

REFERENCES

NATIONAL STANDARDS AND RECOMMENDED PRACTICES

The following national standards and recommended practices issued by the American National Standards Institute (ANSI), the Association for Information and Image Management (AIIM), the National Association of Photographic Manufacturers (NAPM), and the International Association for Standards (ISO) may contain additional information that will assist state agencies and local government with complying with Michigan law. These publications are available from the Association for Information and Image Management, 1100 Wayne Ave., Suite 1100, Silver Spring, MD 20910-5699, <http://www.ansi.org/>.

ANSI/AIIM MS6-1981 (R1993) (R1999) – Microfilm Packaging Labeling

ANSI/AIIM MS8-1988 (R1998) – Image Mark (Blip) Used in Image Mark Retrieval Systems

ANSI/AIIM MS14-1988 (R1996) – Specifications for 16 and 35 mm Roll Microfilm

ANSI/AIIM MS23-1998 – Practice for Operational Procedures / Inspection and Quality Control of First-Generation Silver-Gelatin Microfilm of Documents

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

ANSI/AIIM TR2-1998 – Glossary of Document Technologies

ANSI/AIIM TR34-1996 – Sampling Procedures for Inspection by Attributes of Images in Electronic Image Management (EIM) and Micrographics Systems

ANSI/NAPM IT9.17-1993 – Photography-Determination of Residual Thiosulfate and Other Related Chemicals in Processing Photographic Materials-Methods Using Iodine-Amylose, Methylene Blue and Silver Sulfide

ISO 15489-1:2001 – Information and Documentation – Records Management – Part 1 – General

ISO 15489-2:2001 – Information and Documentation – Records Management – Part 2 – Guidelines

ISO 18901:2002 – Imaging materials – Processed silver-gelatin type black-and-white films – Specifications for stability

ISO 18911:2000 – Photography – Processed safety photographic films – Storage practices (formerly ANSI/NAPM IT9.11-1993)