

**DEC
STANDARD
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**FORMAT &
QUALITY
REQ. FOR
MICRO-
FORMS**

TITLE: MICROGRAPHICS: FORMAT AND QUALITY REQUIREMENTS FOR MICROFORMS

ABSTRACT: This standard describes the general format and quality requirements for each type of microform produced by Digital Equipment Corporation. The requirements are based on appropriate industry standards and U.S. Government specifications that have been adopted by the Digital Micrographics Committee.

F O R I N T E R N A L U S E O N L Y

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1 INTRODUCTION

Microform is a generic term for any form, on film or paper, that contains microimages. One of these forms is microfiche, which is a sheet of microfilm that contains multiple microimages arranged in a grid pattern. The following major benefits of using microfiche (which also apply to other microform) provide key reasons for using microform throughout Digital for documentation applications.

- o Reduced printing costs - microfiche can be produced for about one-tenth the cost of printing on paper.
- o Quicker dissemination - turnaround time to prepare and disseminate information on microfiche instead of paper can put the material in the hands of the user in one-fourth the time.
- o Faster retrieval - microfiche provides finger-tip accessibility. All you do is select the desired microfiche and insert it in a reader.
- o Lower cost distribution - six microfiche can be sent by air mail coast to coast for only \$0.15; the equivalent amount of information on paper air mailed the same way would cost \$6.24.
- o Space savings - microfiche offers compactness of the file. Over ten thousand documents can be stored in an area 105mm x 148mm x 25.4mm (4" x 6" x 1").
- o Ease of handling - no longer is it necessary to juggle cumbersome catalogs and manuals, or fumble through stapled, dog-eared pages, often misfiled.
- o File uniformity - each microfiche is produced to a standard format, which eliminates the handling of documents of all shapes and sizes.
- o Increased durability - microfiche can withstand much more rugged handling than paper.
- o Rapid updating - microfiche reduces updating delays. Instead of having dozens of pages to file when updated material is received, only one or two microfiche need be slipped in the file.
- o User acceptance - the use of neat, uniform microfiche files and microfiche readers, rather than a scramble of bulky catalogs or cluttered reference files, reflects the efficiency of an office.

1.1 PURPOSE

The purpose of this standard is to establish the general format and quality requirements that apply to each type of microform produced by Digital. It is intended for use as a reference by those organizations within the corporation that produce microform products, either for sale to customers or for use by groups within Digital.

1.2 SCOPE

The requirements for microform characteristics and production practices at Digital are generally consistent with those of the micrographics industry, as documented in the National Microfilm Association (NMA), American National Standards Institute (ANSI), and relevant government endorsed standards. This standard identifies and refers to the appropriate industry or government standard that has been or will be adopted by the Micrographics Committee at the Digital standard for each type of microform.

Referenced standards are not reprinted in this standard. Additional information is provided only where the requirements for Digital-produced microforms differ from those in adopted standards.

1.3 RESPONSIBILITIES

It is the responsibility of each organization within Digital that produces microforms to comply with the requirements of this standard.

Those organizations that prepare and submit source documentation to outside microform vendors are responsible for assuring that vendor supplied microforms meet the requirements of this standard.

This standard is maintained by the Micrographics Committee. Requests for changes to the requirements of this standard must be submitted, in writing, to the Micrographics Committee. Such requests must include the following information.

1. An explanation of the requested change.
2. The reason for submitting the change request.
3. An analysis of the impact on operations and costs that compares projected results if the change is made with projected results if the standard is retained in its current form.
4. The requesting organization's plans regarding future compliance with the current requirements (i.e., migration to current microform standards).

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1.4 REFERENCED STANDARDS

1.4.1 Industry Standards

<u>Designation</u>	<u>Title</u>	<u>Origin</u>
MS1 - 1971	Quality Standards for Computer Output Microfilm	NMA
MS2 - 1976 (ANSI PH5.18)	Format and Coding Standards for Computer Output Microfilm	NMA
MS8 - 1974 (ANSI PH5.28)	Document Mark (Blip) Used in Image Mark Retrieval Systems	NMA
MS5 - 1975 (ANSI PH5.9 - 1975)	Microfiche of Documents	NMA
RS14 - 1976	The Users Guide to Standard Microfiche Formats	NMA
MS100 - 1971	Glossary of Micrographics	NMA
ANSI PH2.19	Conditions for Diffuse and Doubly Diffuse Transmission Measurements (Transmission Density)	ANSI
ANSI PH4.8	Methylene Blue Method for Measuring Thiosulfate and Silver Densitometric Method for Measuring Residual Chemicals in Films, Plates, and Papers	ANSI
MS110	Operational Practices Manual	NMA
RS1	Basic U.S. Government Micrographics Standards and Specifications	NMA



1.4.2 Military Specifications and Standards

<u>Designation</u>	<u>Title</u>	<u>Origin</u>
MIL-M-9868D	Microfilming of Engineering Documents, 35MM, Requirements for	U.S. Government
MIL-C-9877B including Amendment 1	Card, Aperture	U.S. Government
MIL-C-9949, Amendment 3 only	Card, Copy	U.S. Government
MIL-STD 105	Sampling Procedures and Tables for Inspection	U.S. Government

1.4.3 Digital Standards

<u>Designation</u>	<u>Title</u>
DEC STD #33 Sec 0-2	<u>Microfilm Aperture Cards - Creation and Distribution Process</u>
DEC STD #29	<u>Graphic COM System: Requirements and Procedures</u>

Copies of referenced standards can be obtained from:

DEC Standard Administration:
MLJ-2/E56 DTM 223-2954

2 MICROFORM REQUIREMENTS/CHARACTERISTICS

The following categories of microforms are produced by various organizations within Digital.

1. Microfiche from source documents.
2. Roll microfilm from source documents.
3. Microfilm aperture card from source documents.
4. Computer Output Microfilm (COM) generated versions of the above categories.

The industry and government-endorsed standards that have been adopted by the Micrographics Committee as the Digital standard format for each type of microform are specified in the following paragraphs. Terminology used in these paragraphs is in accordance with MS100-1971, Glossary of Micrographics.

Note

Refer to the most recent version of a standard unless otherwise indicated.

2.1 MICROFICHE

The general format requirements for microfiche are described in the NMA document RS14-1976, The User's Guide to Standard Microfiche Formats. A summary of the general microfiche formats is presented in Table 1. The reductions, as listed in Table 1, are effective reductions that are fixed when applied to COM systems. For source document applications, the listed reductions are to be considered as maximums.

Microfiche produced by Digital will comply with the requirements of NMA MS5 (ANSI PH5.9) Microfiche of Documents.

This standard specifies requirements for:

1. Physical characteristics of the microfiche.
2. Types of microfiche, including size and orientation of frames and microimages.
3. Reduction.
4. Heading, pagination, frame identification and cutting mark.

2.2 QUALITY REQUIREMENTS

2.2.1 Density

Density of source document microforms (first-generation) shall be read in accordance with ANSI PH2.19. Minimum background density shall be 0.8. Maximum background density shall be 1.25. Maximum base density shall be 0.4.

Density of full-reversal processed computer output microforms shall be read in accordance with ANSI PH2.19. Minimum background density shall be 1.8. Maximum background density shall be 2.0. Maximum base density shall be 0.4.

2.2.2 Resolution

Resolution on film should exceed 90 line pairs per millimeter for source documentation microforms. Computer output microfilm should exceed 75 line pairs per mm.

Table 1
Microfiche Formats

TYPE	ARRANGED FOR	REDUCTION **	COLUMNS	ROWS	NO. OF FRAMES		USE
					8 1/2 X 11	11 X 14	
1	8 1/2 X 11	24X	14	7	98	49	Documents or COM
2	8 1/2 x 11	20X	12	5	60	--	Documents
3	11 x 14	24X	9	7	63	63	Documents or COM
	11 x 14	27X	10	8	80	80	
	11 x 17	24X	7	7		49 (11 x 17)	
4	8 1/2 x 11	42X	25	13	325	156*	Documents or COM
5	11 x 14	42X	16	13	208	208	Documents or COM
6	8 1/2 X 11	48X	28	15	420	210*	Documents or COM
7	11 X 14	48X	18	15	270	270	Documents or COM

* A single image occupies two frames.

** Typically, 24X viewers can be used for reduction ranges 20X-32X:
12X viewers can be used for reduction ranges 32X-48X.

The following exceptions to NMA MS5 (ANSI PH5.9) apply:

1. The requirements for frame placement and pagination of microfiche produced by Documate II equipment for use in manual retrieval systems is to be defined by the organization preparing the microfiche.
2. The requirement for the test target used for resolution quality control is not required for material micropublished by Technical Documentation Micropublishing.

Note

The Micrographics Committee recommends that the test target be included wherever possible, to comply with the recognized industry standards.

3. Image System equipment and format used in the Purchase Specification System are excepted from any NMA MS5 (ANSI PH5.9) requirements.

2.3 ROLL MICROFILM

Roll microfilming (16mm and 35mm) for non-aperture card applications may follow any industry standard practices consistent with requirements for the specific application. Image orientation of cine, comic, duo, duplex, and four track are included.

When on-film indexing is used, document mark placement will conform to the requirements of NMA MS8 (ANSI PH5.20) Document Mark (Blip) Used in Image Mark Retrieval Systems. This standard specifies the location, dimensions and density of the document mark. Code line indexing will conform to manufacturer's standards for the retrieval equipment specified in the application. Other proprietary on-film indexing (e.g., "Oracle") will conform to equipment manufacturers' specifications.

Flash targets may be used. Their placement will be determined by the applications requirements.

This standard specifies requirements for:

1. Non-perforated 16mm and 35mm applications.
2. Microfiche applications.

2.4 MICROFILM APERTURE CARDS

Aperture card microfilming will comply with the requirements of the following specifications/standards:

1. MIL-M-9868D, Requirements for Microfilming Engineering Documents 35mm,
2. MIL-C-9877B including Amendment 1, Aperture Cards,
3. MIL-C-9949, Amendment 3, Copy Cards.

These documents specify the general format of the microfilm and the dimensions of the various aperture card types. Standard procedures and practices for aperture card coding, image locations and orientation are described in DEC STD 195, Process Control and Distribution of Microfilm Aperture Cards.

3 PRODUCTION/QUALITY CONTROL REQUIREMENTS

The referenced standards, specifications, and specific practices required for the production and quality control of microforms are described in NMA MS110, Operational Practices Manual and RSL, Basic U.S. Government Micrographics Standards and Specifications.

The microform production methods and quality control procedures required in this standard represent the general requirements, not the specific practices that each organization may need to do the job. It is expected that the microform producers within Digital will develop and document any standard operating procedures they determine necessary to comply with the requirements stated in this standard. Such documentation is to be maintained and kept up to date by the originating organizations.

3.1 CERTIFICATION OF RECORDS

Certification of records and documents on microfilm will be done in accordance with policies and procedures established and maintained by the Corporate Records Management group. Questions pertaining to certification should be directed to Corporate Records Management attention: Records Manager MS/B86.

3.2 MICROFICHE RESOLUTION EXCEPTION

Micropublished material on microfiche is not required to have the test target used for resolution quality control purposes. However, the use of test targets is encouraged by the Micrographics Committee.

3.3 PROCESSED FILM THIOSULPHATE CONTENT

Processed camera film shall comply with ANSI PH4.8, Determining Sulphate Content of Processed Black and White Photographic Film. General business documentation microfilm may be sample-tested using a MIL-STD 105, or equivalent, statistical sampling plan.

Films of permanent corporate records such as those to be archived by Corporate Records Management, are required to be tested on an individual basis; sampling is not allowed.

3.4 COMPUTER OUTPUT MICROFILM (COM)


The format and coding for computer output microfilm will comply with the requirements of NMA MS2 (ANSI PH5.18), Format and Coding Standards for Computer Output Microfilm.

The quality control requirements for computer output microfilm shall be in accordance with NMA MS1, Quality Standards for Computer Output Microfilm.

The processed film will be subjected to the control guidelines outlined in ANSI PH4.8 for thiosulphate content measurement.

4 MICROGRAPHICS EQUIPMENT AND MATERIALS

Equipment and materials purchased for use in micrographics applications by Digital will conform to the following general requirements.

- a. Production equipment used to create or duplicate microforms will provide a product that meets industry standards for formats and size.
- b. Materials used in the production of micrographics systems will, in their final form, conform to industry sizes and packages (such as jackets, cartridges, leaders, etc.).
- c. Only high-quality silver films will be used for original records - both in source document microfilming and COM production. Dry silver imaging processes will not be used for permanent records retention. 

Applications for electrophotographic, non-silver media and other non-standard products must be submitted for review by the Micrographics Committee.

- d. Micrographics viewers and hardcopy output devices purchased by Digital will use industry standard microform sizes and formats.
- e. Image Systems' equipment and replacement parts and supplies required to support the Purchase Specifications system are specifically authorized by this standard. New applications that require this equipment will be reviewed by the Micrographics Committee prior to their acceptance.

