

# TECHNICAL REPORT

**ISO/TR  
10593**

First edition  
1997-08-01

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## **Micrographics — Use of microfilm jackets**

*Micrographie — Utilisation des jaquettes de microfilm*

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Reference number  
ISO/TR 10593:1997(E)

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Printed in Switzerland

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until data they provide are considered to be no longer valid or useful.

ISO/TR 10593, which is a Technical Report of type 3, was prepared by Technical Committee ISO/TC 171, *Document imaging applications*, Subcommittee SC 2, *Application issues*.

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# Micrographics — Use of microfilm jackets

## 1 Scope

This Technical Report has been prepared to provide guidelines and information for the formatting and loading of microfilm jackets specified in ISO 8127-1 and ISO 8127-2. This Technical Report is a series of recommendations for jacketing microfilm which, if followed by producers and end-users of microfilm jackets, should result in greater consistency and effectiveness in the micrographics industry.

While the conditions and characteristics of the jacketing process allow for a wide degree of latitude in image placement within a jacket, they also present problems in the creation of a rigid standard for loading microfilm jackets. However, there are certain procedures which can be followed in the production of a jacket that should enhance quality. This Technical Report has been prepared to assist end-users and producers of jackets in those aspects of jacket formatting and loading that do remain relatively constant.

## 2 References

- ISO 446:1991, *Micrographics — ISO character and ISO test chart No. 1 — Description and use.*
- ISO 3334:1989, *Micrographics — ISO resolution test chart No. 2 — Description and use.*
- ISO 5123:1984, *Documentation — Headers for microfiche of monographs and serials.*
- ISO 5466:1996, *Photography — Processed safety photographic films — Storage practices.*
- ISO 6196-1:1993, *Micrographics — Vocabulary — Part 01: General terms.*
- ISO 6196-2:1993, *Micrographics — Vocabulary — Part 02: Image positions and methods of recording.*
- ISO 6196-3:1983, *Micrographics — Vocabulary — Part 03: Film processing.*
- ISO 6196-4:1987, *Micrographics — Vocabulary — Part 04: Materials and packaging.*
- ISO 6196-5:1987, *Micrographics — Vocabulary — Part 05: Quality of images, legibility, inspection.*
- ISO 8127-1:1989, *Micrographics — A6 size microfilm jackets — Part 1: Five channel jacket for 16 mm microfilm.*
- ISO 8127-2:—<sup>1)</sup>, *Micrographics — A6 size microfilm jackets — Part 2: Other types of jacket for 16 mm and 35 mm microfilm.*
- ISO 9923:1994, *Micrographics — Transparent A6 microfiche — Image arrangements.*

1) To be published.

### 3 Definitions

For the purposes of this Technical Report the following definitions apply. For additional information see ISO 6196.

**3.1 Abut:** To touch along a border, to terminate at a point of contact.

**3.2 Code-notch:** A cut-out in either the top or bottom edge of the microfilm (microfiche, jacket) which is used for indexing, coding or retrieval.

**3.3 Colour-stripe:** A coloured band (or bands) placed at the top edge of the heading area of a jacket or microfiche used for identification, filing and retrieval.

**3.4 Formatting:** A general plan of organization and arrangement for placement of microfilm images within a jacket.

**3.5 Grid pattern:** An array of horizontal and vertical lines (usually imaginary) that divide an area of a microform into spaces called frames. The grid defines the arrangement of the rows and columns.

**3.6 Insertion opening:** An opening in the support sheet of the microfilm channel through which the microfilm is inserted into the jacket.

**3.7 Jacket:** A flat, transparent, plastic carrier with single or multiple microfilm channels made to hold single or multiple microfilm images.

**3.8 Justify:** To set or place a microfilm image relative to one or more of the edges of the jacket.

**3.9 Microfilm channel:** The space in the jacket into which the microfilm is inserted.

**3.10 Registration holes:** Holes located in the heading of the jacket for alignment with some loading equipment. Also called jacket locating holes.

**3.11 Reverse-reading:** An image that must be viewed in a mirror or through the film in order that the characters, words, and sentences assume the same sequence and arrangement present in the original document.

**3.12 Right-reading:** An image that, when viewed directly shows the characters, words, and sentences in the same sequence and arrangement present in the original document.

**3.13 Sensitised side:** A single or multilayered coating consisting of light-sensitive materials in a medium carried as a thin layer on a film base. It is intended to be the contact printing surface. Its synonym is the emulsion side.

**3.14 Support sheet:** The material that forms the limiting dimensions and provides the main support for the microfilm jacket. It is synonymous with back sheet.

**3.15 Thin sheet:** A sheet of material that is affixed by suitable means to the support sheet to form the film channel into which the microfilm is inserted. It is intended to be the contact printing surface. The sensitised side of the microfilm is placed against this sheet. Thin sheet is synonymous with emulsion sheet, cover sheet, and face sheet.

**3.16 Throw-away:** A duplicate of the jacket that is disposed of when additions are made to the master jacket.

## 4 Microfilm jacket systems

Microfilm jackets are a versatile medium, lending themselves to a multitude of uses. They can be used with 16 mm and 35 mm roll microfilm in a variety of systems, suited to virtually any application. Microfilm jackets are a means of converting units of information from roll microfilm into logical units, groups of units or chapters of information. They also allow for removal, replacement, or additions to each unit at any time. Microfilm jackets come in a wide variety of styles and sizes, and are used wherever there are paper file folders or existing roll microfilm. Compared to conventional file folders, jackets are strongly resistant to wear, corner folds, smudges or tears.

### 4.1 Applications

Many elements make up a microfilm jacket system, and each must be considered when designing the system. Considerations involve the type of material to be filmed, the organization of the file, the retrieval requirements, and the type of equipment to be used. Each of these areas needs to be reviewed to insure that the system to be selected will meet the user's needs. The single, most common application for jackets is to provide a unit record where information on a single subject is required. However, the wide variety of jacket systems currently available (both "standard" systems and "custom" systems) allows for a multi-subject unit record content within a single jacket. Microfilm is usually placed in jackets when one or more of the following conditions exist.

**4.1.1** A unit record file (a collection of single files accumulated in some logical file sequence, such as an alphabetic or numeric order) is required.

**4.1.2** A single unit record file must be updated by the addition of new or additional information which provides the same function as the insertion (replacement or removal) of additional pages into a paper file folder.

**4.1.3** A group record file (subject file) must be updated by the addition of new files in file sequence, such as alphabetic or numeric order, which provides the same function as a new paper file folder created and inserted in its proper location.

**4.1.4** Access to the file can be controlled, with access granted to users on the basis of individual file items (for example, on a "need to know" basis). This condition would apply to confidential records, such as personnel or medical records, or classified governmental records.

**4.1.5** A file is to be organized in two or more file orders. This would be done by generating one or more contact prints (microfiche duplicates) from the jackets. This system will permit filing of the jackets in alphabetical order by name and a duplicate set in numeric order by identification number, etc.

**4.1.6** The integrity of a file can be controlled by retaining the jackets in a central secure location, with inquiries for individual file items to be met by the production of a distribution copy (microfiche duplicate) made from the jacket. This system requires an in-house capability to make microfiche "throw-away" duplicates on demand.

**4.1.7** A pre-existing flat film (microfiche) system is in place, and the same format is required for compatibility. This means that a closed end data base, which could otherwise be microfilmed as a roll microfilm system, could be converted to jackets for the purpose of compatibility.

**4.1.8** The interfacing of 16 mm jackets and 35 mm jackets in a single record is desired (using "combination" jackets, with both 16 mm and 35 mm channels, or by interfiling 16 mm jackets with 35 mm jackets with common titles).

**4.1.9** A single unit record file is to be subdivided into categories (e.g. by year, document type, etc.). This approach permits control over specific document types, and retrieval of single unit records based on categories.

**4.1.10** A classification system is to be superimposed, with additional levels of indexing, filing or categorisation. This is accomplished by colour-coding, notching, etc.

These operational needs and the characteristics of the jacketing process allow for a wide degree of latitude in systems specifications. This latitude, coupled with the end-use variety, may present problems in establishing a standard for loading microfilm jackets.

## **5 Microfilm used in jacketing**

### **5.1 Microfilm structure**

Camera microfilms share a basic composition and structure. The base or support of camera microfilm can be either a flexible or rigid plastic material. Its specific chemical composition can vary from acetate to polyester. Its thickness may vary with each type of film. This support is coated with an image-forming layer that is known as the emulsion or the sensitised side. Emulsion is bonded to the support side by a substratum layer. Emulsion composition varies, but its purpose is to react when exposed to an energy source (commonly light). This reaction can be chemically processed to produce a visible, usable image.

### **5.2 Microfilm widths used in jacketing**

The majority of microfilm presently loaded into jackets are 16 mm and 35 mm. The choice of microfilm width, number of channels and title area design should be made in accordance with cost effectiveness and system design considerations.

### **5.3 Right-reading vs. reverse-reading**

The majority of microfilm cameras will produce camera microfilm which is right-reading through the base side of the microfilm. This statement is true of all cameras that do not use mirrors in their optical systems. Some cameras, particularly rotary cameras, use mirrors in their optical systems. Cameras that use an even number of mirrors (2, 4, etc.) will generate microfilm that is right-reading through the base side of the microfilm (the same as a camera with no mirrors); an odd number of mirrors (1, 3, etc.) will generate microfilm which is reverse-reading through the base side of the microfilm.

### **5.4 Microfilm generation used in jacketing**

Formal definitions found in practically all micrographic specifications describe the camera microfilm as being "first generation," or "camera master" microfilm and the copy made from the camera microfilm as being "second generation" microfilm.

These referenced definitions do not deal with the issue of right-reading versus reverse-reading. It is important to comprehend the following with reference to microfilm generation used in jacket loading. First generation or camera microfilm from planetary or rotary camera with no mirror or an even mirror optical system is right-reading through the base side of the microfilm, which is the generally preferred method of jacket loading. Second generation duplicate film or camera film from an odd mirror optical system is reverse-reading through

the base side of the microfilm. Jackets require that the sensitised side of the microfilm be placed against the thin sheet of the jacket. When this is done, the microfilm should be right-reading through the support sheet side; the titling or indexing information is facing the user and is also right-reading. Since camera microfilm is usually right-reading through the base side of the microfilm, whenever possible, it should be used when loading the jacket. If a security copy of a reel is deemed necessary, it should be made before the camera microfilm is loaded into the jackets. To ensure problem-free operation during loading or copying, it is recommended that only microfilm strips or individual images of the same film thickness be loaded into any one jacket. These guidelines will ensure the following:

**5.4.1** That the finished jacket can be duplicated, and that the loss of resolution or legibility shall be no more than one test pattern of the test object as described in ISO 3334 or ISO 446.

**5.4.2** That the duplicate copies made from the jackets will be right-reading and of acceptable quality and legibility to allow viewing and/or hard copy reproduction on any standard unitised microfilm retrieval system.

**5.4.3** That the titling or identifying information is facing the user and is also upright and right-reading with the microimage.

## **6 Microfilm image configurations**

### **6.1 Configuration**

In cases where the producer and end-user of the microfilm jacket system have control over the production of the microfilm itself, consideration should be given to specifications for microfilming orientation and reduction ratio in relation to document size, resolution requirements and the system's configuration.

### **6.2 Orientation**

If the principal use of the jacket is to read the microfilm on microfiche readers, the microfilm should be produced in the horizontal mode. This is based on the fact that some microfiche readers do not feature "image rotation" (i.e. the ability to turn or "rotate" an image that appears sideways on the reader screen). If the principal use of the jacket is to produce paper prints on demand, the microfilm should be produced in such a way that the short edge of the document is parallel to the bottom edge of the microfilm (i.e. so that a "normal" letter is standing upright in the horizontal mode and that a document that was printed with the writing line parallel to the wide edge of the paper is in the vertical mode). The reason for this preference is that most reader/printers are designed to transfer the image from the microfilm to the paper in format of a "normal" business letter. With a page where the print line runs parallel to the wide edge of the paper and is microfilmed in the horizontal mode, it is necessary to rotate the image to allow it to fit on the paper print.

NOTE — Most reader/printers include the image rotation feature described above, but its use requires an additional action by the user.

If the intended use is both for reading and printing purposes, horizontal mode filming is usually preferred, since most reader/printers include the image rotation feature.

### **6.3 Reduction ratio**

Careful control of reduction ratio is needed if the enlarged microfilm images are to fit within reader screens or into printed hard-copy areas in reader/printers. The entire microfilm system

should be considered. With rotary cameras, reduction is usually pre-determined, since most rotary cameras operate at a fixed ratio. On planetary cameras with various reduction ratios available, decisions must be made. It is generally more cost effective to microfilm all media, regardless of size and conditions, at one fixed reduction ratio. However, poor quality media or very small print may dictate using the lowest possible reduction for a given document. Here, there is a necessary trade-off between cost and quality. In general, the selection of reduction ratio will depend on the intended use of the microfilm.

## 7 Formatting

Certain procedures can be followed, and should be considered, when producing of microfilm jackets to ensure optimum quality at initial creation and to reduce or prevent operational or successive generation problems after file establishment. Unless special requirements dictate unorthodox image placement, microfilm jackets should be formatted in the following manner.

### 7.1 Left justification

It is desirable that microfilm be left justified in all rows; e.g. the first image of a subject should be placed in Row A, Column 1 (see ISO 2707).

**7.1.1** At the end of a file unit, the last channel used in a jacket may not be completely filled. The operation of most jacket filling machines is such that after the microfilm is inserted into a channel and cut, the jacket is advanced to the next film channel. The system is designed in such a way that the last strip of microfilm added is intended to stay in the position where it was placed by the machine. Jackets in many systems are left this way, the assumption being that if additional frames are added to the jacket, the short length of microfilm already existing in the jacket will be moved to the left when new microfilm is added. Consideration should be given to avoid leaving a short (less than a full jacket channel) section of microfilm where the machine leaves it (on the right side of the jacket channel).

**7.1.2** Should a long period of time elapse between initial loading of the jacket and the addition of new microfilm, the existing microfilm tends to stick to the jacket and resist being moved over to the left. This condition seems to be more pronounced when there are several short lengths of microfilm in the channel. In a related problem, sometimes one section of microfilm will slide under an existing piece of microfilm already in the jacket. These problems can be avoided if, at the time the microfilm is inserted into the jacket, partial line microfilm strips are pushed over to the left side of the jacket in alignment with the channel above.

**7.1.3** If a grid locator system is used in conjunction with an index, the partial line (strips of microfilm which do not fill the entire jacket channel) shall be moved to the left side of the jacket; otherwise the grid location of an indexed page would change as new microfilm is added.

### 7.2 Image placement

All images appearing after the first image should be placed to the immediate right of each image in a microfilm channel until no space is available to the right of existing images in the channel (see ISO 2707).

**7.2.1** When no space is available to the right of an image appearing in Row A, additional frames should be placed in Row B, Column 1, again extending to the right until the channel is completely full, and then in Row C, Column 1, and then D,E, etc. until the jacket is full. If the last channel used in a jacket master is not full, the microfilm image should be left justified (see 7.1).

**7.2.2** When system classification or sub-divided categories are in effect, a unique grid position, line position, or jacket needs to be pre-determined. There are also cases where it is desirable not to split a "document" (multiple pages) between lines and/or jackets. Consideration should be given to the system design and pre-determined specifications to be generated.

## **8 Jacket loading technique**

To create a master jacket, roll microfilm is cut into strips and inserted in rows into the channels of the optically clear jacket.

### **8.1 Margins**

Separate (cut) lengths of microfilm in the same channel should always abut. The margin between the trailing edge of the left hand frames and the leading edge of the right-hand frames should approximate the margin between adjacent frames on an uncut length of microfilm. There shall be no overlap of lengths of microfilm in the same channel.

### **8.2 Edge allowances**

Microfilm images should not extend beyond either the left edges or right openings (insertion opening) of each channel and should be at least 4,0 mm from the left edges and right openings (insertion opening) of the jackets.

### **8.3 Autoload systems**

Automatic loading systems are available for 16 mm blip coded (two level) microfilm. This unit can be operated in the automatic or manual mode. This system only fills a microfilm jacket. Each microfilm jacket shall be located manually on the registration points by the operator. In the automatic mode, partial lines will require manual left-justification.

## **9 Jacket heading**

This space is located at the top of the microfilm jacket where a translucent coat is applied to the support sheet and is used to identify the contents of the jacket. As a note to the user and producer, jacket headings, whether free standing or purchased on pin-feed paper (where headings are generated utilising a computer) should be in accordance with the following guidelines.

### **9.1 Heading integrity**

Heading information, prepared by any method of machine, should be legible, typographically correct, eye readable, and co-reproducible with the jacket images. Heading information should be created with a black carbon-type ribbon, using bold-faced type. It is not advisable to use oil based ribbons for titling, as this type of printing, over time, will tend to bleed through the matte finish, causing a halo effect around the characters.

### **9.2 Heading placement**

Jacket headings should be at least 1,6 mm from the top edge of the jacket, and above the registration holes that appear in the heading area. The heading information should be at least 4,0 mm (+/- 0,5 mm) from the left and right sides of the jacket. This will assure that if striping or notching techniques are used, the stripe or notch will not obscure the titling information. This also eliminates the risk of losing the titling information during duplication.

Normally a jacket is held so that the heading is right-reading and upright, so that the micro-images shall be right-reading and upright.

### 9.3 Heading — custom design

Jacket headings can be purchased with custom design printed indexes to suit special needs and requirements. There are also pre-designed index formats to select from.

### 9.4 Microfilm jacket sequencing

To ensure file integrity, it is helpful if jackets are sequentially numbered in the title area of a unitised batch. This technique, i.e. 1 of 2, 2 of 2, should verify that it is a complete set. If, however, the microfilm jackets to be sequenced are part of an active system (i.e. to be updated), it may prove more effective to use a sequential code with a period after the terminal jacket and a dash on the other jackets (1.; 1-, 2.; 1-, 2-, 3.). The period can be converted to a dash upon generation of a new jacket in order to facilitate expansion during updating.

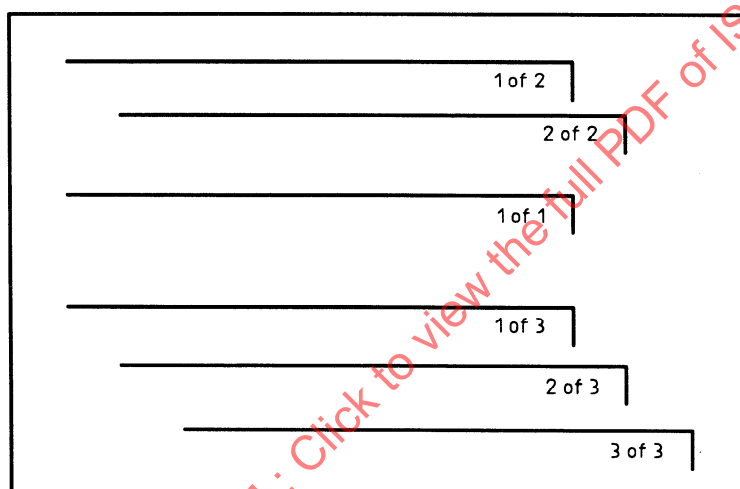


Figure 1 — Sequencing for closed files

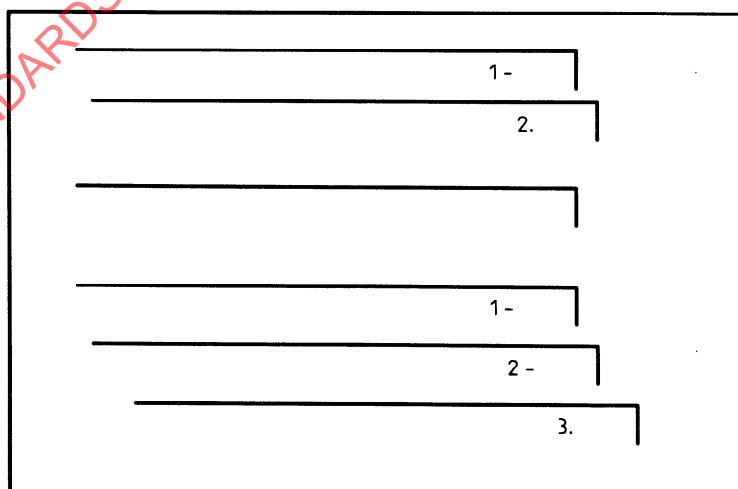


Figure 2 — Sequencing for active files