

American National Standard for Information and Image Management —

Micrographics — Rotary (Flow) Microfilm Camera Test Chart and Test Target — Descriptions and Use

An American National Standard prepared by
The Association for Information and Image Management International

Approved as an American National Standard

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Abstract:

This standard describes specifications for creating and using a test chart and a test target for rotary (flow) microfilm cameras and a method for evaluating the photographic quality and mechanical performance of rotary microfilm cameras.

ANSI/AIIM MS17-2001 — Micrographics — Rotary (Flow) Microfilm Camera Test Chart and Test
Target — Descriptions and Use

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Foreword

(This foreword is not a part of American National Standard for Information and Image Management – Micrographics – Rotary (Flow) Microfilm Camera Test Chart and Test Target – Descriptions and Use. ANSI/AIIM MS17-2001.)

This standard describes a methodology for determining several aspects of the optical quality of rotary microfilm cameras, permitting comparisons of products designed for the same purpose. Evaluations of how consistent a single camera's quality is over time is also included. This standard features editorial revisions of ANSI/AIIM MS17-1992 and supercedes editions previously published in 1992, 1983 and 1977.

Two annexes are included with this standard, annex A. An example of a completed test report form (also annex A1, Blank test report form), and annex B, Resolution and capstan check. These annexes are informative annexes, and are not a part of the standard. Physical test charts are used in the methodology covered in this standard.

The wide variety of material now being microfilmed with this type of equipment, from overwritten tissue copies through checks, letters, carbons, and long graphical material, has indicated the use of "generic" test charts.

The use of such generic charts will provide valid comparison of equipment and mechanical/optical conditions, making it possible to select or optimize the choice of film, processing, size of type font, etc., for any specific installation. A chart can also be used to ensure continuous quality of microfilming or to help locate specific equipment malfunctions.

Chart materials specified are both paper and heavy-duty, cleanable plastic film, giving users a selection that is, as nearly as possible, compatible with their system control problems.

The charts do not purport to be typical in image content or contrast, stiffness or weight. Rather, they are tools to be used to determine machine performance. Remember other factors—the type of microfilm used and the type of film processing, for example—also have a major effect on the appearance of the recorded chart and must be considered fully when evaluating the resulting images.

The charts and test methodology described here enable the user to measure photographic quality and mechanical performance of 16mm flow cameras.

The test charts include a variety of type sizes. The overall dimension of the rotary camera test chart is 216 mm X 297 mm (8.5 inch X 11.7 inch). This test chart can be trimmed to metric A4 size of 210 mm X 297 mm (8.3 inch X 11.7 inch) or "A" letter size of 216 mm X 279 mm (8.5 inch X 11.0 inch). These sizes were selected not only because of trends toward the use of metric sizes in the U.S., but in recognition of the growing use of American equipment in areas employing metric-size originals.

Obtaining the charts

X112 Rotary Camera Test Chart (Plastic) and X113 Rotary Camera Test Chart (Paper) are available separately from this standard from the Association for Information and Image Management (AIIM), Publication Sales, 1100 Wayne Avenue, Silver Spring, Maryland 20910; (301) 587-8202; fax: (301) 587-2711 and other sources.

References in the text to the plastic and paper charts refer to X112 and X113, above. The charts are *not* standards.

ANSI/AIIM MS17-2001 — Micrographics — Rotary (Flow) Microfilm Camera Test Chart and Test Target — Descriptions and Use

This standard is divided into three sections:

- 1) Specification for creating a chart, including size, materials, and quality.
- 2) Method for using the chart, which covers microimage quality, mechanical performance, correlation of optical and mechanical performance, reduction, and, in an annex, resolution and capstan check.
- 3) Method for using a white paper (blank) target with an explanation of test report forms.

Suggestions for improvement of this standard are welcome. They should be sent to the Chair, AIIM Standards Board, Association for Information and Image Management, 1100 Wayne Avenue, Silver Spring, Maryland 20910-5699.

At the time it approved this standard, the AIIM Standards Board had the following members:

Name of Representative	Organization Represented
Herbert J. White, II, <i>Chair</i>	Genealogical Society of Utah
Robert Breslawski	Eastman Kodak Company
Betsy Fanning	Association for Information and Image Management International
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The AIIM Micrographics Quality and Control Committee, C10, had the following members at the time it reviewed, revised, and approved this standard.

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Michael J. Badal	Badal Associates
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American National Standard for Information and Image Management —**Micrographics — Rotary (Flow) Microfilm Camera Test Chart and Test Target — Descriptions and Use, ANSI/AIIM MS17-2001****1 Scope and purpose****1.1 Scope**

This standard

- 1) describes the content of a test chart (paper or plastic) to be used in determining the optical and mechanical performance of rotary microfilm cameras (see Section 4);
- 2) describes the test method for use of a test chart (paper or plastic) and a target (see Sections 5 and 6, respectively);
- 3) provides a sample test report form which is suitable for consistent recording of the test results. See annex A1, Blank test report form.

1.2 Purpose

This standard helps evaluate the photographic quality and mechanical performance of a rotary microfilm camera, giving the purchaser a means of comparing various products or assessing how consistent the quality of a single camera is over time. The standard helps ensure continuous quality of microfilming and helps pinpoint product malfunctions.

2. Normative references

All standards are subject to revision. When the following documents are superseded by an approved revision, that revision may apply.

2.1 Referenced American National Standards

ANSI/AIIM MS23-1998, Standard Recommended Practice - Production, Inspection and Quality Assurance of First-Generation, Silver Microforms of Documents.

2.2 Other referenced standards

ANSI/ISO 3334-1991 (ANSI/AIIM MS51-1991). Micrographics – ISO Resolution Test Chart No. 2 – Description and Use

2.3 Referenced publications

AIIM TR2-1998, Technical Report for Information and Image Management – Glossary of Document Technologies

2.4 Related standards

ANSI PH2.17-1985, Photography (sensitometry) – Density Measurements – Geometric Conditions for Reflection Density

ANSI PH2.19-1990, Photography (sensitometry) – Density Measurements – Geometric Conditions for Transmission Density

ISO 216-1975, International Standard for Writing Paper and Certain Classes of Printed Matter – Trimmed Sizes – A and B Series

ISO 5/2-1991, Photography – Density Measurements – Part 2: Geometric Conditions for Transmission Density

ISO 5/3-1984, Photography – Density Measurements – Part 3: Spectral Conditions

ISO 5/4-1985, Photography – Density Measurements – Part 4: Geometric Conditions for Reflection Density

T442-1988, Technical Association for the Pulp and Paper Industry (TAPPI) Standard for Spectral Reflectance Factor Transmittance, and Color of Paper and Pulp (Polychromatic ILLUM).

3 Definitions

The following definitions apply to terms that appear in this standard. Other terms are defined in ANSI/AIIM TR2.

3.1 Density: (1) In micrographics, the light-absorbing quality of a processed photographic image expressed as the logarithm to the base 10 of the ratio of incident radiant flux to the transmitted or reflected flux. (2) In electronic imaging, the number of bits in a single linear track measured per unit of length of the recording medium.

3.2 Density, background: The opacity of the noninformation area of a microform. See also Density, 3.1.

3.3 Density, line: The opacity of the line work, letters or other nonbackground information of a microform. See also Density, 3.1.

3.4 Density, optical: See Density, 3.1.

3.5 Font: Complete family of a given size of type, including capitals, small capitals, and lowercase, together with figures, punctuation marks, ligatures, etc. Italics are spoken of as a separate font.

3.6 Glitch: Momentary interruption or hesitation in the flow of one or more components in a mechanical device.

NOTE: May cause “loss line” in rotary cameras.

3.7 Ladder pattern: Band of parallel lines that are perpendicular to the length direction of the band and in which line width and line spacing are equal and uniform throughout the band length.

3.8 Legible: Capable of being read or deciphered.

3.9 Longitudinal: Parallel to the edges of a roll film.

3.10 Longitudinal lines: Defects in a film image that appear parallel to the film edges.

NOTE: May be caused by problems in film exposure, handling, or processing.

3.11 Loss line: A blurring of a small section of a ladder pattern.

3.12 Optical skew: A condition in rotary microfilm equipment in which angles on the target are not truly reproduced in the film image, i.e., square corners do not appear as right angles on the film.

3.13 Reduction: (1) Quotient of a linear dimension of an object and the corresponding linear dimension of the image of the same object expressed as the number of times a given linear dimension is reduced. (2) Copy smaller than the original; or, its size being expressed as the number of times a given linear dimension is reduced.

3.14 Rotary Camera: Camera used for rotary filming.

3.15 Rotary filming: Method of microfilming in which the movements of the document and the film are synchronized during exposure.

3.16 Synchronize: To take place at the same time, e.g., the film and documents in a rotary camera are synchronized.

3.17 Target: (1) Any document or chart containing identification information, coding, or test charts. (2) Aid to technical or bibliographic control that is photographed on the film preceding or following the document.

3.18 Test chart: Image, comprised of different (or a number of the same) test targets, that is designed for test and evaluation of imaging systems.

3.19 Test element: Image designed for test and evaluation of imaging systems, e.g., a specific line of type that is set in a particular point size, a specific collection of horizontal and vertical lines and spaces, a line that represents a specific frequency, i.e., 50 cycle/mm and 152.4 mm (6.0 inch) length.

3.20 Test pattern: Image, comprised of a collection of test elements, e.g., resolution test elements, frequency test elements, that is designed for test and evaluation of imaging systems.

3.21 Test target: (1) Image comprised of test patterns and/or test elements designed for test and evaluation of imaging systems. (2) High-quality form slide used to evaluate computer-output microfilmer quality. See also Test chart, 3.18; test element, 3.19; and test pattern, 3.20.

3.22 Transverse lines (ripples, variations): Defects in a film image that appear as bands of lighter or darker areas perpendicular to the film edges. Such defects in a rotary camera film image are frequently traceable to voltage fluctuations or mechanical problems that result in lighting variations or lack of synchronization. See examples in ANSI/AIIM MS23.

4 Content of the test chart

4.1 General

Several aspects of the test chart are described in this section, including an explanation and specifications for use. A photograph of the test chart is also included.

4.2 General description and explanation of the test chart