

**INCH-POUND**

**MIL-M-38761B**  
**14 February 1994**  
**SUPERSEDING**  
**MIL-M-38761A**  
**26 August 1977**

## **MILITARY SPECIFICATION**

### **MICROFILMING AND PHOTOGRAPHING OF ENGINEERING/TECHNICAL DATA AND RELATED DOCUMENTS, REQUIREMENTS FOR**

This specification is approved for use by all departments and agencies of the Department of Defense (DoD).

#### **1. SCOPE**

**1.1 Scope.** The principle objective is to provide 80-column military tabulating card (see 6.4.4) construction, microfilm carrier bonding process, and testing requirements for engineering data (see 6.4.1) as set forth within the DoD Engineering Data Reproduction Systems (EDRS) standardization area. Requirements for five kinds of engineering data tabulating cards (aperture, camera, copy, nonaperture, and image) and two kinds of microfilm carriers (bonding tape and a pocket holder) are covered.

**1.1.1 Application.** Suppliers, contractors, civil agencies, DoD activities, other government agencies, and any other users are cautioned that all requirements in the previous issue have been rewritten, renumbered, combined, or deleted. New requirements have been added. It must also be understood that some requirements are stratified throughout the specification and, that the figures (i.e., illustrations not drawn to scale) are only provided to further clarify the requirements. So, it is necessary to read the entire specification (i.e., text, tables, figures, and footnotes).

User comments and recommendations for improvement are invited. Please use Standardization Document Improvement Proposal, DD Form 1426, when submitting your comments or recommendations. A sample form with the Preparing Activity (PA) information inserted is located on page 27. If a DD Form 1426 is not available, a letter will suffice. Mail the DD Form 1426 or letter to: HQ AFMC/ENIS, 4027 Col Glenn Hwy, Suite 300, Dayton OH 45431-1672.

**AMSC N/A**

**AREA EDRS**

**DISTRIBUTION STATEMENT A.** Approved for public release; distribution is unlimited.

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a. MIL-M-38761 is one in a group of publications associated with 80-column military tabulating cards. The specific card identities are : (i) camera cards, DD Form 1562A; (ii) aperture cards, DD Form 1562B through H; (iii) copy cards, DD Form 1562H through K; and (iv) nonaperture cards, DD Form 1309 and DD Form 1310.

b. MIL-M-38761 is a specification within the DoD EDRS (formerly designated EDMS) standardization area. However, related information in other DoD standardization areas and Federal Supply Classifications (FSCs) should not be overlooked (e.g., FSC 6750, FSC 6760, DRPR, and PACK).

c. MIL-M-38761 requirements are intended to promote, not inhibit, the philosophies (see 4.2) of Total Quality Management (TQM) particularly when a card manufacturer, an engineering data supplier (see 6.4.3), or any other user is contractually tasked with implementing the requirements.

d. MIL-M-38761 reflects the present Defense Management Review (DMR) cost-effective standardization efforts. One of the DMR efforts is to use Non-Government Standards (NGSs) to the maximum extent when they are available and practical (see 6.7). The development, coordination (consensus), and adoption of the referenced NGSs (see 2.2) is a result of the Government-Industry Partnering process .

**1.1.2 Inch-pound designation.** Even though the width (35mm) of the card's microfilm is a standard metric unit, MIL-M-38761 is assigned an inch-pound designation. The reason is the majority of the MIL-M-38761 dimensional requirements are standard inch-pound units. However, within the textual paragraphs, metric dimensions (i.e., mathematic equivalents) are shown in parentheses. It must be understood that the mathematical equivalent is only a soft conversion of the inch-pound requirement.

**1.1.3 Acquisition Management Systems Control (AMSC) designation.** MIL-M-38761 by itself cannot generate engineering/technical data source documents (i.e., product design requirements). Therefore, an AMSC number is not applicable (see 6.3).

## 1.2 Classification

**1.2.1 Card classification.<sup>1</sup>** There are three card classifications:

Card Type I. An aperture card (see 6.4.4a) whose rectangular hole (aperture) either contains a Type I carrier (see Footnote 3) and a protection sheet (see 3.3.2) or it contains a Type II carrier (see Footnote 3); also, a camera card (see 6.4.4b) whose rectangular hole (aperture) contains a Type I carrier (see Footnote 3) and undeveloped (raw stock) camera silver microfilm.

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<sup>1</sup> To avoid confusion, do not misinterpret or intermix the card classifications with the Type I, Type II, and Type III microfilm classifications. Microfilm classifications are specified in MIL-M-9868, paragraph 1.2.

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**Card Type II.** A copy card (see 6.4.4c) whose rectangular hole (aperture) contains a Type I carrier (see Footnote 3) and undeveloped (raw stock) noncamera diazo microfilm.

**Card Type III.** A tabulating card (see 6.4.4e) that does not have an aperture and does not contain microfilm.

**2. APPLICABLE DOCUMENTS****2.1 Government documents.**

**2.1.1 Specifications, standards, and handbooks.** The following references form a part of MIL-M-38761 to the extent specified. Unless otherwise specified, the issue of the reference is identified in the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto or as cited in the solicitation. (See 6.2a.)

**SPECIFICATIONS****FEDERAL**

- |           |   |   |
|-----------|---|---|
| G-C-116   | - | Cards, Tabulating.  |
| L-F-315b  | - | Film, Direct Positive, Diazotype.<br>Note the April 25, 1965 issue applies. |
| PPP-B-636 | - | Boxes, Shipping, Fiberboard.  |

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- |            |   |  |
|------------|---|--|
| MIL-B-131  | - | Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat Sealable User. |
| MIL-M-9868 | - | Microfilming of Engineering Data, 35mm, Requirements For.                      |
| MIL-C-9877 | - | Cards, Aperture.   |
| MIL-C-9949 | - | Cards, Copy.   |

**STANDARDS****MILITARY**

- |             |   |   |
|-------------|---|---|
| MIL-STD-129 | - | Marking for Shipment and Storage.                                   |
| MIL-STD-804 | - | Formats and Coding of Aperture, Camera, Copy, and Tabulating Cards. |

**HANDBOOKS**

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**MIL-HDBK-331 – Directory of DoD Engineering Data Repositories.**

(Copies of the above references are available from the Department of Defense Single Stock Point (DoDSSP) - Defense Printing Service Detachment Office, 700 Robbins Avenue, Bldg. 4D, Philadelphia PA 19111-5094.)

**2.1.2 Other government documents, drawings, and publications.** The following references form part of MIL-M-38761 to the extent specified. Unless otherwise specified, the reference is the latest issue or the issue cited in the solicitation. (See 6.2b.)

**PUBLICATIONS****FEDERAL REGULATIONS**

- 29 CFR - Part 1910, Subpart C – General Safety and Health Provisions.
- 40 CFR - Part 240, Subchapter I – Solid Wastes.

**DoD REGULATIONS**

- DoD 5200.1-R – Information Security Program Regulation.

**DoD MANUALS**

- DoD 5220.22-M – Industrial Security Manual for Safeguarding Classified Information.

**DoD FORMS**

- DD250 – Material Inspection and Receiving Report.

(Copies of the above references are available from the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402-0001.)

- DD1309 – Model or Type Designation Card.
- DD1310 – Part and Drawing Number Card.
- DD1562 - series of cards<sup>2</sup> – Dual Purpose Engineering Document Card.

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<sup>2</sup> Unprocessed aperture, camera, and copy cards make up this DD Form 1562 card series (see 6.4.4a, 6.4.4b, and 6.4.4c).

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(For MIL-M-38761 purposes, the referenced cards (forms) shall be purchased from sources identified in the following General Services Administration (GSA) schedules. The cards and their sources are listed in Schedule, 75 VIII A; except camera cards and their sources are listed in Schedule, 67 IV B. Copies of the schedules are available from GSA, 4900 Hemphill St., PO Box 6477, Fort Worth TX 76115.)

**2.2 Non-government publications.** The following references form a part of MIL-M-38761 to the extent specified. Unless otherwise specified, the issue of a DoD adopted reference is identified in the DoDISS and supplement thereto. The issue of a reference not DoD adopted is as listed or as cited in the solicitation. (See 6.2b.)

**AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)**

- |                     |  |
|---------------------|--|
| ANSI IT9.6-1991     | - Photographic Films - Specification for Safety Film.  |
| ANSI X3.11-1990     | - General Purpose Paper Cards for Information Processing. (DoD adopted.)   |
| ANSI/AIIM MS43-1988 | - Recommended Practice for Operational Procedures/Inspection and Quality Control of Duplicate Microforms. (DoD adopted.) |

(Copies of the above references are available from the American National Standards Institute, ATTN: Customer Service, 11 West 42nd Street, 13th Floor, New York NY 10036. DoD adopted references are also available from the DoDSSP - Defense Printing Service Detachment Office, 700 Robbins Avenue, Bldg. 4D, Philadelphia PA 19111-5094.)

**ASSOCIATION FOR INFORMATION AND IMAGE MANAGEMENT (AIIM)**

- |               |  |
|---------------|--|
| AIIM TR2-1992 | - Glossary of Imaging Technology. (DoD adopted.) |
| AIIM TR4-1989 | - Silver Recovery Techniques. (DoD adopted.)     |

(Copies of the above references are available from the Association for Information and Image Management, ATTN: Bookstore, 1100 Wayne Avenue, Suite 1100, Silver Spring MD 20910-5699. DoD adopted references are also available from the DoDSSP - Defense Printing Service Detachment Office, 700 Robbins Avenue, Bldg. 4D, Philadelphia PA 19111-5094.)

**2.3 Order of precedence.** In the event of a conflict between MIL-M-38761 requirements and the cited references, the MIL-M-38761 requirement takes precedence. However, MIL-M-38761 requirements do not supersede applicable laws and regulations unless a specific exemption is in effect.

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**2.3.1 Copies.** Suppliers (see 6.4.3), in connection with acquisition contracts (see 6.2), that do not have copies of the cited references (see 2.1.1, 2.1.2, and 2.2) should obtain them from the procuring activity or as directed by the contracting officer.

**3. REQUIREMENTS****3.1 80-column tabulating cards.**

**3.1.1 Card stock.** Paper requirements shall comply with ANSI X3.11-1990 or G-C-116. Note the only difference between ANSI X3.11 and G-C-116 is the weight and size requirement (sample quantity) for testing purposes. See 3.1.5 for microfilm requirements.

**3.1.2 Edge coating.** Unless otherwise specified by the procuring activity, during the manufacturing process, the edges of the paper stock shall be coated. The coating shall be a mixture of 25 percent vinyl acetate and 75 percent toluol or an equivalent substance. A single or a double coating application shall be specified. This process is used to make sure a card's top and bottom edges (long sides) are coated. (See 6.2c.)

**3.1.3 Unique card elements.** Unless otherwise specified by the procuring activity, a card's color, striping, security classification identification, and any overprint statement shall comply with MIL-STD-804. The alpha designation (see 1.1.1a) for aperture, camera, and copy cards (see 6.4.4a, 6.4.4b, and 6.4.4c) and the designation's relationship to the card's microfilm shall comply with MIL-M-9868, Table IX. (See 6.2d.)

**3.1.4 Formats.** As specified by the procuring activity, in accordance with MIL-STD-804, an image card (see 3.1.6 and 6.4.4d) shall be formatted as either "H" (upper legends) or "T" (lower legends). The Hollerith information (keypunch coding) for all cards shall comply with MIL-STD-804, Tables I, II, and III. (See 6.2e.)

**3.1.5 Microfilm.** The raw stock in a camera card (silver microfilm) or the raw stock in a copy card (diaz microfilm) shall comply with ANSI IT9.6-1991. Furthermore, a copy card's diazo microfilm shall also comply with L-F-315b, 24 April 1965. When exposing and processing the silver microfilm in a camera card or mounting frames of camera or noncamera (duplicating) silver roll microfilm into an aperture card, the requirements set forth in MIL-M-9868 apply. When duplicating camera and noncamera silver roll microfilm or when duplicating noncamera diazo (sensitized) microfilm, the requirements set forth in ANSI/AIIM MS43-1988 apply.

**3.1.6 Image cards.** An image card shall be generated by the following methods and, as specified by the procuring activity, any method or combination of methods shall be designated for delivery (see 3.2). (See 6.2f.)

**Method A.** *The process of mounting or inserting a developed (imaged) frame of camera silver roll microfilm into an unprocessed aperture card.*

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- Method B.** The process of exposing and processing the camera silver microfilm in an unprocessed camera card.
- Method C.** The process of mounting or inserting a developed (imaged) frame of duplicating silver roll microfilm (noncamera duplicate negative) into an unprocessed aperture card.
- Method D.** The process of transferring (reproducing) a processed aperture card or a processed camera card image (silver microfilm) to an unprocessed copy card (diaz microfilm) in a card-to-card duplicating device.
- Method E.** The process of transferring (reproducing) a processed copy card image (diaz microfilm) to an unprocessed copy card (diaz microfilm) in a card-to-card duplicating device.

**3.2 Deliverable product medium.** The deliverable medium shall either be image cards (see 3.1.6 and 6.4.4d) or unprocessed cards. (see 1.1.1a and 1.2.1). Also, as necessary, processed nonaperture cards (i.e., a Type III card) which supplement an image card's (i.e., a Type I or Type II card) Hollerith information shall also be delivered. (See 6.2f.)

**3.3 Workmanship.** Unprocessed and processed cards and their microfilm shall not have any manufacturing or processing flaws (e.g., scratches, tears, finger marks, etc.) that would affect the quality of any future image card reproductions (see 3.3.6) made therefrom.

**3.3.1 Microfilm carriers.<sup>3</sup>** The kind of bonding and construction method used determines whether a carrier is designated Type I or Type II. A Type I carrier's tape location (card face or card back) or a Type II carrier's pocket opening (card face or card back) determines a carrier's classification (Class 1 or Class 2). The tape (Type I carrier) or the pocket opening (Type II carrier) are always located on the opposite side of the card's microfilm emulsion layer. Class 1 applies when located on the card face and Class 2 applies when located on the card back. As specified by the procuring activity, the carrier shall either be bonding tape (i.e., a Type I carrier) or a suspension pocket holder (i.e., a Type II carrier). In either instance, a portion of the carrier material is bonded to the card and the remaining portion holds the card's microfilm in its aperture. (See 6.2g.)

**a. 20 gram weight test (see 4.3).** The holding strength (adhesion) of bonding tape (Type I carrier) or the material of a suspension pocket holder (Type II carrier) to the

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<sup>3</sup> Do not confuse a carrier's Type I or Type II designation with the Type I and Type II card classifications specified in 1.2.1. A Type I carrier is a single piece of pressure-sensitive (cold seal) bonding tape. The tape is bonded to either the card face or card back. A Type II carrier is two pieces of static-free (optically clear polyester material) that shall not adhere to itself. One piece is bonded to the card face and one piece is bonded to the card back. Note MIL-C-9949 provides additional microfilm carrier information.

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card's paper stock shall comply with a one-minute weight drop (peel back distance) of no more than 0.50 inches (12.70mm).

**b. 10 gram weight test (see 4.4).** The holding strength (adhesion) of bonding tape (Type I carrier) to the card's microfilm shall comply with a one-minute weight drop (peel back distance) of no more than 0.50 inches (12.70mm).

**c. Microfilm retention test (see 4.5).** The retainability of a suspension pocket holder (Type II carrier) shall not allow any portion of the microfilm to project through the pocket opening.

**3.3.2 Protection sheet (see 4.6).** A removable piece of glassine or equivalent material used to protect the exposed adhesive portion of an unprocessed aperture card's bonding tape (Type I carrier). Prior to the mounting of a frame of silver roll microfilm (camera or duplicating) into an aperture card's aperture, the protection sheet shall remain bonded to the Type I carrier.

**3.3.3 Buildup<sup>4</sup> (see 4.7).** The area on a card where the microfilm carrier is located (i.e., bonded to the card). When the procuring activity specifies a Type I carrier (bonding tape), Style A buildup shall apply. When the procuring activity specifies a Type II carrier (suspension pocket holder), Style B buildup shall apply. Style A buildup shall not be more than 0.0002 inches (0.005mm) greater than the thickness of the card. Style B buildup is more than 0.0002 inches (0.005mm) but shall not be more than 0.0055 inches (0.140mm) greater than the thickness of the card. (See 6.2h.)

**3.3.4 Non-blocking characteristic (see 4.8).** When a group of cards are fanned, no card(s) shall stick together.

**3.3.5 Card dimensions (see 4.9).** Cards associated with unclassified engineering data shall have their upper left corner diagonally cut and their other three corners rounded. The dimensional requirements shall comply with Figure 1. The diagonal cut and corner rounding shall not be done for cards associated with classified engineering data. The dimensional requirements for card width, card length, card thickness, and aperture size (rectangular hole) shall comply with Figure 2. Microfilm carrier dimensions shall comply with Figure 3.

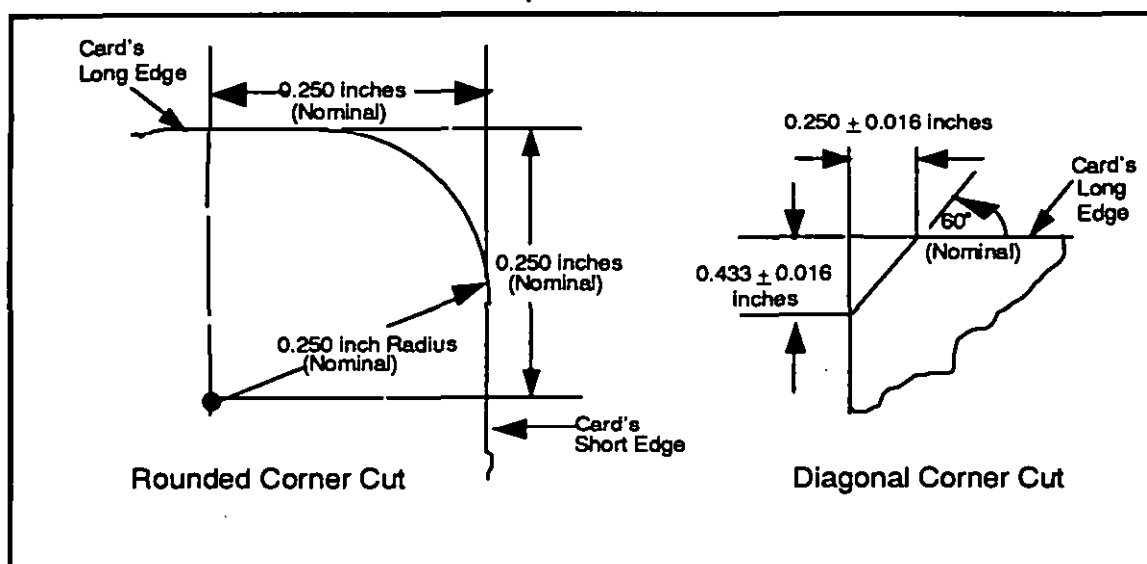
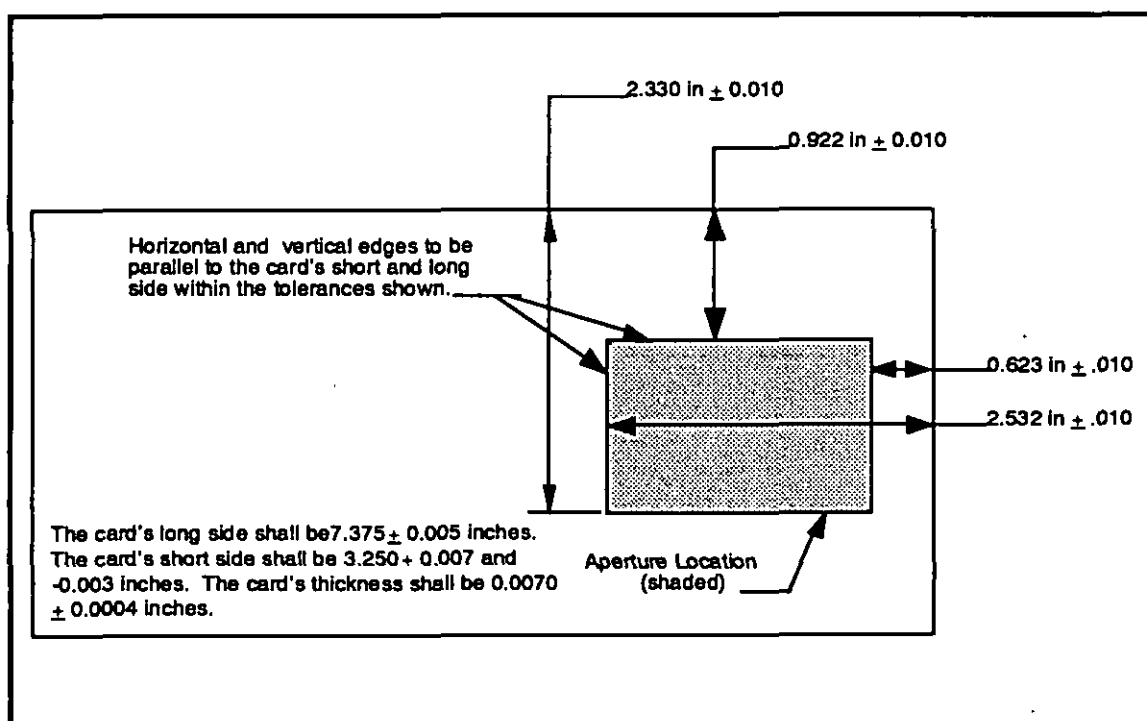
**3.3.6 Card construction elements (see 4.10).** The cards shall be free of any defect recorded in Table I. However, if any requirement recorded in Table I or any other defect is only cosmetic and will not affect future image card reproductions (see 3.3) and handler safety (see 3.4), the cards are acceptable.

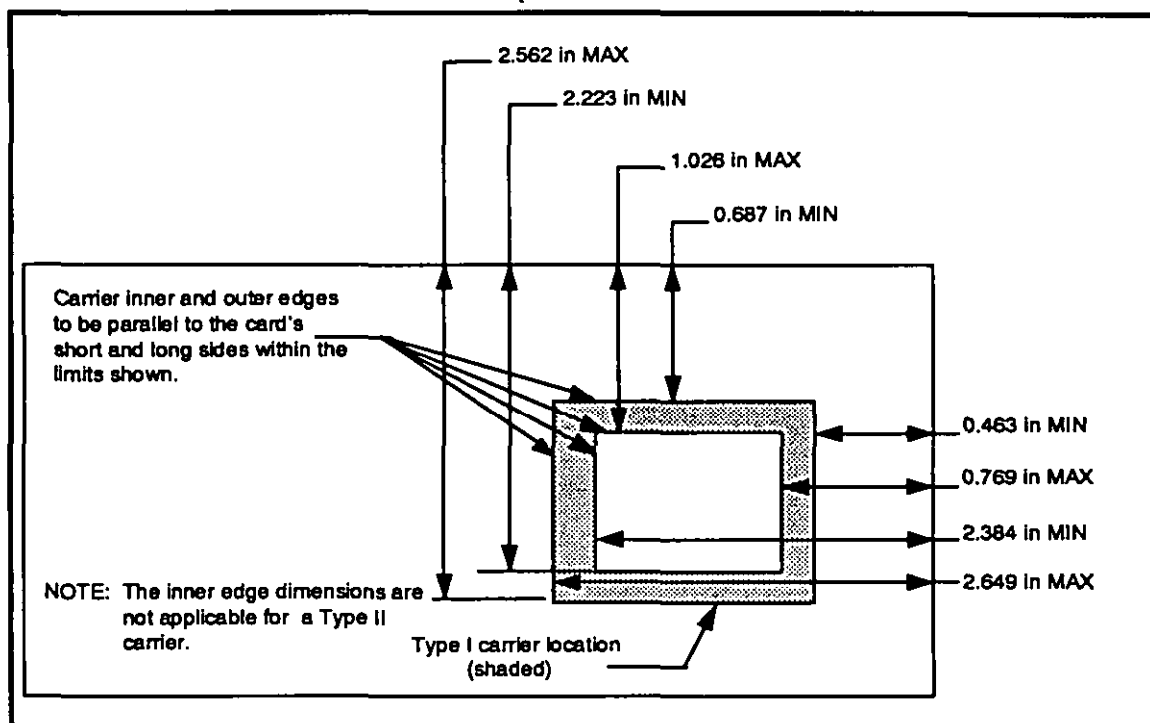
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<sup>4</sup> Note MIL-C-9877 provides additional buildup information.



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FIGURE 1. Rounded corner and diagonal corner cutFIGURE 2. Card size and aperture dimensions

**MIL-M-38761B****FIGURE 3. Microfilm carrier dimensions**

**3.4 Safety.** Card handling precautions shall comply with all manufacturers' recommendations, in-house agency or department regulatory direction, and Occupational Safety and Health Administration (OSHA) requirements particularly 29 CFR, Part 1910, Subpart C.

**3.4.1 Environmental.** Chlorofluorocarbons (CFCs), halons, chlorinated solvents, and Ozone Depleting Substances (ODSs) are not applicable for MIL-M-38761 purposes. However, when discarding any card, applicable state laws, local laws, in-house agency or department regulatory direction, federal laws particularly 40 CFR, Part 240, Subchapter I shall be complied with. Furthermore, when discarding silver microfilm or a card that contains silver microfilm, the requirements set forth in AIIM TR4-1989 also apply.

**3.5 Terms.** Definitions for words and phrases used in MIL-M-38761 can be found in AIIM TR2-1992 (see 6.4); see 6.5 for acronyms.

## **4. QUALITY ASSURANCE PROVISIONS**

**4.1 Responsibility for inspection.** Unless otherwise specified in the contract or purchase order, the supplier (see 6.4.3) is responsible for inspecting and performing the tests set forth in Table II. The absence of a test requirement in Table II shall not relieve the supplier of the responsibility to deliver cards that comply with all MIL-M-38761

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requirements and any other contractual requirement. A supplier's in-house quality inspection process may be used to ascertain from its viewpoint contractual conformance. However, it shall not relieve the supplier of the responsibility to perform all prescribed tests. When specified by the procuring activity, located on page 25 is an example of a supplier's certificate of conformance that shall be copied, completed, and delivered with each unprocessed card purchase. (See 6.2i.)

**TABLE I. Visible defects\***

1. A card's edge is nicked.
2. The card is torn, creased, or folded.
3. The card's upper left corner cut is not within tolerance.
4. The corner cuts of the card's rectangular hole (aperture ) are not sharp right angles.
5. The card's color is incorrect.
6. The color of a card's stripe or the location of the stripe is incorrect.
7. A card's microfilm carrier (bonding tape or pocket opening) is on the wrong side.
8. The unexposed portion of an unprocessed aperture card's bonding tape adhesive substance is not continuous.
9. An unprocessed aperture card's protection sheet is not large enough to appropriately protect the unexposed portion of the bonding tape.
10. A segment of the card's microfilm carrier is torn, pleated, wrinkled, or missing.
11. The microfilm carrier's bonding to the card is not continuous.
12. A foreign substance is stuck to a card's microfilm carrier adhesive, its exterior portion, or the interior portion of a suspension pocket holder.
13. A suspension (pocket holder) microfilm carrier material is not static free, optically clear, or it adheres to itself.

\* Microfilm requirements set forth in Table VI of MIL-M-9868 also apply.

**4.1.1 Responsibility for compliance.** Unless otherwise specified in the contract or purchase order, a DoD in-plant quality assurance inspector or any other designated contractual representative is responsible for the inspection, certification, and verification compliance. However, the procuring activity reserves the right to: (a) have independent testing performed by someone other than the supplier; (b) have the destination point (usually a primary DoD

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engineering data repository<sup>5</sup>) perform the inspection, certification, and verification; or (c) implement any combination of the inspection, certification, and verification options. (See 6.2i.)

**TABLE II. Test requirements**

Test	Reqt. Para.	Test Para.
Carrier to card bonding	3.3.1a	4.3
Carrier to microfilm bonding	3.3.1b	4.4
Retention	3.3.1c	4.5
Carrier to protection sheet bonding	3.3.2.	4.6
Buildup	3.3.3	4.7
Non-blocking (card fanning)	3.3.4	4.8
Dimensional measurements	3.3.5	4.9
Visual	3.3.6	4.10

**4.2 Test measurement.** The Acceptable Quality Level (AQL) and testing procedures shall comply with 4.3 through 4.10. The prescribed testing and AQL requirements are necessary to produce an acceptable unprocessed card (product). Furthermore, the tests are used to quantify the effectiveness (quality assurance and control) of a card's construction (design) process and its microfilm carrier (bonding) process. However, it must be understood that emphasis on the construction and bonding processes will invariably increase product (card) quality but inspection by itself (which is only an information gathering function) will not improve TQM philosophies (see 1.1.1c) nor the quality of the card.

**4.2.1 Preconditions.** A DD Form 250 is usually required with each delivery of unprocessed/processed cards. Whether a DD Form 250 is, or is not used, the term "lot" means the number of unprocessed cards or the number of processed (image) cards delivered in an individual shipment. For testing purposes, the term "lot" means the number of sample cards (i.e., unprocessed cards which are not to be shipped) required to perform the prescribed tests. When the contract or purchase order requires multiple shipments, sample cards from each lot being shipped shall be tested. A minimum of 48 hours up to a maximum of 15 days since the cards were manufactured shall have elapsed

<sup>5</sup> A primary DoD repository is where the official record copy of data (camera masters and noncamera silver duplicate masters) are stored and, where copies of the master data are made and distributed to the repository's customers. MIL-HK BK-331 provides addresses and identifies the kind of engineering data stored at each repository.

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for any sample card selected for testing. Prior to testing, the selected sample cards shall be acclimatized for a period of 6 hours in a controlled environment where the temperature shall be 70 plus or minus 3 degrees Fahrenheit (approximately 21 degrees Celsius) and, the relative humidity shall be 50 plus or minus 10 percent.

**4.3 Carrier to card bonding test.** This test is applicable for a Type I and a Type II carrier. Randomly select three sample cards. The selected samples shall be tested to comply with 3.3.1a. As illustrated in Figure 4, a test rack, clipboard, one-inch scale, stop watch, alligator clip, and a 20 gram weight (which includes the weight of the alligator clip) are required. The scale shall be calibrated in one-sixteenth inch increments. The weight shall be within plus or minus 0.10 grams, its lower edge shall be flat, and it shall be attached by a small wire to the alligator clip. The following procedures apply:

- Slit (cut line #1) the card's carrier material and peel it back approximately 0.375 inches (9.53mm)(i.e., make a tab) as shown in the carrier to card inset of Figure 4. Attach the 20 gram weight to the tab. Note either long edge of the carrier may be used as long as cut line #1 is parallel and adjacent to the long edge of the card's aperture.
- Place the card in the test rack and adjust the scale to make sure that the lower edge (flat end) of the weight is in alignment with the scale's zero marking as shown in Figure 4. Prior to releasing the weight, recheck the zero scale alignment.
- Release the weight and start the stop watch.
- Observe the weight drop and after one minute has elapsed, record the distance that the weight has dropped.

If any one of the sample cards fail (i.e., the weight dropped more than one inch), the entire lot shall be rejected.

**4.4 Carrier to microfilm bonding test.** This test is only applicable for a Type I carrier. Randomly select three sample cards. The selected samples shall be tested to comply with 3.3.1b. The test procedure is identical to the requirements set forth in 4.3 with two exceptions. The exceptions are that a 10 gram weight, not a 20 gram weight, is used, and a second cut (cut line #2) as shown in the carrier to microfilm inset of Figure 4 is necessary.

**4.5 Microfilm retention test.** This test is only applicable for aperture cards with a Type II carrier. Randomly select two sample cards. The selected samples shall be tested to comply with 3.3.1c. This test procedure is identical to the requirements set forth in 4.6 with one exception. The exception is that a chip of microfilm shall be inserted into the pocket of the Type II carrier and the chip's retainability, not the protection sheet, is tested.

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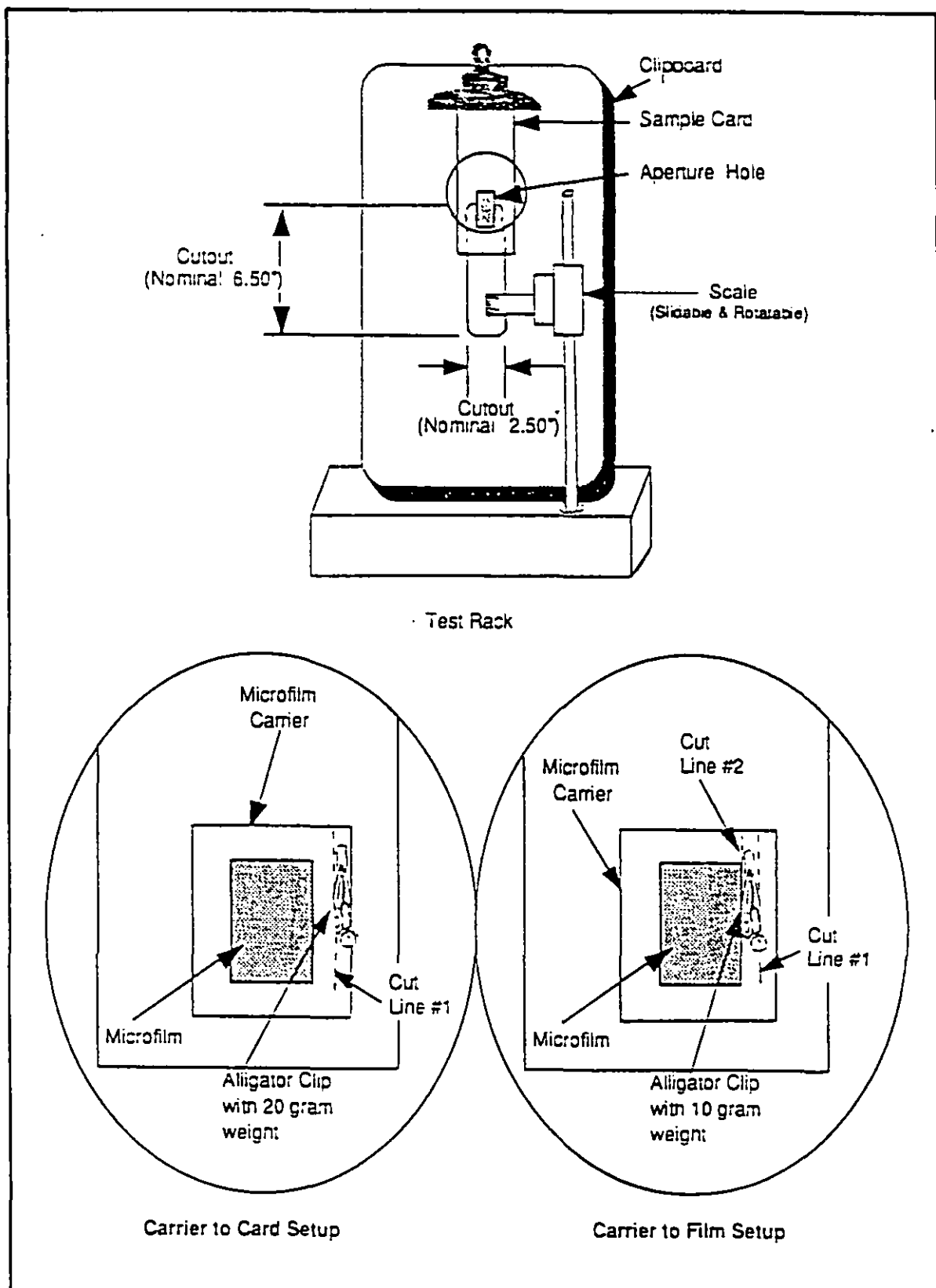


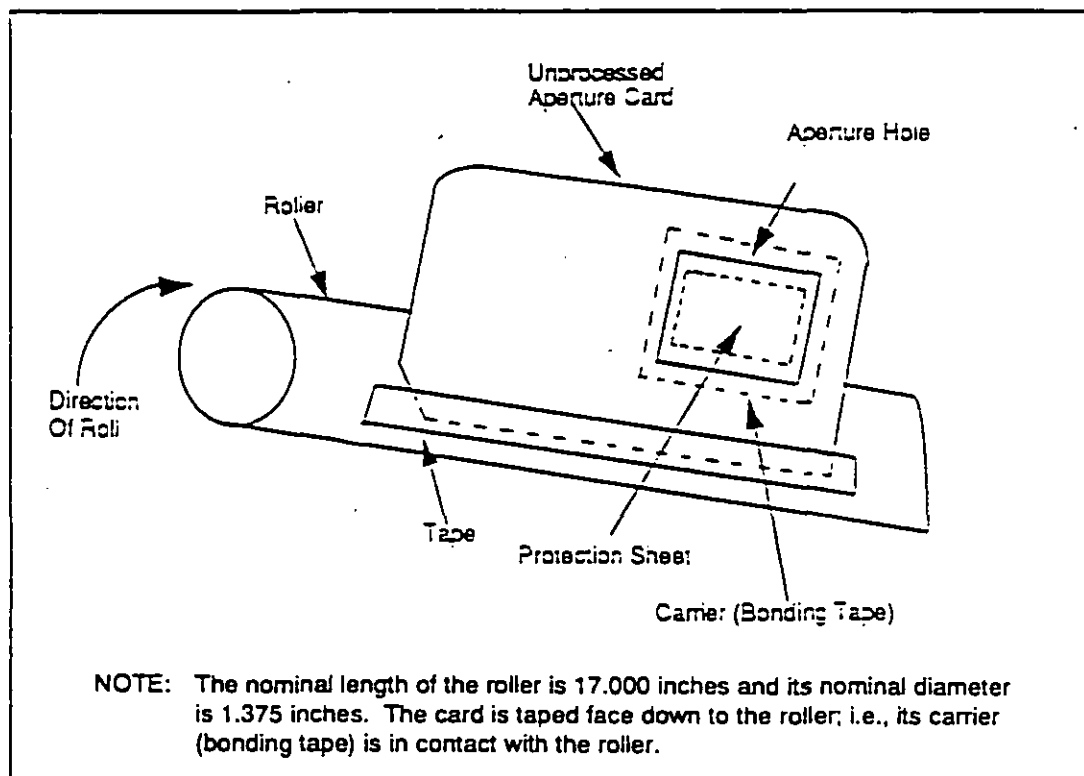
FIGURE 4. Carrier to card/microfilm test setup

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**4.6 Carrier to protection sheet bonding test.** This test is only applicable for aperture cards with a Type I carrier. Randomly select two sample cards. The selected samples shall be tested to comply with 3.3.2. The following procedures apply:

- As shown in Figure 5, tape the top edge of one sample card to the roller. Place on a flat surface and in one continuous motion roll across the entire width of the card. This test step shall be done twice.
- Tape the bottom edge of the other sample card to the roller. Place on a flat surface and in one continuous motion roll across the entire width of the card. This test step shall be done twice.

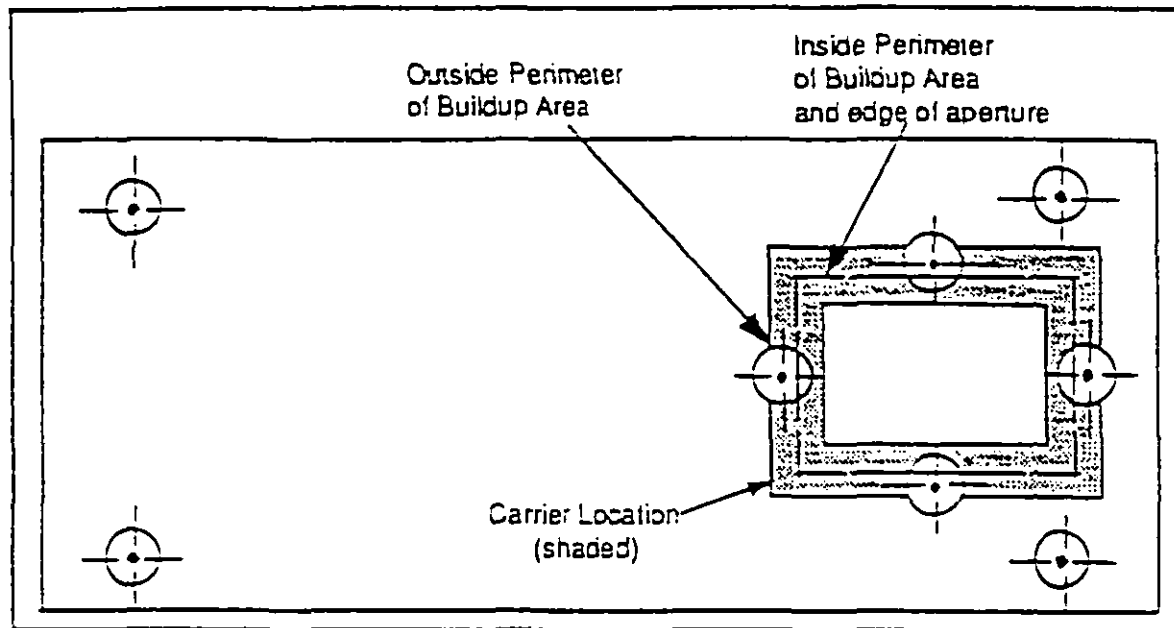
If either sample card fails, the entire lot shall be rejected.



**FIGURE 5. Protection sheet bonding test layout**

**4.7 Buildup thickness test.** This test is applicable for either Style A or Style B buildup. Randomly select ten sample cards. The selected samples shall be tested to comply with 3.3.3. Bunch the ten sample cards together. At the locations shown in Figure 6, use a micrometer (manual or motorized) and measure the thickness of the card stock and the thickness of the buildup. The largest of the four measurements for both the card stock thickness and the buildup thickness applies. If the measurement is satisfactory, the test is complete. If the measurement is not satisfactory, a motorized micrometer with a digital readout shall be used to individually measure each of the 10 sample cards. If

more than one individual card measurement is not satisfactory, the entire lot shall be rejected. Note when measuring a group of 10 cards, the 3.3.3 requirements shall be multiplied by 10.



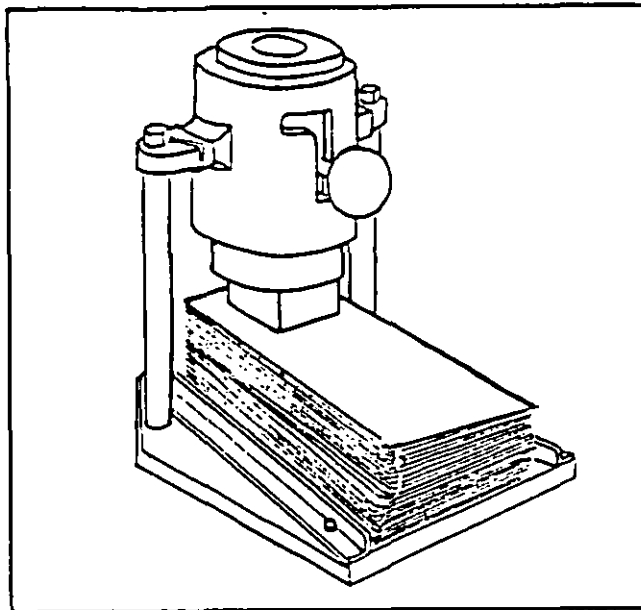
**FIGURE 6. Buildup thickness measurement locations**

**4.8 Non-blocking test.** A minimum of 50 sample cards is required. However, for small orders (i.e., less than 50,000 cards), a minimum of 10 sample cards shall suffice. The selected samples shall be tested to comply with 3.3.4. The following procedures apply:

- As applicable, randomly select either 10 or 50 sample cards.
- Place the selected cards in a device (similar to the illustration shown in Figure 7) that will apply a constant weight of 11.00 plus or minus 0.50 pounds (approximately 5 kilograms) on the aperture area specifically the bonded portion of the carrier.
- Place the device in an oven and maintain a temperature of 115 plus or minus 5 degrees Fahrenheit (approximately 47 degrees Celsius) for a period of 24 hours.
- Remove the device from the oven, release the weight, and recondition (i.e., acclimatized) the sample cards for a period of 6 hours.
- Upon completion, fan the cards.

If any one of the sample cards fail, the entire lot shall be rejected.





**FIGURE 7.** Example of an eleven pound test set-up

**4.9 Measurement test.** Randomly select three sample cards. The selected cards shall be tested to comply with 3.3.5, Figure 1, Figure 2, and Figure 3. Using an optical comparitor, record the dimensions. If any measurement does not comply, the entire lot shall be rejected.

**4.10 Visual test.** Randomly select 10 sample cards. Visually inspect the selected cards to comply with 3.3.6 and Table I. If any sample card does not comply, the entire lot shall be rejected.

#### **4.11 Packaging inspection**

**4.11.1 Materials.** The packaging materials shall be visually inspected to comply with 5.1, 5.1a, 5.1b, and 5.1c.

**4.11.2 Marking.** Interior containers and shipping containers shall be visually inspected to comply with 5.2, 5.2.1, and 5.2.2.

### **5. PACKAGING**

**5.1 Packaging requirements.** The construction of the interior containers and the shipping containers shall be in accordance with PPP-B-636. The following packing methods apply:

**a. Unprocessed cards (aperture, copy, and nonaperture).** Unless otherwise specified by the procuring activity, place 2000 cards into each of five individual cartons

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(interior containers) designed for that quantity. The top and bottom flaps of each carton shall be taped or glued. In addition to MIL-STD-129 marking and labeling requirements (see 5.2), each carton shall be marked with a label that identifies the: Run Number, Use Before Date, and Microfilm Code for copy cards. Place the five interior containers (a total of 10,000 cards) into a shipping (exterior) container. The top and bottom flaps of the shipping container shall also be sealed by taping or gluing. One end (never top, bottom, or sides) of each shipping container shall also have a label and a sample card glued to it. The label shall identify the Purchase Order or Contract Number, the DD Form 1562 Alpha Designator, (as appropriate A through K), Use Before Date, and the quantity (10,000 cards). The preprinted headings (which shall be boldface) for both labels and their fill-in entries shall be characters not less than 12 point. (See 6.2j.)

**b. Unprocessed cards (camera).** Unless otherwise specified by the procuring activity, place eight microfilm cartridges each containing 250 camera cards into eight individual cartridge cartons (interior containers) designed for that quantity. The top and bottom flaps of each cartridge carton shall be taped or glued. In addition to MIL-STD-129 marking and labeling requirements (see 5.2), each cartridge carton shall be marked with a label that identifies the Kind of Cartridge (M2800 camera cards), Microfilm Code, Use Before Date, and the warranty information. Place the eight cartridge cartons (a total of 2000 cards) into a shipping (exterior) container of sufficient size to allow appropriate packing material (e.g., styrofoam inserts) to surround the eight cartridge cartons. The packing material shall prevent light from entering the cartridge cartons and also prevent the microfilm cartridges from moving. The top and bottom flaps of the shipping container shall also be sealed by taping or gluing. In addition to MIL-STD-129 marking and labeling requirements (see 5.2), one end (never top, bottom, or sides) of each shipping container shall have a label and a sample card glued to it. This label shall identify the kind of cartridge (M2800 camera cards), Use Before Date, and the Quantity (2,000 cards). An additional label shall also be placed on one (i.e., either) side of the shipping container. This label shall identify the From and Ship To address, Quantity (2,000 cards), the Purchase Order or Contract Number, and the DD Form 1562 Alpha Designator (i.e., A). The preprinted heading (which shall be boldface) for each of the three labels and their fill-in entries shall be characters not less than 12 point. (See 6.2j.)

**c. Processed cards (image).** Unless otherwise specified by the procuring activity, place the cards into a fiberboard box specifically designed for holding 2000 cards. For smaller amounts place corrugated fiberboard spacers in the unused space or place the cards in a similarly constructed smaller size fiberboard box or wrap the cards with a layer of bubble cushioning material and place the wrapped cards into a MIL-B-131, Type I, Class 3 scrim bag (see 6.4.2) or place fiberboard stiffeners on the top and bottom of the cards, secure with rubber bands, and place into a cushioned envelope. Place all fiberboard boxes, scrim bags, or envelopes (interior containers) and a paper copy packing list (i.e., an overall numerical listing of all source document numbers) into a single shipping container. If the shipment only requires a single fiberboard box, scrim bag, or envelope (interior container), this container can also be used as the shipping container. (See 6.2j.)

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**5.2 Standard marking.** Unless otherwise specified by the procuring activity, interior containers and shipping containers shall be marked or labeled in accordance with MIL-STD-129. See 5.1a and 5.1b for additional marking and labeling requirements. The markings or labels shall use black waterproof ink printing that will not become illegible during shipping. (See 6.2k.)

**5.2.1 Special marking.** When the deliverable product medium (see 3.2) is image cards, in addition to MIL-STD-129 requirements, shipping containers shall also be marked with the following precaution: "THIS SHIPMENT ONLY TO BE OPENED AT THE DESTINATION POINT - CONTAINS HIGH COST ENGINEERING DATA MICROFILM IMAGES. DO NOT EXPOSE TO RAIN, WATER, DIRECT SUNLIGHT OR EXTREME TEMPERATURE." (See 6.2k.)

**5.2.2 Security classification marking.** When applicable, in addition to 3.1.3, MIL-STD-129, and the 5.2.1 precaution, appropriate DoD 5200.1-R and DoD 5220.22-M requirements apply. (See 6.2k.)

**6. NOTES**

( This section provides information of a general or explanatory nature.)

**6.1 Intended use.** The principle purpose is to provide requirements to those who manufacture cards or those who process the cards or those who use the processed cards. A secondary purpose is to satisfy a primary DoD repository's (see Footnote 5) engineering data card needs; i.e., the serviceability of DD Form 1309, DD Form 1310, and the DD Form 1562 series of cards..

**6.2 Acquisition requirements.** When purchasing unprocessed cards, contractual requirements are usually implemented through the use of a DD Form 1155, Order for Supplies or Services. When purchasing processed (image) cards, applicable Data Item Descriptions (DIDs) (DD Form 1664) and associated tailoring are usually contractually implemented through the selection and ordering options set forth in MIL-T-31000. MIL-M-38761 amplifies the MIL-T-31000 options to make sure an optimum balance between needs and cost is fulfilled. As applicable, a Contract Data Requirements List (CDRL) (DD Form 1423) or any other contractual document used to implement MIL-M-38761 requirements, by the contracting officer, should specify the appropriate options for the following:

- a. Issue of DoDISS with the MIL-M-38761 title, revision, and date stipulated separately. (See 2.1.1.)
- b. Issue of other government and non-government references. (See 2.1.2 and 2.2.)
- c. Edge coating application. (See 3.1.2.)
- d. Card color, striping, overprint statement, and security markings. (See 3.1.3.)
- e. Upper legends or lower legends format. (See 3.1.4.)
- f. Deliverable product medium. (See 3.1.6 and 3.2.)

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- g. Kind of microfilm carrier. (See 3.3.1.)
- h. Style of buildup. (See 3.3.3.)
- i. Inspection, certification, and verification. (See 4.1 and 4.1.1.)
- j. Shipping containers and packing. (See 5.1a, 5.1b, and 5.1c.)
- k. Standard, special, and classified shipping container markings. (See 5.2, 5.2.1, and 5.2.2.)

**6.3 Data (DID) requirements.** When engineering data are being developed/created, MIL-M-38761 should not be used as a source document for a DID (see 1.1.3). Therefore, for MIL-M-38761 purposes, DID requirements and suggested tailoring are not applicable nor provided. However, within the Acquisition Management System and Data requirements control List (AMS DL), MIL-M-38761 is identified as the source document for a tasking DID, DI-EDRS-80907 (Army). This tasking DID defines requirements for purchasing engineering data in the microfilm image card medium (see 6.4.4d) and, it generally is only used by the Army Missile Command (A/MICOM).

**6.4 Definitions.** General explanations can be found in AIIM TR2-1992, Glossary of Imaging Technology (see 3.5). Unique MIL-M-38761 terms that are not covered in AIIM TR2 or terms that require additional clarification are explained here.

**6.4.1 Engineering data.** Those data, regardless of form or characteristic, required to define a design or process that can be used to produce, support, operate, test, and inspect a product or service. Some examples follow: engineering drawings, logic diagrams, computer printouts, manufacturer processes, wiring board patterns, parts list, test methods, performance characteristics, electrical circuits, and so forth. Furthermore, the term "engineering data" is commonly used when referring to technical data, engineering drawings, level 3 data, level 2 data, production data, digitized data, product definition data, digital data, and other similar expressions. Do not misinterpret (confuse) these generic expressions when discussing MIL-M-38761 card requirements or the card's MIL-M-9868 microfilm requirements.

**6.4.2 Scrim bag.** A flexible container constructed of barrier material. The barrier material has an outer layer of cloth (woven fabric), an inner layer (backing) of aluminum, and its edges are heat-sealable. The bag's opening also has mated surfaces for sealing. The sealed bag provides a degree of watervaporproof and greaseproof protection.

**6.4.3 Supplier.** Any entity (generically referred to as a card manufacturer, prime contractor, subcontractor, vendor, seller, service bureau, and other similar expressions) who may be tasked to implement MIL-M-38761 manufacturing, testing, or filming requirements. For MIL-M-38761 purposes, the generic expressions are considered to be synonymous.

**6.4.4 Tabulating card.** An 80-column card, with or without an aperture, on which information is indexed using punched holes that can be machine-sensed for sorting,

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collating, listing, or totaling. Individual explanations for the unique 80-column military engineering data tabulating cards follow:

**a. Aperture card.** An unprocessed tabulating card whose aperture (rectangular hole) is designed for the subsequent mounting or insertion of a developed frame of Type I silver (camera or noncamera) microfilm. Furthermore, the expression "aperture card" is commonly used when referring to any tabulating or nontabulating card (military or commercial), whether processed or unprocessed, that has an aperture. Do not confuse the popularity of the generic "aperture card" expression with the formal definition (i.e., specific functional characteristics) of an aperture card, camera card, copy card, and image card.

**b. Camera card.** An unprocessed tabulating card whose aperture contains undeveloped (raw stock) Type I silver camera microfilm. A camera card is designed for its microfilm to be exposed and processed while in the aperture. Thus, camera cards can only be used with cameras capable of this process.

**c. Copy card.** An unprocessed tabulating card whose aperture contains undeveloped (raw stock) Type II diazo noncamera microfilm. A copy card's undeveloped diazo microfilm is designed to be exposed and processed by contact printing in a card-to-card duplicating device (i.e., the emulsion layer of the undeveloped diazo microfilm must be in direct contact with the emulsion layer of the developed (imaged) silver or diazo microfilm in the image card being copied).

**d. Image card.** A processed aperture card, camera card, or copy card. A processed card is keypunched (Hollerith information), has eye-readable (unaided) header information, and its aperture (rectangular hole) contains developed (imaged) microfilm (silver or diazo).

**e. Nonaperture card.** In addition to cards with an aperture (i.e., the DD Form 1562 series of cards), there are two nonaperture (i.e., contain no microfilm) unprocessed 80-column engineering data tabulating cards (DD Form 1309, Model or Type Designation Card and DD Form 1310, Part and Drawing Number Card). When processed, these nonaperture cards are keypunched (Hollerith information), have eye-readable (unaided) header information and, their purpose is to supplement an image card's Hollerith information.

**6.5 Acronyms.** All acronyms used within MIL-M-38761B are spelled out here; they may, or may not, be spelled out in each associated individual paragraph, table, or figure.

**AIIM** - Association for Information and Image Management

**NOTE:** AIIM has replaced NMA (National Micrographics Association). NMA may be used in some related documents or publications.

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- AMSC - Acquisition Management Systems Control
- AMSDL - Acquisition Management System and Data requirements control List
- ANSI - American National Standards Institute
- AQL - Acceptable Quality Level
- CAGE - Commercial And Government Entity

**NOTE:** CAGE has replaced FSCM (Federal Supply Code for manufactures). FSCM replaced CIN (Code Identification Number). FSCM and CIN may be used in some related documents or publications.

- CFCs - Chlorofluorocarbons
- CFR - Code of Federal Regulations
- DID - Data Item Description
- DMR - Defense Management Review
- DoD - Department of Defense
- DoDISS - Department of Defense Index of Specifications and Standards
- DoDSSP - Department of Defense Single Stock Point
- DRPR - Drawing Practices
- DSN - Defense Switched Network

**NOTE:** DSN has replaced AUTOVON (Automatic Voice Network). AUTOVON may be used in some related documents or publications.

- EDRS - Engineering Data Reproduction Systems

**NOTE:** EDRS has replaced EDMS (Engineering Data Micro-reproduction Systems). EDMS may be used in some related documents or publications.

- FSC - Federal Supply Classification
- GSA - General Services Administration
- N/A - Not Applicable
- NGS - Non-Government Standard
- ODS - Ozone Depleting Substances
- OSHA - Occupational Safety and Health Administration
- PA - Preparing Activity
- PACK - Packing, Packaging, Preservation, and Transportability
- TQM - Total Quality Management

**6.6 MIL-D inference.** Within the engineering/technical data marketplace, "MIL-D" is a common and popular generic expression that is used to identify the unique DD Form 1562 series of military 80-column engineering data tabulating cards (i.e., aperture, camera, copy, and image). The "D" refers to the size of the card's aperture (rectangular hole) which is designed for 35mm microfilm. There are commercial 80-column tabulating cards (also popularly and commonly referred to as aperture cards) that use the DD Form 1562 identity without its military alpha designator (see 1.1.1a).

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These commercial cards also may have an aperture size other than "D". The commercial aperture sizes are designated Tab C, Tab D (which is identical to the MIL-D size), Tab E, and Tab F. However, the most commonly used commercial card is the card with the "D" size aperture. A commercial nontabulating A6 aperture card with either a Tab C, Tab D, Tab E, or Tab F size aperture is also available. The A6 card size is nominally 105mm in width, 148mm in length, and its thickness is 0.180mm; a thinner translucent paper stock with a nominal thickness of 0.145mm is also available.

**6.7 Government-Industry partnering (See 1.1.1d).** Presently (1 Sep 93) a 26 Jul 93 draft NGS, ANSI/AIIM MS41-19xx, describes standard card characteristics for both military and commercial cards. This standard is expected to be published as early as 1 Nov 93 but no later than 1 Mar 94. There are two EDRS projects associated with this standard. First, project EDRS0134 for the adoption of ANSI/AIIM MS41-19xx. Second, after completion of project EDRS0134, project EDRS0157 plans to combine the MIL-C-9877 and MIL-C-9949 requirements, cancel MIL-C-9877, retitle MIL-C-9949, and emphasize the use of ANSI/AIIM MS41-19xx.

**6.8 Subject term (key word) listing.**

- Aperture (rectangular hole)
- Aperture card
- Buildup
- Camera card
- Copy card
- Image card
- Microfilm carrier
- 80-column tabulating card

**6.9 International standardization agreements.** There are no agreements associated with MIL-M-38761B.

**6.10 Changes from previous issue.** MIL-M-38761B is a complete revision of the previous issue; however, it does not supersede any other DoDISS document. Furthermore, due to the extensiveness of the changes, marginal notations (asterisks, vertical lines, etc.) are not used.

**CONCLUDING MATERIAL****Custodians:**

- Air Force - 16
- Army - CR
- Navy - AS
- DLA - GS

**Preparing activity:**

Air Force - 16

(Project EDRS0137)

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### **Review activities:**

Air Force- 11

Army - AR, MI, SC

Navy - SA, SH

DLA - CS

### **User/Interest activities:**

Air Force- 13, 14, 18, 19, 24, 30, 69, 70, 71, 79, 80, 82, 84, 85, 89, 99

Army - AM, AT, AV, EA, ER, GL, IE, ME

Navy - CG, CH, EC, MC, NM, OM, OS, TD, YD

DLA - DH, ES, IS



**MIL-M-38761B****SUPPLIER CERTIFICATE OF CONFORMANCE**

I hereby certify that all MIL-M-38761B requirements and any other contractual requirement has been complied with and I also certify that the tests listed below have been performed and the test results comply with all MIL-M- 38761B quality assurance provisions.

PURCHASE ORDER \_\_\_\_\_

SUPPLIER \_\_\_\_\_ CAGE \_\_\_\_\_

DATE OF SHIPMENT \_\_\_\_\_

DoD PRIMARY REPOSITORY DESTINATION \_\_\_\_\_

MEDIUM: UNPROCESSED TABULATING CARDS

DD FORM 1309 \_\_\_\_\_ NUMBER OF CARDS \_\_\_\_\_

DD FORM 1310 \_\_\_\_\_ NUMBER OF CARDS \_\_\_\_\_

DD FORM 1562 (Aperture) \_\_\_\_\_ NUMBER OF CARDS \_\_\_\_\_

DD FORM 1562 (Camera) \_\_\_\_\_ NUMBER OF CARDS \_\_\_\_\_

DD FORM 1562 (Copy) \_\_\_\_\_ NUMBER OF CARDS \_\_\_\_\_

CARRIER TO CARD BONDING\*

RETENTION

CARRIER TO FILM BONDING\*

CARD FANNING

PROTECTION SHEET BONDING\*

CARD DIMENSIONS

BUILDUP DIMENSIONS\*\*

VISUAL

\* In lieu of an "XX" entry, insert peel back distance.

\*\* In lieu of an "XX" entry, insert measured thickness.

NOTE: If any test is waived by the procuring activity, insert "N/A."

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

TITLE \_\_\_\_\_

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## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>I. RECOMMEND A CHANGE:</b>		1. DOCUMENT NUMBER MIL-M-38761B	2. DOCUMENT DATE (YYMMDD) 940214
3. DOCUMENT TITLE MICROFILMING AND PHOTOGRAPHING OF ENGINEERING/TECHNICAL DATA AND RELATED DOCUMENTS. REQUIREMENTS FOR			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER			
a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
c. ADDRESS (Include Zip Code)		d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY			
a. NAME HQ AFMC/ENIS ATTN: EDRS Standardization Manager		b. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (513) 427-2295 787-3085	
c. ADDRESS (Include Zip Code) 4027 COL GLENN HWY SUITE 300 DAYTON OH 45431-1672		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	