

A collection of microfilm and film strips, including a microfilm cartridge, a film strip, and several microfilm frames, arranged on a light surface.

Module One of Ten

Preservation Microfilming— Basics

TRAINING *in* PRESERVATION MICROFILMING

Module One of Ten

Preservation Microfilming— Basics

Heather Brown

National Library of Australia
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Introduction

Welcome to *Preservation Microfilming—Basics*. This is the first in a series of ten modules of training materials about preservation microfilming.

The purpose of this introductory module is to explain the reasons why preservation microfilming is important and to help you to become familiar with some of the basic terminology.

Learning outcomes

When you have successfully completed this module, you will be able to:

- I outline reasons why a preservation microfilming project may be undertaken
- I outline issues which need to be resolved when preparing culturally-sensitive materials for preservation
- I outline key issues relating to the selection of materials for microfilming
- I outline the role of microfilming standards and technical specifications and their importance to the success of microfilming projects
- I identify reasons why an organisation may wish to convert existing microform collections to a digital image format.

In competency-based training models, the **learning outcomes** closely relate to the term **elements of competency**.

Recognition of current competencies (RCC)

You may already have knowledge, experience and skills which are relevant to this module.

This means that if you wish to complete a formal Preservation Microfilming Course, you may not have to study all of it.

Please discuss this with your course coordinator, or lecturer. Evidence of your microfilming competence, and/or an assessment, such as a practical test, will be required.

Assessment

If you are formally studying the Preservation Microfilming course, you must meet certain **performance criteria** in order to demonstrate your competency in each unit or module.

These criteria form the basis of your assessment. They are listed at the beginning and end of each topic.

As you work your way through the training materials, you will need to keep a record of the performance criteria and other learning activities that you have completed.

There are two types of learning activities in this module, which are indicated by the icons below.

■ Activity

Responses to these activities are written in this book. They are usually short tasks which keep you involved with the issues you are considering and may also require you to apply what you are learning.

Some of the activities in these training materials require you to perform tasks such as loading a camera, or operating a processor. A lecturer or assessor will observe you performing the tasks and then examine the results or the product (e.g. the newly processed microfilm) to check that it meets requirements.

Major activities are marked with the symbol .

● Reflect

Here you will be asked to think about key issues, usually in consultation with workplace colleagues, and come to some conclusions. The purpose of these activities is to allow you to share your understanding with others, and benefit from wider experience than your own.

You will need to be prepared to discuss your findings or conclusions with your assessor or lecturer who will be signing off the relevant **performance criteria**.

▲ Submit

When this icon appears, you are ready to record in the **Log book** that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities** for a topic.

You can record these by marking off the boxes in the shaded columns with a ✓ **yes** or ✗ **no**.

You can then ask your lecturer or assessor to verify that you can meet the **performance criteria** and that you have satisfactorily completed the **activities**.

If you work through the various activities along the way, you will find the assessment activities relatively easy to complete.

Resources

 **There are a number of resources available on preservation microfilming.
A librarian can help you find out where these resources are available.**

Below are a few:

Printed materials

Adcock, Edward P. (ed. & comp.) 1998, *Principles for the Care and Handling of Library Material*, International Preservation Issues, number 1, IFLA-PAC, Paris.

Address: IFLA Core Programme for Preservation and Access (PAC) Bibliotheque Nationale de France, 2, rue Vivienne, 75084 Paris Cedex 02, France.

(Available online at IFLA website as *Principles for the care and handling of library material*, <<http://www.ifla.org/VII4/news/pchlm.pdf>>, accessed 4 May 2003.)

AICCM (Australian Institute for the Conservation of Cultural Material Inc.) 2000,

Code of Ethics and Code of Practice, AICCM, Canberra.
Address: GPO Box 1638, Canberra ACT 2601, Australia.

Berthon, Hilary 2001, 'Preserving together: Collaborative library activities in Australia', *International Preservation News*, no. 24, May, pp. 22-25.

(A number of back issues of *International Preservation News* are available direct from the IFLA website, <<http://www.ifla.org/VII4/pac.htm>>, accessed 12 May 2003).

Canadian Cooperative Preservation Project 1993, *Guidelines for Preservation Microfilming in Canadian Libraries*, Prepared by the National Library of Canada for the Canadian Cooperative Preservation Project, Ottawa.

Dean, John & Henchy, Judith 2001, 'Preservation in Southeast Asia: a new beginning', *International Preservation News*, no. 24, May, pp. 15-19.

(A number of back issues of *International Preservation News* are available direct from the IFLA website, <<http://www.ifla.org/VII4/pac.htm>>, accessed 12 May 2003).

Elkington, Nancy E. (ed.) 1992, *RLG Preservation Microfilming Handbook*, Research Libraries Group, Mountain View, California.

Elkington, Nancy E. (ed.) 1994, *RLG Archives Microfilming Manual*, Research Libraries Group, Mountain View, California.

'FAQ: Microfilm Scanning' 2001, *RLG DigiNews*, vol. 5 no. 3, 2001. *RLG DigiNews* is available online, <<http://www.rlg.org/preserv/diginews/diginews5-3.html>>, accessed 4 May 2003. *RLG DigiNews* is a newsletter conceived by the members of the Research Libraries Group's PRESERV community.

Fox, Lisa L. (ed.) 1996, *Preservation Microfilming: A Guide for Librarians and Archivists*, 2nd edn, ALA, Chicago.

Harvey, Ross 1993, *Preservation in Australian and New Zealand Libraries: Principles, Strategies and Practice for Librarians*, 2nd edn, Charles Sturt University, Wagga Wagga.

Heritage Collections Council Secretariat, Department of Communications, Information Technology and the Arts 1998, *ReCollections: Caring for Collections Across Australia*, Heritage Collections Council Secretariat, Department of Communications, Information Technology and the Arts Canberra. (The resource *ReCollections* is also available online from the Museums Australia website, <<http://amol.org.au/recollections/>>, accessed 15 May 2003.)

IFLA-PAC, 2000 *Safeguarding our Documentary Heritage*, (CD Rom), UNESCO Memory of the World Programme, Paris.

Jian Li 1999, 'Description of Microfilming Efforts of Public Libraries in China', *International Preservation News*, no. 18, March, pp. 19-21.

(A number of back issues of *International Preservation News* are available direct from the IFLA website, <<http://www.ifla.org/VII4/pac.htm>>, accessed 12 May 2003).

Meyer, Lars & Gertz, Janet 1993, *RLG Guidelines for microfilming to support digitization*, Research Libraries Group, Mountain View, California. Available online at <<http://www.rlg.org/preserv/microsuppl.pdf>>, accessed 12 May 2003.

Microform and Imaging Review 1972- . (journal), quarterly, K. G. Saur, Munich, Germany.

Micrographics Year Book 1981- 2001 (annual), G. G. Baker, Windlesham, Surrey, UK. (Last edition 2001).

Museums Australia (Inc.) 1996, *Previous Possessions, New Obligations: A Plain English Summary of Policies for Museums in Australia and Aboriginal and Torres Strait Islander Peoples*, Department of Museums Australia Inc., North Fitzroy, Victoria.

Museums Australia (Inc.) 1998, *Caring for Our Culture: National Guidelines for Museums, Galleries and Keeping Places*, Department of Communications and the Arts, Canberra.

National Library of Australia 1995, *Preservation Microfilming: Does It Have a Future?* Proceedings of the First National Conference of the National Preservation Office, at the State Library of South Australia, 4-6 May, 1994, National Library, Canberra.

National Library of Australia 1998, *Guidelines for Preservation Microfilming in Australia and New Zealand*, National Library, Canberra.

National Preservation Office 2000, *Guide to Preservation Microfilming*, The Office, London.

Pryor, Kathryn 2001, 'Digitising Eastern Counties Newspapers', *Newspaper Library News*, no. 30, Summer, pp. 11-12. (Available from the British Library website, <<http://www.bl.uk/collections/news.html>>, accessed 15 May 2003.)

Readings, Reg and Holland, Mark 2002, 'Delivering *The Times* (London) digital archives', *Microform and Imaging Review*, vol. 31, Summer, pp. 95-100.

Saffady, William 1990, *Micrographic Systems*, 3rd edn, Association for Information and Image Management, Silver Spring, MD.

Saffady, William 2000, *Micrographics: Technology for the 21st Century*, Association of Records Managers and Administrators, Prairie Village, Kansas.

Scott, G. & Kelly, M. 1991, 'Improving Access to Stored Objects: Support Systems for the Ethnographic Collections of the Australian Museum', *AICCM Bulletin*, vol. 17, (1-2), pp. 31-50.

SEACAP (Southeast Asian Consortium for Access and Preservation) 2000, Proceedings of the International Meeting on Microform Preservation and Conservation Practices in Southeast Asia: Assessing Current Needs and Evaluating Past Projects, February 21-24, 2000, Chiang Mai University, Chiang Mai. (Available from the SEACAP website, <<http://www.seacap.chiangmai.ac.th>>, accessed 14 May 2003.)

Sitts, Maxine (ed.) 2000, *Handbook for Digital Projects: A Management Tool for Preservation and Access*, 2nd edn, ALA, Chicago.

Standards (relevant):

ANSI/AIIM MS23-1998 Standard for Information and Image Management – Standard recommended practice for production, inspection and quality assurance of first-generation silver microfilm of documents.

MP 25 – 2002 Basic Guide to microfilming – Miscellaneous Standard. Standards Australia.

See also the list of international standards in the **Learning Guide**.

Internet sites

(As internet sites change frequently, you may need to use a search engine to identify the latest location)

AICCM (Australian Institute for the Conservation of Cultural Material Inc.), <<http://www.aiccm.org.au>>, accessed 15 May 2003. Address: GPO Box 1638, Canberra ACT 2601, Australia.

AIIM (Association for Information and Image Management), <<http://www.aiim.org>>, accessed 4 May 2003, and its sub group the Film-based Imaging Association, <<http://www.fbi.aiim.wegov2.com>>, accessed 14 May 2003. The film-based imaging association has a buyers guide of U.S. manufacturers and distributors of micrographic equipment and supplies. Address: 1100 Wayne Avenue, Suite 1100, Silver Spring MD 20910 USA

ANSI (American National Standards Institute) <<http://www.ansi.org>> accessed 15 May 2003. ANSI administers and coordinates the U.S. standardisation system. Address: Customer Service, American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

Australian Cooperative Digitisation Project, <<http://www.nla.gov.au/acdp>>, accessed 4 May 2003.

BSI Group (British Standards Institution), <<http://www.bsi-global.com>>, accessed 13 May 2003. The source of information and supply of British microfilming standards. BSI Group 389 Chiswick High Road, London, W4 4AL, UK.

CLIR (Council on Library and Information Resources), <<http://www.clir.org>>, accessed 3 May 2003. Address: 1755 Massachusetts Avenue, NW, Suite 500 Washington DC 20036, USA

G.G. Baker and Associates, <<http://www.ggbaker.com>>, accessed 15 May 2003. This organisation provides detailed advice about micrographic systems. The web site includes links to suppliers and also provides background information about areas of microfilming from jacketing to linking with electronic document management systems. Address: Saffron Hill, Chedworth, Glos. GL54 4AL UK.

IFLA (International Federation of Library Associations and Institutions) Preservation and Conservation (PAC) Core Programme, <<http://www.ifla.org/VI/4/admin/general.htm#1>>, accessed 15 May 2003.

IFLA-PAC Bibliotheque Nationale de France,
Address: 2, rue Vivienne, 75084 Paris Cedex 02, France.

- See also *Principles for the care and handling of library material*, <<http://www.ifla.org/VI/4/news/pchlm.pdf>>, accessed 15 May 2003.
- A number of back issues of *International Preservation News* are available direct from the IFLA website, <<http://www.ifla.org/VI/4/pac.htm#4>>, accessed 15 May 2003.
- The IFLA-PAC Centre at the National Library of Australia maintains a *Documentary Heritage Preservation Register*. This provides information about preservation projects in the Southeast Asian and Pacific regions such as microfilming, training, basic conservation and collection surveys, <<http://www.nla.gov.au/dhpr/>> accessed 15 May 2003.

IPI (Image Permanence Institute)

<<http://www.rit.edu/~661www1/>>, accessed 15 May 2003.

The IPI is a university-based research laboratory devoted to image preservation.

Address: Rochester Institute of Technology, 70 Lomb Memorial Drive Rochester NY 14623-5064, USA.

ISO (International Organisation for Standardisation),

<<http://www.iso.ch/>>, accessed 15 May 2003 .

Address: ISO Central Secretariat PO Box 56 CH-1211 GENÈVE Switzerland.

Library Preservation and Conservation Tutorial – Southeast Asia.

Designed for librarians and conservators in Southeast Asia, it has a range of information on preservation, including microfilming, <<http://www.librarypreservation.org/>>, accessed 15 May 2003.

The Microfilm Shop, <<http://www.microfilm.com/>>, accessed 15 May 2003.

Provides product information, news and views with a focus on business applications.

MICROLINK-L is an email discussion list on preservation microfilming jointly owned by the National Library of Australia and the State Library of South Australia,

<http://www.nla.gov.au/nla/listserv/microlink_l.html>, accessed 15 May 2003.

Museums Australia, <<http://amol.org.au/>>, accessed 15 May 2003.

Address: PO Box K36 Haymarket NSW 1238.

(The resource *ReCollections* is also available online from the Museums Australia website, <<http://amol.org.au/reollections/>>, accessed 15 May 2003.)

National Library of Australia <<http://www.nla.gov.au/>>, accessed 15 May 2003.

Address: Canberra, ACT 2600, Australia

National Library of Australia. *Policy on Preservation Copying of Collection Materials*, <<http://www.nla.gov.au/policy/micro.html>>, accessed 15 May 2003.

National Library of Australia. Anica – Australian Network for Information on Cellulose Acetate, <<http://www.nla.gov.au/anica/index.html>>, accessed 15 May 2003.

See also MICROLINK-L

<http://www.nla.gov.au/nla/listserv/microlink_l.html>, accessed 15 May 2003, and IFLA-PAC *Documentary Heritage Preservation Register* <<http://www.nla.gov.au/dhpr/>> accessed 15 May 2003.

National Library of New Zealand

New Zealand newspapers which have been digitised from microfilm can be accessed on the Papers Past website at <<http://paperspast.natlib.govt.nz>> accessed 15 May 2003.

The National Preservation Office (UK).

Address: British Library, 96 Euston Road London, NW1 2DB, UK <<http://www.bl.uk/services/preservation/>>, accessed 15 May 2003.

NSSN: a National Resource for Global

Standards, <<http://www.nssn.org>>, accessed 15 May 2003.

Provides a fee-based information service which includes international standards and technical data. Address: Customer Service, American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

PAMBU (Pacific Manuscripts Bureau),

<<http://rspas.anu.edu.au/pambu/>>, accessed 15 May 2003. Based in the Research School of Pacific and Asian Studies, Australian National University, the aim of the Pacific Manuscripts Bureau is to locate and preserve archives, manuscripts and other unpublished or semi-published material through microfilm.

Address: PAMBU, Research School of Pacific and Asian Studies, Australian National University, Canberra, ACT, 0200, Australia.

Preservation Resources is a division of OCLC. (Online Computer Library Center Inc.),

<<http://www.oclc.org/oclc/presres/microfilm.htm>>, accessed 15 May 2003.

It offers services such as preservation microfilming to libraries, including duplicating, scanning and polysulfide treatment.

RLG DigiNews is a newsletter conceived by the members of the Research Libraries Group's PRESERV community. Funded in part by the Council on Library and Information Resources (CLIR) from 1998-2000, it is available internationally via the RLG PRESERV web site, <<http://www.rlg.org/preserv/>>, accessed 15 May 2003. Address: Research Libraries Group 1200 Villa Street Mountain View, CA 94041-1100 USA.

SEACAP (Southeast Asian Consortium for Access and Preservation), <<http://www.seacap.chiangmai.ac.th>>, accessed 14 May 2003.

The aim of SEACAP is to encourage and support collaboration amongst libraries, archives and other institutions and interested individuals in order to preserve and provide access to the published and documentary heritage of the region.

Spring Singapore, <<http://www.psb.gov.sg>>, accessed 15 May 2003.

The source for information and supply of Singapore Codes of Practice relating to microfilming.

PSB Building, 2 Bukit Merah Central, Singapore 159835.

Standards Australia, <<http://www.standards.com.au>>, accessed 14 May 2003. Address: GPO Box 5420 Sydney NSW 2001, Australia.

UNESCO *Memory of the World Programme*, <<http://whc.unesco.org/nwhc/pages/home/pages/homepage.htm>>, accessed 15 May 2003.

Topic 1

Value of microfilm as a preservation reformatting option

Performance criteria

You will have achieved the performance criteria for this topic when you can:

- I explain the concepts of preservation and preservation reformatting
- I list possible reasons why material may be chosen for preservation microfilming
- I explain the benefits of a preservation microfilming program
- I list possible occasions when microfilming may not be the best option.

'Money does not last. Empires disappear. Nothing else but knowledge lasts eternally'.

Shri Prabhakar Keshav Sardeshmukh Maharaj—India

What is preservation?

Preservation is about linking the past with the future. It is about passing on cultural knowledge and information from one generation for the benefit of the next.

Preservation helps to make heritage available for the use of current and future generations either in its original format or in another usable way. Over the centuries many societies have preserved their cultural heritage in a variety of ways. These have ranged from maintaining oral traditions, to keeping manuscripts and published materials, art and artifacts, and maintaining archeological sites.

UNESCO's *Memory of the World Programme* is one recent example of a coordinated effort to preserve heritage on a global scale.

Further information about preservation is available in the module, **Preservation of Materials**.

Preservation reformatting

Preservation reformatting is the copying of information from one form to another in order to preserve it. This saves the original from further damage. It also provides a copy which can be used long after the original has become unusable, for example, through deterioration.

Examples of techniques which have been used for preservation reformatting include transcription (a technique which dates back thousands of years), photocopying, 'conventional' photography, microfilming, and, more recently, digitisation.

Each technique has its own advantages, depending on the situation.

General microfilming

At this point it is worthwhile distinguishing between preservation microfilming and general microfilming. Preservation microfilming is a specialised part of the wider microfilming industry—an industry which is not always interested in preservation aims.

This is explored further in this module under, **Differences between general microfilming and preservation microfilming**.

Benefits of a preservation microfilming program

A preservation microfilming program offers a number of benefits to cultural institutions such as libraries and archives.

Life expectancy

The major advantage of microfilm is its stability and its long **life expectancy** (sometimes abbreviated to LE).

Microfilm can be expected to last up to 500 years if it is:

- I manufactured to international quality standards on a **polyester film base**
- I processed to international quality standards
- I housed in containers which meet preservation standards
- I stored under optimum environmental conditions—including temperature and humidity. (This is discussed in the modules, **Preservation of Materials** and **Physical Management and Storage of Microforms**.)

By comparison, digital information has a shorter life expectancy due to its instability and the rapid changes in software and hardware.

The major benefit of a formal preservation microfilming *program* is to capture the 'knowledge' in a form that will outlast decaying materials. These original materials are often in the form of brittle and decaying books, newspapers, maps, plans, and 'archival' materials such as diaries and manuscripts.

 The article by Jian Li on microfilming newspapers in China is an interesting case study. See the **Resources** list at the front of this module.

Space saving

Another advantage of microfilm is its space saving capacity. A huge amount of information can be stored on microfilm in a much smaller space than the equivalent amount of information in paper form. Many libraries have experienced this space saving advantage in the case of microfilm copies of long back runs of newspaper titles (such as *The Straits Times* or *Sydney Morning Herald*).

Security

Microfilm has security benefits also. A page can be torn out of written material, whereas it is more difficult to mutilate microfilm. Microfilm also has advantages of authenticity and integrity. Once filmed, the image on microfilm cannot be manipulated, unlike digital files that can be readily altered or deleted. One area where the issue of authenticity can be critical is that of preserving manuscripts. This is because scholars who study the manuscripts need to know that the information in the manuscripts (and the copies) has not been tampered with.

Reducing stress on originals

Once a microfilm copy has been created, there is the added benefit of reducing stress on the original material. There is also the possibility of creating wider access by making duplicate copies for other readers around the world.

Economical

Microfilm is also an economical storage option. This is of particular interest when comparing the costs of preservation microfilming with the costs of preserving digital information for the long term.

Digitising option

Finally, there is also the possibility of digitising from microfilm. Once the microfilm is digitised there is the possibility of even wider access through the internet.

Benefits of a formal program

Where there is a lot of material to microfilm, it is useful to establish a formal microfilming program.

The process of establishing a formal program will help to clarify issues such as:

- I the purpose of the project
- I whether all or part of the production should be carried out in-house or contracted to a commercial bureau
- I prioritising the materials to be microfilmed
- I quantifying the amount of materials to be microfilmed
- I identifying relevant resources—funding for staffing, equipment etc.
- I record keeping
- I storage of microfilms
- I setting goals and production targets.

Further information on managing preservation microfilming programs is available in the module, **Project Management for Preservation Microfilming**.

Reasons why material may be chosen for preservation microfilming

As we cannot save everything, preservation becomes an issue of making choices about what to preserve in the original format, and what to reformat.

There are a number of reasons why original material may be chosen for microfilming, such as the condition of the original material, its rarity and how much it is used.

You will explore these reasons further in **Activity 1.2** below.

■ Activity 1.2

Advantages of microfilming

Complete the details on the right hand side of the table below.

Give as many advantages gained by microfilming as you can in each case. The first item has already been completed as an example.

Reasons for microfilming	Advantage gained by microfilming
<ul style="list-style-type: none"> • condition e.g. degree of deterioration and/or fragility 	<ul style="list-style-type: none"> • copied onto long term stable format • saves further use of original
<ul style="list-style-type: none"> • rarity 	
<ul style="list-style-type: none"> • the level of usage—current and potential for the future 	
<ul style="list-style-type: none"> • space occupied by original 	
<ul style="list-style-type: none"> • the value—monetary, aesthetic, historical etc. 	
<ul style="list-style-type: none"> • concern about authenticity and ‘integrity’ of copy 	

This gives you a checklist of reasons why material may be chosen for preservation microfilming which you can use in the future.

● Reflect 1A

Reasons why material may be chosen for microfilming

1. Discuss the reasons why material may be chosen for microfilming with your colleagues and your mentor.
2. Discuss your **Activity 1.2** checklist with them, and add their suggestions to your list.

Occasions when microfilming may not be the best reformatting option

Limitations of microfilming

Microfilm is only one important tool in a whole kit of many reformatting options. It has its limitations. For example:

- I the strict linear nature of the microfilmed information may make it difficult to use
- I a standard microfilm copy may not reproduce the photographs well, especially where the originals contain a large number of 'half-tone' black and white photographs
- I unless the filming and processing organisation has had experience in colour microfilming, microfilm may not be the best tool for copying coloured materials.

Other reformatting options

Photocopying

Photocopying is another example of a reformatting tool which is widely used. Photocopying may be the best alternative in situations where users prefer a copy that closely resembles the original form.

Digitisation

Digitisation is a reformatting tool which has potential for providing increased access to information by a global audience via the internet. During the digitising process, 'dirty' images can be 'cleaned up' and faint marks on an original can be made legible. For these reasons digitisation may be the preferred option—especially if the information is not required to be preserved in the long term.

Combination

A range of reformatting tools can be used in combination. For example, it is possible to digitise from microfilm and to create microfilm from digital images. With some modern cameras it is possible to digitise and film with the one camera. This gives a long-term preservation base, together with all the advantages of access through digitisation. This is discussed further in Topic 6.

The decision

The decision as to which reformatting tool is most appropriate is a complex one.

The decision should be made with an understanding of the reasons for reformatting, and the strengths and weaknesses of each tool.

Summary

- I Preservation is a means of linking the past with the future.
- I Preservation reformatting is the copying of information from one form to another in order to preserve it. Preservation microfilming is one of the proven reformatting techniques which can help preserve information for many hundreds of years if the films are stored correctly.
- I Digital information has a comparatively shorter life expectancy due to its instability and the rapid changes in software and hardware.
- I Microfilming is one part of a tool kit of many reformatting options. It can be used in combination with digitising to provide both preservation and access for users.

Checklist

In order to test your understanding of this material, work through the checklist below.

If you can answer 'yes' to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities**.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled **Resources**, talk to your work colleagues or contact your lecturer or mentor.

I can:

- I explain the concepts of preservation and preservation reformatting
- I list possible reasons why material may be chosen for preservation microfilming
- I explain the benefits of a preservation microfilming program
- I list possible occasions where microfilming may not be the best option.

▲ Submit

You are now ready to record in your **Log book** that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities** for this topic.

You can record these by marking off the boxes in the shaded columns with a ✓ **yes** or ✗ **no**.

You can then ask your lecturer or assessor to verify this information.

Topic 2

Working with cultural institutions

Performance criteria

You will have achieved the performance criteria for this topic when you can:

- I identify acceptable practices for handling culturally-sensitive materials
- I explain special security arrangements for handling culturally-sensitive materials
- I explain special arrangements for record keeping when preparing culturally-sensitive material for preservation microfilming.

Librarians, archivists, conservators and other preservation professionals all follow certain codes of ethics and practice when working with cultural collections. These codes have been developed to ensure the continuing safety and integrity of the collections.

Staff members from these cultural institutions want to make sure that other people handling these collections follow similar codes of practice. As a result, specifications for microfilming or copying items from these collections are strict.

Cultural institutions may also have unusual or special requirements for some materials where the items are especially fragile or 'culturally-sensitive'. Examples of culturally-sensitive materials are those which have a particular religious, spiritual, ritual or social significance to the original owners.

Good communication is required by both preservation staff and staff of cultural institutions to obtain the best possible result.

General guidelines

Generally, cultural institutions will expect the preservation microfilmer to do the following:

Expectations of microfilmer

handling requirements	description
handle originals with respect	<ul style="list-style-type: none">• this means taking care not to damage material through careless handling or storage, and taking care not to place items under excessive physical pressure during the microfilming process
minimum handling	<ul style="list-style-type: none">• handle collection material as little as possible
carry out special procedures	<ul style="list-style-type: none">• be prepared to carry out special procedures necessary for dealing with fragile, culturally-sensitive or restricted material
store appropriately	<ul style="list-style-type: none">• store collection material under appropriate environmental conditions, providing security from theft, damage, fire, flood and attack from pests (see the module, Physical Management and Storage of Microforms)
inform of damage immediately	<ul style="list-style-type: none">• inform institutions immediately of any damage that may occur
minimise light exposure	<ul style="list-style-type: none">• do not leave objects under lights for longer than necessary
no repairs without prior approval	<ul style="list-style-type: none">• do not attempt to repair or alter the original in any way, unless written approval is first obtained
follow agreed time frames	<ul style="list-style-type: none">• material may need to be filmed within a certain time frame, or there may be limitations on how much material can be filmed at a time

The preservation microfilmer can expect a cultural institution to do the following:

Expectations of cultural institution

handling requirements	description
clarify standards	<ul style="list-style-type: none"> • provide precise information about their quality standards
clarify special needs at start	<ul style="list-style-type: none"> • make any special needs clear at the beginning of the project
communicate clearly	<ul style="list-style-type: none"> • communicate clearly throughout the project in response to queries and problems that arise
give direction on handling and repairs	<ul style="list-style-type: none"> • provide support and direction for repair and handling where necessary

Acceptable practices for handling culturally-sensitive material

In addition to the guidelines above, special arrangements will need to be made for the handling and microfilming of some culturally-sensitive material.

For example, women should not view some images of Aboriginal Australian peoples. Within the Asian-Pacific region there may be manuscripts of religious or spiritual significance which may only be viewed by certain people. Such arrangements will need to be specified at the beginning of a microfilming project by the cultural institution or owners.

An example of a policy document on practices for handling culturally-sensitive material is *Previous Possessions, New Obligations: Policies for Museums in Australia and Aboriginal and Torres Strait Islander Peoples*, Museums Australia, (1996). This document encourages all organisations to work closely with indigenous peoples to interpret, display and preserve their cultural property. Part of this policy includes repatriation – this means sending cultural materials back to the original owners.

A related example comes from the Australian Institute for the Conservation of Cultural Material (AICCM) which states in its revised *Code of Ethics and Code of Practice* (2000) that members should:

- *be informed and respectful of the cultural and spiritual significance of cultural material*
- *consult with all relevant stakeholders before making treatment or any other decisions relating to such cultural material*
- *recognise the unique status of Aboriginal and Torres Strait Islander peoples as first peoples, and as key stakeholders in the conservation of their cultural heritage material*
- *recognise that the objects and the information relevant to them are of equal importance and that conservation practice must adapt to cultural requirements, particularly in respect of secret/sacred items.*

( See the AICCM contact details in the **Resources** list at the front of this module.)

Security of culturally-sensitive material

Special arrangements will be needed to maintain security of working and storage conditions when handling culturally-sensitive material. The arrangements will need to protect the material at all stages. The arrangements need to be made in close consultation with the cultural institution and relevant stakeholders, such as the original owners.

Special security arrangements can include:

- l keeping professional confidentiality with clients, owners etc. about materials being filmed
- l restricting filming, handling and quality checking to designated people
- l preparing and filming material in a separate, secure area
- l securing and locking material when not in use
- l secure packing and transportation of originals and microfilm copies.

The following principles are taken from, *Previous Possessions, New Obligations: Policies for Museums in Australia and Aboriginal and Torres Strait Islander Peoples*.

- l *Secret/sacred material shall be kept in a manner consistent with its sensitive nature and separately from other collections.*
- l *Traditional custodians will be consulted on the method of storage and preservation of secret/sacred material.* (Items 2.5, 2.6)

Record keeping of culturally-sensitive material

Accurate records of what and when material was prepared, filmed, processed and checked is good microfilming practice. This is explored in further detail in the module, **Microfilm Quality Control Inspection**.

However, it may be necessary to vary standard record keeping according to the nature of the culturally-sensitive material. Again, record keeping arrangements should be developed in close consultation with clients, owners and custodians.

Examples of special recording requirements

recording	<ul style="list-style-type: none">• information about the cultural and spiritual significance of the material and any handling restrictions
	<ul style="list-style-type: none">• permissions granted to designated people to handle and film the originals
	<ul style="list-style-type: none">• information on storage of the master microfilms and copies and any restrictions on viewing the microfilm copies
limiting	<ul style="list-style-type: none">• the description of items being prepared or filmed (due to restrictions)
expanding	<ul style="list-style-type: none">• details to help with security arrangements such as:<ul style="list-style-type: none">• who has handled, prepared, filmed, checked, transported and returned sensitive items• how materials are kept secure and separate
arranging	<ul style="list-style-type: none">• for a representative of the traditional owners or custodians to do the record keeping

● **Reflect 1B**

Local experience in handling culturally-sensitive material:

1. Check with your colleagues or your mentor to find examples of special arrangements they make when they are filming culturally-sensitive material.
2. Are there any examples of local customs which need to be followed?
3. Record the information below.

Special arrangements followed by colleagues/mentor

Local customs

Summary

- I When working with cultural institutions such as libraries, archives and museums there is a need to follow codes of practice.
- I General guidelines include handling materials with respect and exposing them to minimal damage.
- I Acceptable practices for handling culturally-sensitive material include the need for close consultation with all relevant stakeholders. Arrangements may need to be adapted to cultural requirements.
- I Special arrangements will need to be made for security and record keeping when handling culturally-sensitive material.

Checklist

In order to test your understanding of this material, work through the checklist below.

If you can answer 'yes' to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities**.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled **Resources**, talk to your work colleagues or contact your lecturer or mentor.

I can:

- I identify acceptable practices for handling culturally-sensitive materials
- I explain special security arrangements for handling culturally-sensitive materials
- I explain special arrangements for record keeping when preparing culturally-sensitive material for preservation microfilming.

▲ Submit

You are now ready to record in your **Log book** that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities** for this topic.

You can record these by marking off the boxes in the shaded columns with a ✓ **yes** or ✗ **no**.

You can then ask your lecturer or assessor to verify this information.

Topic 3

Selecting materials for microfilming and copyright

Performance criteria

You will have achieved the performance criteria for this section when you can:

- I explain why some materials may be at risk
- I explain copyright implications associated with a preservation microfilming project.

Making the choice

Preservation is about making choices of what to preserve, why, when and how.

The question of what to preserve through copying on to microfilm should always be discussed in consultation with relevant experts, such as records managers, archivists, curators and library staff. Ross Harvey (1993) highlights four main factors which influence preservation priorities.

These are:

- I physical condition—the extent of deterioration
- I use—past, present and future
- I rarity
- I value—financial, aesthetic, historical and bibliographical.

Local and national priorities and funding potential may also influence the choice.

Why some materials may be at risk

There are a number of key factors which determine why materials may be at risk and will therefore influence priorities for microfilming. Some of these are listed below. Further information is available in the module, **Preservation of Materials**.

Physical damage

Materials which are damaged physically (e.g. torn or broken) are much more susceptible to further damage. Therefore these may become a higher priority for microfilming.

Instability

Many cultural objects are made up of materials which do not last long—for example newspapers.

Modern newspapers are produced on paper made from wood pulp which contains lignin. Lignin is very reactive and susceptible to photochemical deterioration. As lignin breaks down it produces yellow-brown substances as well as acids. The acids then attack the paper fibres, making the paper brittle. This process is accelerated by exposure to light and ultraviolet radiation and other environmental conditions.

Problems with light and UV radiation

Light is necessary in museums, libraries and archives for viewing exhibitions, for reading and research and for curatorial work. All common sources of light such as the sun, light bulbs and fluorescent tubes also give out other forms of radiation to varying degrees. These include ultraviolet (UV) and infrared (IR) radiation. All of these hasten the deterioration of original materials.

Copyright implications of preservation microfilming

There are two major copyright issues to be addressed when microfilming. The first is the rights of the original copyright owner, and the second is the copyright that may exist in the microfilm reproduction.

Rights of the original copyright owner

Before material is microfilmed relevant national and international copyright laws must be checked to ensure compliance with the copyright owner's rights.

The example below is taken from Australian copyright law and refers to relevant copyright legislation for both published and unpublished materials under the Australian *Copyright Act, 1968*.

It is an example of the kind of issues typically covered under copyright legislation. However, you should always check the copyright laws as they apply in your own country.

Published works

As an example, section 51A of the Australian *Copyright Act* permits libraries to make a microfilm copy of published works for preservation purposes provided that:

- the original is damaged or has deteriorated
- the original forms part of a library/archive collection
- a declaration is prepared by an authorised officer stating that a new copy cannot be obtained within a reasonable time at an ordinary commercial price.

Provided that the microform is produced for preservation, research or replacement purposes, there is no need to destroy the original.

Section 51A also allows a single microfilm copy of published works to be made for **non-preservation purposes provided that the original is destroyed**.

A sample copyright declaration form is included below. It is only applicable to Australian law.

Sample copyright declaration form

Declaration by an officer of [insert name of institution] authorised to copy a work for the purposes of preservation, replacement of an original work pursuant to section 51A of the *Copyright Act 1968* (Australia)

I, [insert name of authorised officer] of [insert name of institution] am authorised by [insert name of institution] by the officer in charge of this [name of institution] to make a copy of the following work for the purposes of preserving or replacing the work:

[insert name of the work] ('the work')

I declare that I:

1. have caused an investigation to be carried out to determine whether the work can be obtained within a reasonable time at an ordinary commercial price; and
2. am satisfied that the investigation having been completed, a copy (not being a second hand copy) of the work cannot be obtained within a reasonable time at an ordinary commercial price.

Dated:

Signed:

[insert name of authorised officer]

[Office held]

Sample copyright declaration form (applicable to Australian law)

© National Library of Australia

Unpublished or archival materials

Unpublished or archival materials may have special requirements, for example, donor restrictions. Many manuscripts, diaries etc. may never be published and therefore copyright may be perpetual (ongoing). In all cases it is advisable to first seek written permission of the copyright owner, before microfilming. The permission should refer to any acknowledgements which need to be made.

As an example, for unpublished or archival materials, Section 51A(1)a of the Australian *Copyright Act* allows for copying:

- to preserve against loss or deterioration (i.e. before deterioration has set in)
- for the purpose of research.

If copies are to be made for sale, permission of the copyright owner should be obtained.

Copyright in the microfilm reproduction

The organisation that produces the microfilm copy may also hold copyright rights on the microfilm reproduction.

Both copyright issues—the rights of the original owner and the copyright in the microfilm copy—should be recorded in the microfilm targets (the equivalent of title pages in books). Targets are discussed further as a microfilming term on in Topics 4 and 5 of this module and in the module, **Preparation for Microfilming**.

Summary

- I Preservation is about making choices of what to preserve, why, when and how.
- I The question of what to preserve on microfilm should always be discussed with relevant experts.
- I A number of key factors determine why materials may be at risk, including physical damage, instability, light and UV radiation, humidity, temperature and biological pests.
- I Important copyright issues are:
 - the rights of the original copyright owner
 - the copyright that may exist in the microfilm reproduction.

Checklist

If you can answer 'yes' to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities**.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled, **Resources**, talk to your work colleagues or contact your lecturer or mentor.

I can:

- I explain why some materials may be at risk
- I explain copyright implications associated with a preservation microfilming project

▲ Submit

You are now ready to record in your **Log book** that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities** for this topic.

You can record these by marking off the boxes in the shaded columns with a ✓ **yes** or ✗ **no**.

You can then ask your lecturer or assessor to verify this information.

Topics 4 & 5

Common microfilming terms, standards and specifications

Performance criteria

Criteria relating to microfilming terms

You will have achieved the performance criteria for this section when you can:

- I list the available formats of microforms
- I explain the terms 'positive' and 'negative' as they apply to film polarity
- I discuss the use of first, second and third generation microforms
- I record the types of film used as microforms and discuss their features
- I list available film bases and discuss their suitability for preservation microfilming
- I discuss the alternatives for positioning images on microforms
- I define the term 'reduction ratio'.

Criteria relating to standards and specifications

You will have achieved the performance criteria for this section when you can:

- I list the details which should be included in specifications for preservation filming, processing and storage
- I identify typical areas where more general microfilming is different from preservation microfilming
- I list relevant standards associated with filming, processing and storage
- I describe the typical features listed in a bibliographic record of microfilm.

This section deals with both general microfilming terms and microfilming standards. An understanding of microfilming and microfilming terms is the foundation for understanding the standards. Some of these basic terms are described below.

Microfilm formats

A wide variety of user needs and applications have given rise to a range of different microfilm formats. Each format has a range of applications for specific user needs.

The most common formats in use include:

- I 16mm roll film (open spool)
- I cartridge microfilm (16mm)
- I 35mm roll film (open spool)
- I aperture cards
- I microfiche 105mm
- I jackets -16mm, 35mm or a combination 16/35mm.

Roll film

Both 16 and 35mm roll film is most convenient where there are large volumes of records. The 35mm sized roll film is used for larger documents such as newspapers, maps, plans and large manuscripts.

Unlike cine film, roll microfilm is not perforated (pierced by small holes). Only a small margin at the edges is needed to enable it to be held in a camera or reader. Therefore most of the whole width is available for recording images.

Cartridge film

This is created by **splicing** a 16mm roll film into a fully enclosed single cartridge which gives it a high degree of protection, ease of handling and automatic loading capability. It is designed to be inserted into readers, reader printers etc.

Aperture cards

These data processing cards usually contain one frame of 35mm film. Less common are versions of aperture cards with two frames. They are frequently used to copy images of engineering drawings and maps.

Microfiche

A microfiche is a flat sheet of film, normally 105mm X 148mm, containing multiple micro-images in a grid pattern. Microfiche can be computer generated (COM).

Microfilm jackets

Microfilm jackets are transparent holders containing channels into which strips of 16 or 35mm roll film (or both) are inserted. Each jacket then becomes a **microfiche**. The jackets can be updated by adding or removing individual microfilm images, or rows of images.



*Examples of microforms:
35mm and 16mm film,
cartridge, aperture card and
fiche jacket.*

© National Library of Australia



*Examples of microform
brands*

© Photograph courtesy of State
Library of South Australia

Choice of format

The choice of format should always be discussed with the client and matched to their needs.

In addition, some formats are determined by **standards**. For example, standards for microfilming newspapers specify that 35mm roll film should be used.

As a general rule, the following factors will closely influence choice of film size—35mm or 16mm.

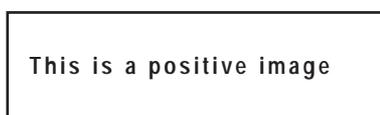
Microfiche and 16mm film generally use a **reduction ratio** twice as high as for materials of the same size on 35mm film. This means that a book filmed on a reduction of 1:10 on 35mm film would probably be filmed at 1:24 on 105mm fiche. So 35mm film is capable of producing larger images compared with 16mm film.

This is discussed further under, **Reduction ratio**.

Factor	Choice of film size
previous filming of same or similar work	<ul style="list-style-type: none"> • continue in same size for continuity unless otherwise indicated
size and volume of originals	<ul style="list-style-type: none"> • 35mm size for large format material larger than A3 size • 35mm for thick materials (depth of field problems occur with some 16mm cameras with originals thicker than 2mm) • 16mm for smaller materials less than, and up to, A3 size where print size and image detail can support the higher reduction ratio • 16mm for materials less than 2mm thick
size and quality of image required.	<ul style="list-style-type: none"> • 35mm film is capable of producing larger images compared with 16mm film. This is discussed further under reduction ratio below • with a lower reduction ratio and a larger image the quality of the image is potentially higher

The terms 'positive' and 'negative' as they apply to film polarity

Positive microfilm has the image darker than the background, just as this text is.



Negative microfilm has the image lighter than the background.



Polarity

The term 'polarity' refers to the change—or retention—of the light to dark relationship of an image. For example, a change from first generation **negative** to a second generation **negative** means the polarity is retained. A change from a first generation **negative** to a second generation **positive** means a change in the polarity. (The different generations of films are explained below). In a positive image the polarity is the same as the original. In a negative image the polarity is the opposite of the original.

The uses of first, second and third generation microforms

Every copy of a microform is known as a generation.

When microforms are used for preservation purposes, three generations are produced as:

- I first generation
- I second generation
- I third generation.

First generation microforms

The first generation is the original camera film. It is also known as the master or first generation master and is normally a negative. It is used as the preservation copy.

Silver halide film is always used for the master negative. (See below under, **Choice of film types**.)

Second generation microforms

The second generation is also known as the duplicate, copying master, or sub-master. It is duplicated directly from the first generation master and is normally a negative.

The second generation master is used to duplicate third generation service copies. It should never be used for reference purposes. This would cause permanent scratches and marks on the second generation master and these would appear on any further copies which are made from them.

In preservation microfilming, silver halide film is always used for the duplicate copy.

Third generation microforms

The third generation is also known as the service, reference, use or working copy. With one exception, the service copy is always duplicated directly from the second generation copying master. It can be either positive or negative.

Exception

Sometimes microfilming organisations make an exception with the first copy of the service copy.

In this case the first service copy is duplicated straight from the first generation master. Here it is used in quality checking for any defects, as it avoids putting the master negative through a reader.

Once the service copy passes quality inspection, then the second generation duplicate negative is made.

This option and other alternatives are discussed further in the module, **Microfilm Quality Control Inspection**.

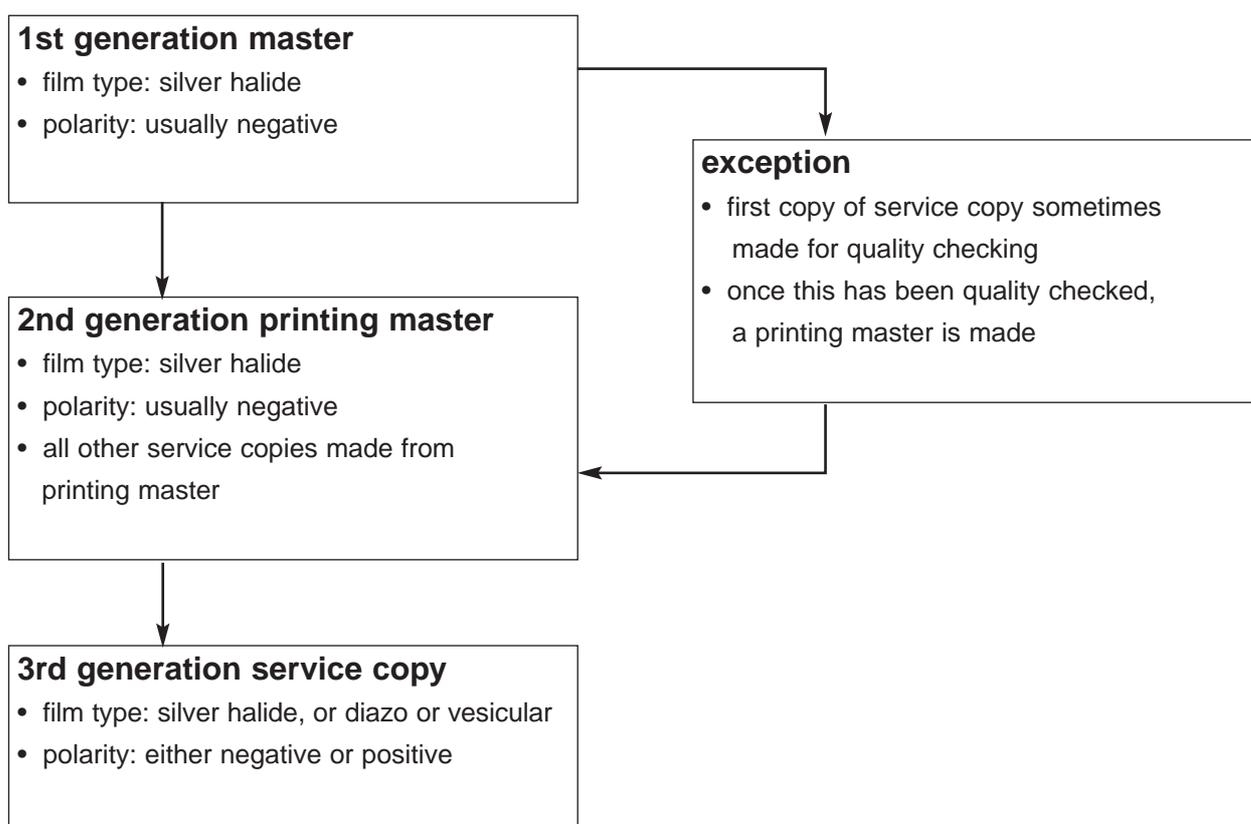
Further copies of the service copy are always made from the duplicate negative.

The third generation service copy is used for reference purposes. This is the copy which users are given when they visit libraries.

See the diagram, **Generations of microfilm** below.

Different types of films can be used for the service copy, depending on the priorities of life expectancy and predicted levels of use. (See below under, **Choice of film types**.)

Generations of microfilm



Choice of film types

The three types of film stock most commonly used are:

- I silver halide
- I vesicular
- I diazo.

Silver halide film

Silver halide film is long lasting. Silver halide film on a polyester base that is processed and stored correctly has an estimated life expectancy (LE) rating of up to 500 years.

The emulsion layer consists of silver crystals suspended on gelatin. Silver halide is generally used for first and second generation microforms. It can also be used for third generation service copies. Its main drawback is that its surface is more easily scratched. Silver halide film can be identified by a dull surface on the emulsion side. The film base side has a shiny surface. When inspecting silver halide film it is important to wear clean white cotton gloves to avoid fingerprints and scratching.

Silver halide film is available in both image-reversing and image-maintaining forms.

Image-reversing films change the polarity from generation to generation—positives from negatives and negatives from positives.

Image maintaining films keep their polarity from generation to generation—positive from positive and negative from negative.

Vesicular film

Vesicular film contains sensitised layers of diazonium salts within a plastic layer. When it is exposed to ultraviolet light, small bubbles of nitrogen gas are formed. These bubbles scatter the light and produce visible images. It has good duplicating qualities and is used for third generation service copies. While it does not last as long as silver halide, vesicular film is considered to have a life expectancy of at least several decades if stored correctly.

Vesicular film is available only in image-reversing form (that is, negative from positive, positive from negative).

Diazo film

Diazo film also contains sensitised layers of diazonium salts and dyes that are exposed to ultraviolet light. These are developed with heat and ammonia to form an image.

Diazo is used for third generation service copies. Like vesicular film it has a more limited life expectancy than silver halide, but should last at least several decades if stored correctly. A navy blue or black toning identifies diazo film.

Diazo film is available only in image-maintaining form (positive from positive, negative from negative).

Colour microfilm

Colour microfilm is also available, although it is not as widely used as black and white film. In comparison it has more a limited life expectancy.

Colour microfilm is discussed further in the module, **Physical Management and Storage of Microforms**.

■ Activity 1.7

Generations of microfilm

Complete the following table by indicating whether polarity is positive or negative with various types of film.

2nd generation copy	produces	3rd generation copy
film type: silver halide	➔	film type: vesicular
polarity:		polarity: positive
film type: silver halide	➔	film type: diazo
polarity:		polarity: negative
film type: silver halide	➔	film type: diazo
polarity:		polarity: positive

Available film bases and their suitability for preservation microfilming

Microforms carry an image layer, which is supported by a base material. Film stock is currently available in both **polyester** and **acetate** base. In the past, some films were produced on a **nitrate** base.

Polyester

Only polyester base films are suitable for preservation microfilming.

Acetate

Cellulose acetate and triacetate bases have a much shorter lifespan and generally deteriorate as a result of the '**vinegar syndrome**'. These will need to be copied onto polyester film to make sure that they last in the long term.

Nitrate

It is also possible that some older microforms may have been produced on a nitrate base.

Nitrate film base can be extremely unstable and dangerous. **If your organisation has any cellulose nitrate film it should be handled with great care and isolated (stored separately) from all other films.**

Nitrate film is further discussed in the module, **Physical Management and Storage of Microforms**.

If you suspect that any film may be on a cellulose nitrate base, check with a professional conservator, your national library or the IFLA regional office for further advice.

Find out about film bases in local microfilm collections. Check with colleagues and your film supplier to find out when different types of film bases have been used in your country and your own organisation.

Simple tests can be carried out to find out about the type of film base. These tests are described in the module, **Microform Quality Control Inspection**.

Further information about cellulose acetate and cellulose nitrate is available from a number of organisations such as the Image Permanence Institute (IPI) and the National Library of Australia.

If you have access to the internet, you can check the National Library of Australia's website under **Anica** – the Australian network for information on cellulose acetate
<<http://www.nla.gov.au/anica/index.html>>.

Reduction ratio

The reduction ratio expresses the relationship between the size of the original document and the corresponding microform image. It is a linear measurement that refers to the number of times the original is reduced on film. For example, a 1:24 reduction ratio means that any line on a microform image is 1/24 the size of the corresponding line on the original. The actual image area is reduced 24 x 24, which means that for a 1:24 reduction ratio, the area is reduced 576 times.

As an example, a document which measures 230 mm x 145 mm would appear on film as an image 23 mm x 14.5 mm if it was filmed at 1:10 reduction.

With a lower reduction ratio and a larger image the quality of the image is potentially higher. This might be important for documents with fine or small print or fine detail.

This closely influences the choice of format.

Reduction ratio.

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Research Libraries.*

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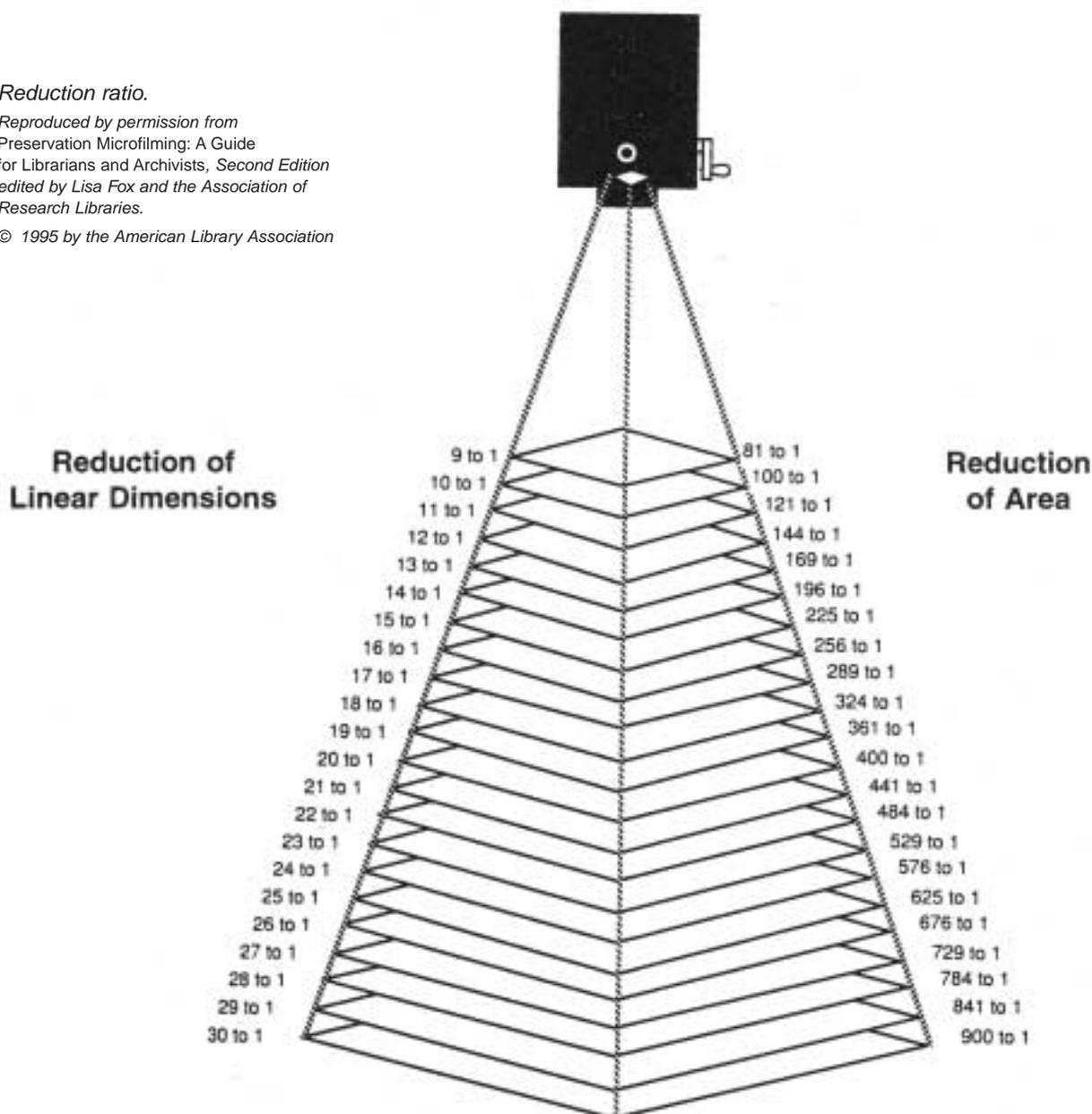


Image orientation

Image orientation refers to the arrangement of images on a film.

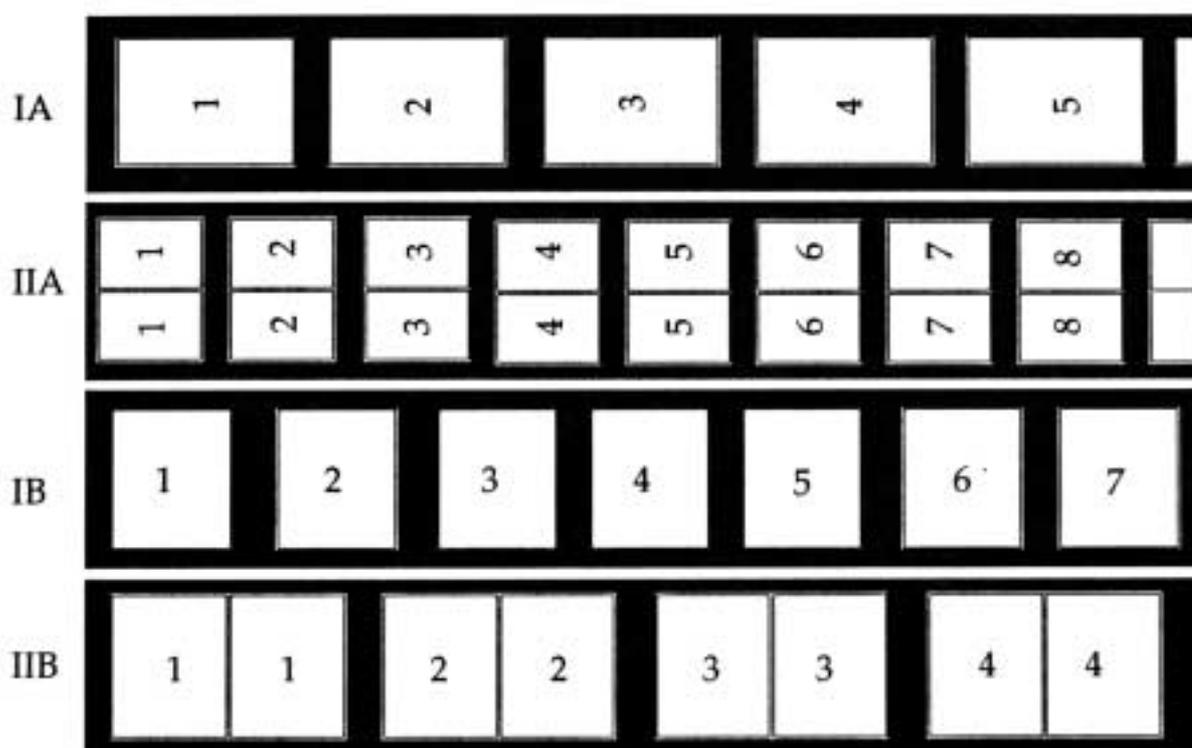
Microfilm

Images can be arranged in four different ways:

- ▮ they can be either arranged as single or double pages per frame
- ▮ they can also be orientated in cine or comic mode
- ▮ in cine mode the text runs at right angles to the long edge of the film
- ▮ in comic orientation the text runs parallel with the long edge of the film.

Each position has a commonly used symbol:

- ▮ IA – single page per frame in cine mode
- ▮ IIA – double page per frame in cine mode
- ▮ IB – single page per frame in comic mode
- ▮ IIB – double page per frame in comic mode.



Microfilm image orientation chart

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Microfiche

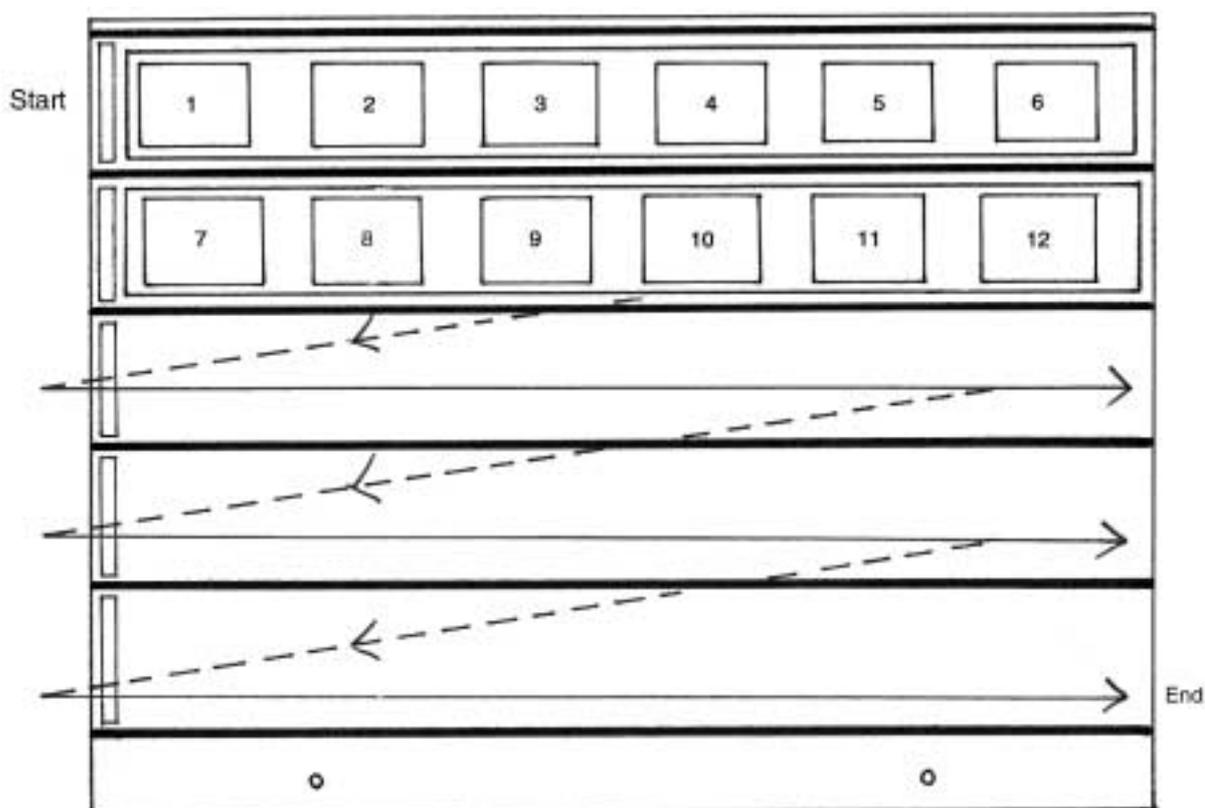
Frames on a microfiche are arranged in grid patterns of columns and rows.

Common formats used for preservation fiche are:

- 5 rows x 12 columns = 60 frames (jacket microfiche are often in this format)
- 7 rows x 9 columns = 63 frames
- 7 rows x 14 columns = 98 frames.

The recommended arrangement for preservation fiche is for the first frame to appear in the upper left hand corner of the grid, immediately below the heading. Frames should follow successively from left to right in each succeeding row.

(Vertical arrangement, another type of arrangement, is less frequently used. In vertical arrangement the frame sequence is in columns from top to bottom.)



Arrangement for preservation microfiche

■ Activity 1.8

Film orientation

a) Describe an example of an item filmed in cine mode—either single or double framed.

b) Explain why you think the item was filmed in cine mode.

c) Describe an example of an original item filmed in comic mode.

d) Explain why you think the item was filmed in comic mode.

Density

Density is the degree of darkening of the film emulsion. The ideal is to aim for as much **contrast** as possible between the background and image areas of the film. The background density is the degree of blackness on the part of the negative film that corresponds to the page background.

Density may be measured with a **densitometer** and is expressed numerically, as maximum (Dmax) and minimum (Dmin) levels, e.g. Dmax = 1.30.

Typical preservation microfilming projects specify minimum density ranges according to the contrast and type of materials. However, in practice, many original materials such as old palm leaf manuscripts are difficult to read, and getting more contrast may not necessarily improve legibility.

Density is influenced by the type of film, the exposure levels and how the film is processed.

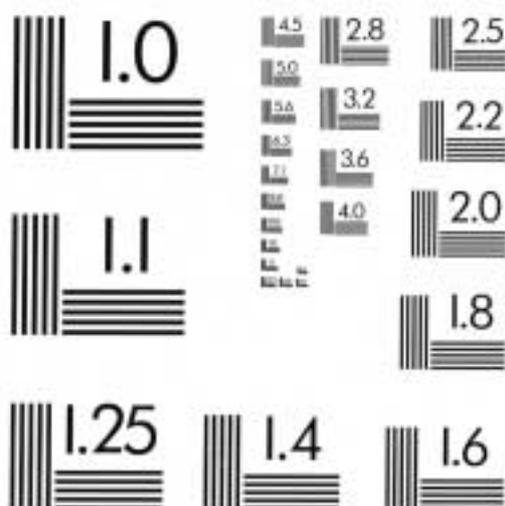
Density and density levels are discussed further in the modules, **Microform Quality Control Inspection** and **Operating Microfilming Equipment: Cameras**.

Resolution

Resolution is the degree to which fine details can be distinguished and is a major factor in film legibility. The higher the resolution, the finer the detail which will be reproduced.

A standard test chart is used to measure resolution. This forms part of the early **target** sequence.

**PM-1 3½"x4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT**



*Resolution test chart
Reproduced by permission
© A & P International*

Each pattern has a resolution rating.

The filmed image of the chart is inspected under a microscope to identify the finest pattern of separate lines that can be clearly distinguished.

The number linked with the smallest of these recognisable patterns – multiplied by the reduction ratio – represents the resolution, in lines per millimetre.

In preservation microfilming, a minimum level of resolution is often specified. This is often quoted at a level of 120 to 150 line pairs per millimetre in the camera negative.

PRECISIONSM RESOLUTION TARGETS



A & P INTERNATIONAL
715/262-5788 FAX 262-3823
577 LOCUST ST.
PRESCOTT, WI 54021

Quality Index

One problem with specifying a resolution level is that it does not take into account the level of detail in the original.

The Quality Index (QI) system was devised to take account of the level of detail. It adds to the resolution measurement a measurement of type size in millimetres of the lower case letter 'e' in the original document. This measurement is then multiplied by the smallest resolution pattern that is resolved on the film. The number is then used as the Quality Index.

It is common to specify a Quality Index (QI) level that must be achieved for each generation of film, e.g. QI =10.0.

The Quality Index can only be used with certain types of printed documents. This is because its calculation is based on there being a standard sized 'e' in the text.

Further information on **resolution** and the **Quality Index** is available in the module, **Microform Quality Control Inspection**.

Targets

Targets are the equivalent of a book's title pages.

They provide:

- technical details about the filming (e.g. the reduction ratio)
- bibliographic details of the original material (e.g. title, dates, place, publisher)
- who is responsible for the project
- any irregularities in the original.

Further details about targets are available in the module, **Preparation for Microfilming**.

An example of a technical target is a resolution target, seen on the previous page. Here is an example of a bibliographic target.

TITLE	City messenger [newspaper] : the voice of Adelaide
IMPRINT	[Port Adelaide, S. Aust.: Messenger Press, Vol. 1, no. 1 (Wednesday, 19 Oct. 1988)-, v.: ill. ; 41cm
SUBJECT	Australian newspapers — South Australia — Port Adelaide Australian newspapers — South Australia — Adelaide Adelaide (s. Aust.) — Newspapers

*Example of
bibliographic target*
© State Library of South
Australia

Film splicing

A splice is a join made by attaching two pieces of film together so they will function as a single piece. This usually happens when there are errors in the camera master, leading to the need for some sections to be refilmed and spliced into the camera master.

Only **ultrasonic splices** are acceptable for preservation microfilming. These should be made only on the camera master. In preservation microfilming, the number of splices per reel is usually limited to **six**, as every splice weakens the film.

Splicing is discussed further in the module, **Jacketing and Splicing Microfilm**.

The importance of technical specifications

A large number of well-established national and international standards and specifications relating to microfilming have been developed. Standards are produced by committees of experts and are designed to present information logically using uniform language.

'Standards provide guidelines against which products can be assessed and because their conditions are very specific, standards reduce misunderstandings between clients and suppliers and promote uniformity throughout the industry.'

(National Library of Australia 1998, p. 17).

Details which should be included in specifications or agreements

Formal specifications clarify exactly what is required at each stage of the microfilming process. They are also called agreements or contracts. Agreements are usually prepared for microfilming work done outside a library e.g. by commercial microfilming organisations. However, Agreements can also be used when microfilming is done 'in-house' by a unit within an organisation.

'At the very minimum the bureau [organisation] should understand why the work is being done, the nature of the material to be filmed, what standards should be used, what will happen to the filmed material after filming, what the film will be used for, and whom to contact in the case of questions or problems.'

(National Library of Australia 1998, p.17)

Typical Agreements will include details such as the following:

- l how originals and microforms are to be handled
- l the environment in which items are to be filmed, processed and stored (e.g. levels of temperature, humidity, exposure to dust)
- l the film base and type to be used
- l whether the filming arrangements and image quality will have to support later digitisation
- l whether the original can be taken apart from its binding
- l whether the original should be filmed 'under glass' to flatten it
- l image orientation and placement and the acceptable degree of '**skew**'
- l reduction ratio
- l resolution
- l density levels
- l scratching and marking
- l the need for multiple exposures
- l sequence and type of targets
- l indexes and guides
- l leaders and trailers
- l splices
- l chemical processing and levels of residual chemicals on master films
- l quality control requirements
- l processes for correcting defects
- l how the film is to be wound
- l 'housing' of films—type of reels, boxes, labels.

There will also need to be an agreement about the time for completion.

An example of a specification/Agreement is provided in Appendix 4 of the *Guidelines for Preservation Microfilming in Australia and New Zealand* (National Library of Australia 1998).

National Library of Australia standing offer agreement for preservation microfilming services

Agreement
between
The National Library Of Australia
and

.....
[This Agreement was prepared
for the National Library of
Australia by the Australian
Government Solicitor, Canberra, 1992.]

THIS STANDING OFFER is made on the day of 199-
BY

.....Australian Company Number, which has its registered office
at.....(in this standing offer called 'the Company').

WHEREAS:

- A. The National Library of Australia (in this standing offer called 'the Library') has a requirement from time to time for certain Micrographic Work to be performed for it in relation to monographs, journals, newspapers, manuscripts and other Library material held by the Library.
- B. The Company hereby offers to perform some or all of that work for the Library on the basis of the terms and conditions contained in Schedule 1 to this standing offer.
- C. The Company acknowledges that the Library may only require the Company to perform some of the work referred to in recital A or may not require the Company to perform any of that work at all.
- D. If the Library requires the Company to perform the work referred to in recital A, the Library shall write to the Company giving 7 days notice of the date it wishes the Company to commence performance of the work. On receipt of the Library's letter to the Company to that effect, a binding agreement between the parties in the terms of Schedule 1 to this standing offer shall come into effect in relation to the precise work specified in the Library's letter.

Signed for and on behalf of

.....

by:

In the presence of:

Differences between general microfilming and preservation microfilming

As highlighted from the beginning, preservation microfilming is a specialised part of the general microfilming industry. Typically, where microfilm is created for more general purposes, (e.g. short term storage) there is not a need for rigorous filming specifications. The following are some typical areas where more general microfilming may be different from preservation microfilming.

Area	General microfilming practices (non-preservation)
handling of originals and films	<ul style="list-style-type: none"> handling procedures not as strict (e.g. gloves not used)
generations of film	<ul style="list-style-type: none"> only two generations may be produced instead of three the master is used to make copies
targets	<ul style="list-style-type: none"> only limited targets are provided
scratching and marking	<ul style="list-style-type: none"> a higher number of scratches on the images may be tolerated
types and number of splices	<ul style="list-style-type: none"> a high number of splices may be tolerated other methods of splicing (e.g. splicing tape) may be used
image orientation and placement	<ul style="list-style-type: none"> a high degree of 'skewing' and/or closer frame placement may be acceptable
chemical processing	<ul style="list-style-type: none"> methylene blue tests will not be undertaken to check whether chemical levels are acceptable
quality testing	<ul style="list-style-type: none"> quality control tests for resolution, density and close visual inspection may not be undertaken
'housing' or 'enclosures' of films – type of reels, boxes, labels	<ul style="list-style-type: none"> using boxes or enclosures which deteriorate

Relevant standards associated with microforms

In order to produce microfilm of preservation quality, microfilmmers must strictly follow the specifications in national and international standards. These cover requirements of all aspects of microfilming from preparation through to filming, processing and storage.

In the section above, the details in **Agreements for filming** are also typical of most details found in standards.

In addition there are specifications covering **housing** of microforms in 'preservation-standard' enclosures and **storage** under conditions of controlled temperature and humidity.

● Reflect 1C

Checking out a standard

1. Ask your colleagues, your supervisor or your mentor to help you locate ONE example of a standard, preferably a **microfilming or photographic standard**—otherwise any standard will be suitable. (Contact your lecturer or mentor if you have any difficulty in locating a standard)
2. Check out the layout of the standard—contents page, definitions, diagrams etc.
3. How could this standard be potentially used in the workplace?

List of standards organisations and resources

The following are some key international organisations and resources that deal with standards. The standards organisation in your country may have links with one or more of these organisations.

AIIM (Association for Information and Image Management), <<http://www.aiim.org>>, accessed 4 May 2003, and its sub group the Film-based Imaging Association, <<http://www.fbi.aiim.wegov2.com>> , accessed 14 May 2003. The film-based imaging association has a buyers guide of U.S. manufacturers and distributors of micrographic equipment and supplies.

Address: 1100 Wayne Avenue, Suite 1100, Silver Spring MD 20910 USA

ANSI (American National Standards Institute) <<http://www.ansi.org>> accessed 15 May 2003. ANSI administers and coordinates the U.S. standardisation system. Address: Customer Service, American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

BSI Group (British Standards Institution), <<http://www.bsi-global.com>> , accessed 13 May 2003. The source of information and supply of British microfilming standards. BSI Group 389 Chiswick High Road, London, W4 4AL, UK.

ISO (International Organisation for Standardisation), <<http://www.iso.ch/>>, accessed 15 May 2003. Address: ISO Central Secretariat PO Box 56 CH-1211 GENF Switzerland.

NSSN: a National Resource for Global Standards, <<http://www.nssn.org>> , accessed 15 May 2003. Provides a fee-based information service which includes international standards and technical data. Address: Customer Service, American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

Spring Singapore, <<http://www.psb.gov.sg>>, accessed 15 May 2003. The source for information and supply of Singapore Codes of Practice relating to microfilming. PSB Building, 2 Bukit Merah Central, Singapore 159835.

Standards Australia, <<http://www.standards.com.au>>, accessed 14 May 2003. Address: GPO Box 5420 Sydney NSW 2001, Australia.

The latest version

Standards are constantly being revised and updated.

Check with the standards organisation in your country, or one of the sources listed below, for further information about the latest versions of microfilming standards.

List of international standards

A list of international standards relating to microfilming is provided in the **Learning Guide**.

■ Activity 1.9

Standards

Check through the list of international microfilming standards that are listed in the **Learning Guide**.

List an example of a standard in each of the categories below. Give the number and title of the standard in each case.

Examples of standards

microfiche and jackets

quality inspection

specifications for the microfilm itself

splices

storage

microfilm vocabulary

microfilming of newspapers

microfilming of press cuttings

microfilming of technical drawings

determination of residual thiosulfate (methylene blue test)

resolution test chart

Where would you be able to obtain copies of these standards or a revised version?

Bibliographic records of microfilm

Standardised bibliographic records have also been developed for recording information about microfilm masters already created, as well as for microfilming intentions. They describe the features of the original item.

Typical details

In a **published item** the bibliographic record may include:

- I author
- I title
- I former and related titles
- I place of publication
- I publisher
- I dates
- I library reference number.

In an **unpublished item**, such as an old manuscript, the details may include:

- I title
- I author
- I language
- I script
- I scribe
- I date.

Bibliographic records assist in systematically describing microforms in the catalogues and databases of libraries and archives. In turn, this provides users with national and international access to details of what items have been filmed. This process also alerts filming organisations to what has already been filmed and so avoids the same item being filmed simultaneously by two different organisations.

Librarians and archivists are the experts in bibliographic standards and records.

Check also with a state, university or national library for examples of microfilm bibliographic records.

Further examples can be found in the *Instructions for Cataloging Preservation Microform Masters* together with a Sample Cataloguing Form that are in Appendices 13 and 14 of the *Guidelines for Preservation Microfilming In Australia and New Zealand* (National Library of Australia 1998).

Summary

- I An understanding of microfilming and microfilming terms is the foundation for understanding microfilming standards.
- I The most common microform formats include:
 - 16mm roll film (open spool)
 - cartridge microfilm (16mm)
 - 35mm roll film (open spool)
 - aperture cards
 - microfiche 105mm
 - jackets – 16mm, 35mm or a combination 16/35mm.

- I Every copy of a microform is known as a generation. When microforms are used for preservation purposes, three generations are produced as:
 - first generation
 - second generation
 - third generation.
- I Images can be arranged in four different ways.
 - as **single** or **double** pages per frame.
 - in **cine** or **comic** mode.
 - in **comic** orientation the text runs parallel with the long edge of the film
 - in **cine** mode, the text runs at right angles to the long edge of the film.
- I A wide range of well-established national and international standards and specifications relating to microfilming have been developed. Standards are produced by committees of experts and are designed to present information logically using uniform language.
- I Formal specifications clarify exactly what is required at each stage of the microfilming process. They are also called *agreements* or *contracts*.

Checklist

If you can answer 'yes' to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities**.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled, **Resources**, talk to your work colleagues or contact your lecturer or mentor.

Criteria relating to microfilming terms

I can:

- I list the available formats of microforms
- I explain the terms 'positive' and 'negative' as they apply to film polarity
- I discuss the use of first, second and third generation microforms
- I record the types of film used as microforms and discuss their features
- I list available film bases and discuss their suitability for preservation microfilming
- I discuss the alternatives for positioning images on microforms
- I define the term 'reduction ratio'

Criteria relating to standards and specifications

I can:

- I list the details which should be included in specifications for preservation filming, processing and storage
- I identify typical areas where more general microfilming is different from preservation microfilming
- I list relevant standards associated with filming, processing and storage
- I describe the typical features listed in a bibliographic record of microfilm

▲ Submit

You are now ready to record in your **Log book** that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities** for this topic.

You can record these by marking off the boxes in the shaded columns with a ✓ **yes** or ✗ **no**.

You can then ask your lecturer or assessor to verify this information.

Topic 6

Microfilm as a platform for digitisation

Performance criteria

You will have achieved the performance criteria for this section when you can:

- I list reasons why an organisation may wish to convert a microform collection to a digital image format
- I list factors which impact on the quality, rate and cost of digital image.

Reasons for converting a microform collection to a digital image format

An organisation may wish to convert a microform collection to a digital image format to enhance access by:

- I making the original information available to a wide international audience via the world wide web
- I bringing together at one web site research materials which are scattered around the world
- I integrating the digital images with other media such as sound and video to provide users with a multi-dimensional experience of the topic
- I 'optimising' or 'cleaning up' the original image to remove stains, background defects and other damage.

Factors which impact on the quality, rate and cost of digital imaging

Studies done by Yale and Cornell Universities during the 1990s have provided much of the information for digitising from microfilm. Most of this work has been done with brittle books. Building on this work, it is possible to identify key factors which impact on the quality, rate and cost of digital image capture.

The quality of the microfilm is a key factor and ultimately the quality of the original material itself.

The following list key factors has been adapted from:

- I *Guidelines for Preservation Microfilming in Australia and New Zealand* (National Library of Australia 1998, pp. 35-36)
- I *Guide to Preservation Microfilming* (National Preservation Office 2000, pp. 29-31)
- I Sitts, Maxine (ed.) 2000 (especially pp. 127-135)
- I the work of Andy Fenton, Managing Director of New Zealand Micrographic Services and Pat Griffiths, Preservation Manager, Library and Information Services of Western Australia.

Microfilm feature	Impact on <i>quality</i> of the digital image	Impact on <i>rate and cost</i> of the digital image
preparation	<ul style="list-style-type: none"> preparation of a bound volume e.g. disbinding, flattening, careful repairs results in a higher quality microfilm image, and hence a higher quality digital image 	<ul style="list-style-type: none"> preparation of a bound volume e.g. disbinding, flattening, careful repairs results in a higher quality microfilm image, and can significantly reduce the cost of setting scanner parameters.
polarity	<ul style="list-style-type: none"> negative microfilm yields higher quality images than positive film 	<ul style="list-style-type: none"> faster scanning speed less 'clean-up' of image during post-processing
background of copyboard		<ul style="list-style-type: none"> document edge detection during scanning of the negative is easier if images are filmed on a black background.
density	<ul style="list-style-type: none"> medium contrast (Dmax 0.9) to high contrast (Dmax 1.3) film results in higher quality images than low contrast film (Dmax 0.8) fogging around frame edges or across frame impacts on quality of scanned image 	<ul style="list-style-type: none"> density variation has no impact on the cost of conversion—but may slow down the scanning rate if there are density changes within the microfilm in this case post-processing 'clean-up' costs may increase
resolution	<ul style="list-style-type: none"> high contrast microfilm produced to a QI level of 5 has the equivalent digital resolution of at least 800 dots per inch (dpi). may not be necessary to achieve this level as most scanning currently ranges from 300 to 600 dpi poor focus and low resolution impacts on quality of scanned image 	<ul style="list-style-type: none"> the better the quality of the images, the easier (faster) the conversion and 'clean-up'
reduction ratio	<ul style="list-style-type: none"> the lower the reduction ratio, the better the quality of the image accurate recording of ratio is crucial for reproduction at original size variations in reduction ratio cause problems 	<ul style="list-style-type: none"> the most important factor influencing costs the lower the reduction ratio, the better the quality of the image
skew	<ul style="list-style-type: none"> minimise or eliminate – no greater than 5 degrees from parallel 	<ul style="list-style-type: none"> increases cost of scanning, quality control and inspection
image placement	<ul style="list-style-type: none"> one full frame per image is generally preferable minimise occurrence of frames that overlap or are unevenly spaced 	<ul style="list-style-type: none"> uneven spacing is manageable through edge-recognition same orientation through filming of each title
splices	<ul style="list-style-type: none"> minimise splices within a given volume or issue 	

The process of digitising from microfilm

Digital conversion of microfilm images involves scanning the microfilm using appropriate hardware and software systems. The high volume microfilm scanners are produced by a number of commercial firms including Mekel Technology, SunRise Imaging and Wicks and Wilson. A number of smaller low-volume microform scanners are also available such as Minolta, Canon, Fuji, Kodak and Bell and Howell. As equipment is constantly being updated you will need to check with the manufacturers and suppliers for the latest information.

The resulting digital images can be displayed as high quality images, or the text can be made accessible by keywords using OCR (optical character recognition software). OCR software is not always successful with certain alphabets or fonts.

Master microfilms should never be used as a scanning source because of the high risk of damage through scratching and handling. Therefore scanning should be undertaken from the duplicate negative.

Many different projects have explored opportunities for digitising from microfilm. Examples include The Times newspaper (London) (Reading 2002), other British newspapers (Pryor 2001), the New Zealand initiative Papers Past <<http://paperspast.natlib.govt.nz>>, and the early Australian Cooperative Digitisation Project <<http://www.nla.gov.au/acdp>>.

Further information



Further information about microfilm scanning and models of scanners is provided in:

- I Meyer 2003
- I 'FAQ: Microfilm Scanning' 2001
- I Saffady 2000, chapter 5

See the **Resources** list at the beginning of this module for the full details of articles.

Further research

Further research is needed on digitising specialised materials such as newspapers and manuscripts.

Additionally, the challenges of scanning from the following types of microfilm are not well understood:

- I older film
- I scratched or damaged film
- I 16mm film
- I positive polarity film
- I third generation film.

Digitising: other possibilities

Microfilm from digital copies

Apart from digitising from the microfilm it is possible to produce microfilm copies from digital images. Anne Kenney and Stephen Chapman at Cornell University have done much of the groundwork in this area, in their work with brittle books.

New electron-beam (e-beam) technology can convert digital data into microfilm as well as offering the potential to deliver high quality digital and microfilming masters from a single manufacturing process. For further information search the internet for e-beam technology on the web sites of various microfilm businesses.

● Reflect 1D

Why digitise?

 Consider the article below and discuss it with your colleagues.

Why does the author describe digitising as ‘an addition to an already well-stocked tool kit’?

Why digitise?

(This article is an excerpt from the full version of the report *Why Digitise?* by Abby Smith. The complete report is available on the Council of Library and Information Resource’s Web site <<http://www.clir.org/pubs/issues/issues08.html>>.)

Digital information is transforming the way we learn, the way we communicate, even the way we think. It is also changing the way that libraries and archives work and the very work that they do. If this new technology does, indeed, turn out to be revolutionary, then we cannot anticipate its impact in full, and we should be cautious about letting our hopes for the future of digital technology blind us to its limitations.

Many libraries have digitised parts of their holdings, including large institutions such as the Library of Congress, the National Archives, and major research libraries in the Digital Library Federation, and smaller institutions such as the Huntington and Denver Public libraries. Their experiences reveal patterns that can help us assess when technology is able to meet expectations for improvement of traditional library services, when it cannot, and when it may do so, but not in a cost-effective manner.

Digitisation is not preservation—at least not yet

Though digitisation is sometimes loosely referred to as preservation, it is clear that, so far, digital resources are at their best when facilitating access to information and weakest when assigned the traditional library responsibility of preservation. Because digitisation is a type of reformatting, like microfilming, it is often confused with preservation microfilming and seen as a superior, if as yet more expensive, form of preservation reformatting. Much is gained by digitising, but permanence and authenticity, at this juncture of technological development, are not among those gains. Therefore, digitisation is not a reliable medium for preservation.

The reasons for the weakness of digitisation as a preservation treatment are complex, having to do with both the difficulty of ensuring the persistence of digital information over time and the challenges of meeting standards of reliability of provenance and authenticity. The preservation of digital information is compromised by the physical fragility of the magnetic media on which the information is often recorded.

More important than the durability of the medium itself is the necessity to keep data fresh and encoded in readable file formats. Ongoing investigations into two possible ways of ensuring data persistence—the migration of data from one software and hardware configuration to a more current one, and the creation of software that emulates obsolete encoding formats—may develop solutions to this problem.

Preservation goals are also challenged by the difficulty of ascertaining the authenticity and integrity of an image, database, or text when it is in digital form. Looked at from the traditional perspective of published or manuscript materials, it is futile even to try to distinguish one copy from another: there is no original with which to compare a suspect file. Nor can one tell whether a digital file has been tampered with, as one can change the bit stream of a file and leave no record of its having been altered. There is much research and development being dedicated to solving the dilemma posed by the stunning fidelity of digital cloning, including methods for marking images and time-stamping them, but as yet there is no solution.

Digitisation is access—lots of it

Digitisation is an excellent medium for access to information. Digital surrogates can make the remote accessible and the hard to see visible. They can bring together research materials that are widely scattered about the globe, allowing viewers to conflate collections and compare items that can be examined side by side solely by virtue of digital representation. Through image processing, one can even transcend the limits of the human eye.

Digital technology can also make available powerful teaching materials for students who would not otherwise have access to them, items that are often rare or too fragile to withstand much physical handling. To create high-quality digital collections, libraries must work collaboratively to build resource bases that are complementary and not duplicative. However, at present there is no central source of information about what has been digitised, and with what care in the process, so that the promise of coordinated digital collection building remains hard to achieve.

Nevertheless, many institutions are taking on ambitious digital conversion projects to find out for themselves what the technology can do for them. They are investing large amounts of money in projects to make their collections more accessible and, too often, believing that they are also accomplishing preservation goals at the same time. The impact of digitising projects on an institution, its way of operating, its traditional audience, and its core functions, is often hard to anticipate. The challenge of selecting the parts of a large collection that will be scanned is, for some, a novel task that calls into question basic principles of collection development and access policies. Many libraries and archives have collections that are intrinsically valuable by virtue of being comprehensive and containing much information that is essentially unpublished. But they also may contain sensitive materials, those that deal with historical events or popular attitudes that may be offensive to us now and that must be understood in the larger context. And this is precisely what a comprehensive collection provides—context.

How does one deal with sensitive materials in a networked environment? If one makes the difficult decision to edit out materials that are readily served in a reading room, but are too powerful to broadcast on the Internet, what does that do to the integrity of a research collection? Only when digitisation is viewed specifically as a form of publishing and not simply as another way to make resources available to researchers, are the thornier issues of selection for conversion put into an editorial context that provides a strong intellectual and ethical basis for imaginative selection of complex materials.

What is gained and what is lost?

As Donald Waters of the Digital Library Federation has expressed it, the promise of digital technology is for libraries to extend the reach of research and education, improve the quality of learning, and reshape scholarly communication. This is not an extravagant claim for the technology, but rather a declaration of an ambition shared by many who are developing and managing the technology. And the key to fulfilling that promise lies within the communities of higher education, science, and public policy responsible for applying digital technology to those ends. Digital conversion of library holdings has its stake in this ambition, particularly to the extent that it can broaden access to valuable but scarce resources.

But the cost of conversion and the institutional commitment to keeping those converted materials refreshed and accessible for the long-term is high—precisely how high, we do not know—and libraries must also ensure the longevity of information that is created in digital form and exists in no other form.

We need more information about what imaging projects cost, and about who uses those converted materials and how they use them, in order to judge whether the investment is worth it. In the meantime libraries must continue to be responsible custodians of their analog holdings, the print, image and sound recording collections that are their core assets and the legacy of many generations. This task requires continued use of tried-and-true preservation techniques such as microfilming to ensure the longevity of imperiled information.

Converting everything to digital form would be wrong-headed, even if we could do it. The challenge is how to make analog materials more accessible using the powerful tool of digital technology, not only through conversion, but also through digital finding aids and linked databases of search tools. Digital technology can, indeed, prove to be a valuable instrument to enhance learning and extend the reach of information resources to those who seek them, wherever they are, but only if we develop it as an addition to an already well-stocked tool kit, rather than a replacement for all of those tools which generations before us have ingeniously crafted and passed on to us in trust.

Summary

- I Organisations may wish to convert microforms to a digital image format to enhance access.
- I The quality of the microfilm—and the quality of the original items—affect the quality, rate and cost of producing the digital image.
- I Options for digitising include:
 - digitising from microfilm
 - creating microfilm from digital images
 - microfilming and digitising simultaneously.

Checklist

If you can answer ‘yes’ to each question, and you have completed the activities for this topic, you are now ready for your lecturer or assessor to verify that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities**.

If you are in any doubt about any of the content, you should read through the material again, consult some of the references mentioned in the section entitled, **Resources**, talk to your work colleagues or contact your lecturer or mentor.

I can:

- I list reasons why an organisation may wish to convert a microform collection to a digital image format
- I list factors which impact on the quality, rate and cost of digital imaging.

▲ Submit

You are now ready to record in your **Log book** that you:

- I can meet the **performance criteria**
- I have satisfactorily completed the **activities** for this topic.

You can record these by marking off the boxes in the shaded columns with a ✓ **yes** or ✗ **no**.

You can then ask your lecturer or assessor to verify this information.

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Background

The training materials have been developed by the National Library of Australia, in collaboration with the State Library of South Australia and under the auspices of IFLA PAC, and will be provided to people within the Asia and Pacific regions as a training resource. The materials will also be used within Australia as part of an accredited TAFE training course.

The training materials consist of 10 modules, 6 wall charts, a Log Book, a Learning Guide and a Glossary/Index. We expect that users will both read a printed version of the materials and download them as PDF files from the National Library of Australia's website – www.nla.gov.au

