
CHAPTER 3. MICROGRAPHIC STANDARDS

- 3-1 Purpose of Micrographics Standards. Uniformity in micrographics is essential to:
- A. Enhance the exchange and use of information,
 - B. Provide for the compatibility of equipment,
 - C. Reduce to a minimum the variety of equipment required by varying formats and reduction ratios.
- 3-2 Departmental Policy on Micrographics Standards. All elements of the Department shall adhere to standards established by the National Archives and Records Administration (NARA), the Association of Information and Image Management (AIIM), and the American National Standards Institute (ANSI). See Appendix 4 for a complete listing of standards. Requests for any exception to these standards shall be addressed to the Departmental Records Management Officer (DRMO), and shall include a complete justification.
- 3-3 Applicability of Micrographics Standards. Format and reduction ratio standards prescribed in this handbook apply to all new micrographics systems developed after the effective date of this handbook. Existing systems and applications not in conformance with these formatted and reduction ratio standards shall be evaluated periodically to weigh the merits of converting such systems to standard systems.
- 3-4 Source Document Microfilming Standards. Micrographics systems involving the microfilming of original records (source documents) shall conform to the following standards:
- A. Preparation. The integrity of the original records must be maintained by ensuring that the original microforms are satisfactory substitutes for and serve the purposes of the original records.
 - 1. Copies must be complete and contain all record information shown on the originals.
 - 2. Records must be arranged, identified, and indexed so that any individual document or component of the records can be located.

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3. As a minimum, the records shall include information identifying the Departmental element; the title of the records; the number or other identifier for each unit of film; security classification, if any; and the inclusive dates, names or other data identifying the first and last records on each unit of film.
- B. Film stock. The film stock used to make long-term (archival quality) or medium-term microforms shall conform to Federal Standard 125, Film Photographic Process (for permanent record use).
1. Existing micrographics systems which do not produce silver gelatin original microfilm for long-term records must produce a silver gelatin duplicate meeting this standard.
 2. To take advantage of emerging technology, source document systems that employ non-silver gelatin film may be approved by the Departmental Records Management Officer for non-archival medium term records, or for archival records where provision is made for production of a silver gelatin duplicate meeting this standard.
- C. Indices. When indices, registers or other finding aids are microfilmed, place them in one of the following:
1. The first frames following identifying and targeting frames,
 2. At the beginning of a roll of film,
 3. In the last frames of a microfiche or microfilm jacket.
- D. Formats. Use standard formats and reduction ratios in all micrographics systems. In normal document recording applications, documents may be microfilmed in the comic mode.
1. Roll microfilm (16mm) and (35mm) for source document recording shall be:
 - a. Simplex format
 - b. 24:1 reduction ratio
 2. Microfiche (105mm) for source document recording shall be:
 - a. AIIM type 1 format (ANSI PH5.9) of 98 frames.
 - b. Arranged in 7 rows x 14 columns.

c. Effective ratio 24:1.

E. Microfilm Processing.

1. To achieve archival quality, microform must be processed so that the residual thiosulfate concentration will not exceed one microgram of sodium thiosulfate per square centimeter as measured by the Methylene Blue Method (ANSI PH4.8).
2. If reversal processing is used, it must be complete full photographic reversal, i.e., develop, bleach, expose, develop, fix and wash.

F. To measure microfilm resolution:

1. Use the Microcopy Resolution Test Chart, NIST-SRM 1010a for planetary cameras.
2. Use AIIM Standard Test Chart for rotary microfilm cameras, ANSI/AIIM MS17.
3. Minimum resolution in microforms of source documents shall be:
 - a. Archival records and long-term records - Quality Index 5 at third generation level.
 - b. Non-permanent records and medium-term records - Quality Control of First Generation, Silver- Gelatin Microfilm of Documents, ANSI/AIIM MS23.

G. To measure microfilm density:

Depending upon the type of original documents filmed, gross densities shall be from 0.8 to 1.4 in clear base film.

1. Recommended density aim point is 1.1 (ANSI/AIIM MS23).
2. Ultimate density criteria are that the microfilm be legible for its intended use (direct reading, duplicating film on hardcopy printing) and that all images in a roll can be printed at the same printing exposure.

- A. Film stock. The film stock used to make archival quality microforms shall be safety base permanent record film conforming to Federal Standard 125, Film Photographic and Film Photographic Process.
- B. Indices. All computer generated indices or other finding aids shall be placed following the data on roll film in the last frames of the microfiche.
- C. Formats. Use the following formats and reduction ratios conforming to ANSI PH5.18 in all computer output microfilm systems for:
 - 1. 16 millimeter: Simplex format, comic or cine mode, 48:1 reduction ratio.
 - 2. Systems with an optional additional reduction ratio, 24:1 (range 27:1 to 30:1 may be used).
 - 3. Microfiche:
 - a. NMA Type 7 format of 270 frames
 - b. Effective reduction ratio of 48:1
 - c. Arranged in 15 rows x 18 columns
 - d. Standard 105mm (148mm x 105mm) in size.
- D. Microfilming Processing.
 - 1. Archival quality film processing must be accomplished as specified in 3-4e above.
 - 2. COM systems using non-silver gelatin film, when approved by the Departmental Records Management Officer (DRMO) for temporary records, will employ such methods as specified by DRMO to assure longevity of records appropriate to their use.
- E. Legibility tests:

In COM generated microfilm, resolution is measured in terms of legibility, as specified in ANSI/AIIM MS1. In examining test samples, each character or symbol must be identifiable without

error.

- F. Density.

Densities for silver gelatin films developed by conventional processing to produce a positive appearing image shall:

1. Produce a density difference of 0.8 minimum, measured as visual diffuse transmission density; with a background density (including base density) of 0.4 maximum, as described in AIIM MS-1.
2. Silver gelatin films developed by complete reversal processing to produce a negative appearing image shall produce a density difference of 0.8 minimum and a line density of 0.6 maximum, with a background density (including base density) of 1.1 minimum.

3-6 Government and Industry Standards. Government and Industry Standards cited in this handbook are listed in Appendix 4.

3-7 Documentation for Microfilm Production.

A. From the initial receipt of information to be microfilmed, whether source document or COM, through all production phases to delivery of the processed film, accurate records must be maintained by the production facility. This applies to both internal resources and to external facilities, whether Government or commercial. Such records are necessary to maintain accountability, provide an audit trail, and to document quality control. Recommended formats for such recordkeeping are contained in ANSI/AIIM MS-23.

B. Recommended recordkeeping includes:

1. Maintaining logs indicating:

- a. Date filmed,
- b. Job control number,
- c. File identification,
- d. Camera operator,
- e. Number of frames photographed, and

f. Number of rolls or fiche produced.

2. Keep individual logs of all work produced on each camera, for multiple camera installations and operations, indicating:

- a. Date,
 - b. Operator, and
 - c. Job control number.
3. All roll film should contain an information sheet, completed by the originator and filmed as an integral part of the job. This information sheet should indicate requirements for the particular job. The information sheet should also be filmed on source document microfiche, except in those instances where its inclusion would necessitate generating another fiche.
 4. Film processing activities must maintain records on:
 - a. Equipment maintenance (including cleaning),
 - b. Chemistry changes, and
 - c. Control readings.
 5. Inspection of processed film is based upon requirements noted in the information sheet, and should be accomplished for all film, whether internally or externally processed. Records of all inspected film should be maintained by the processing facility (internal processing) or by the receiving office (external processing).
 6. Records of all rejected film must be maintained with:
 - a. Notations of affected portions and reasons for rejection.
 - b. Name of inspector and date of rejection.
 7. All deliveries of completed film and returned records must be adequately receipted.
- C. The prescribing of standardized record formats is not anticipated. However, should inspection of production facilities indicate such a need, such forms may be developed.