

# Microfilm storage

South Carolina Department  
of Archives and History  
**Archives and Records  
Management Division**

## Introduction

One of the more important factors in the preservation of microfilm is the storage of the original negative. Unfortunately, too many government agencies give this little or no thought. The omission is a major one, for no matter how carefully film is selected and produced, it can be damaged severely if it is improperly stored. Storage is particularly critical for “archival,” or permanent microfilm.

**“If the [microfilmed] records are of permanent value to the agency or subdivision concerned or are determined to be of archival value by the Archives, one master copy of each record filmed must meet standards approved by the Archives and be deposited there [with the Archives].”  
*The Code of Laws of South Carolina, 1976 section 30-1-130.***

This leaflet explains what must be done to establish environmental conditions that will ensure the preservation of permanent microfilm; the information also applies to storing microfilm of records of long-term value.

## Cores and containers

When you keep microfilm in roll form, you must wind it around a reel or core. The core around which the film is wound and the container in which the roll will be placed are



of crucial importance, for if you use the wrong core or container, you can negate the benefits of a good storage facility. Both the core and the container you use must be made of a noncorroding material like anodized aluminum, stainless steel, peroxide-free plastic, or acid-free paper. Containers made from cardboard and similar materials contain chemicals that can harm the film.

When you place the film on the core, you should neither wind it too tightly nor wind on too much. When film is wound too tightly, the risk of scratching increases; when it is wound closer than 1/4" to the outer edge of the core, it can slip off. You should neither attach adhesive labels to the film; nor write on it with ink, crayon, or a felt-tip pen; nor use rubber bands to hold the film on the core—the vulcanized rubber contains acids that can destroy the images.

To achieve the greatest protection, you should place your roll in a sealed, airtight container to protect it from dust and from the damaging effects of humidity and gaseous impurities.

### **Storage cabinets**

You can store microfilm on shelves, racks or in storage cabinets. Those shelves or cabinets, however, like the cores and containers, should be made from noncorroding material. Special cabinets for microfilm are available commercially. Do not store microfilm on, or in the same room as, shelves made of wood, pressboard, or particle board. These materials give off fumes that may damage the film.

### **Storage room**

Any room you use for the archival storage of microfilm should be isolated from offices, work areas, or other storage areas. It should have an independent circulating system to keep the air as free as possible of pollutants and dust and to prevent the entry of unfiltered air from other parts of the building. If the room is to be painted, wait at least two weeks after painting before moving the microfilm into it.

The air in the storage room should be filtered to remove gaseous impurities such as sulfur dioxide, hydrogen sulfide, ammonia, peroxides, ozone, nitrogen oxide, and solid particles like dust. The temperature and humidity should be rigidly controlled and monitored.

Do not store silver gelatin microfilm with other forms of records. Paper, and diazo or vesicular microfilm give off fumes that may damage silver gelatin microfilm.

**Fire protection** The fire suppression system you install in your storage room should use halon not water—water from sprinklers will damage the microfilm it is intended to protect. If you intend to store the microfilm in a fireproof safe or vault, use one that is designed for microfilm or computer media. A safe designed for paper records may not provide enough protection for your film because paper can withstand higher temperatures than microfilm. A safe for microfilm should maintain an internal temperature of 150° or less when it is subjected to fire, and it should have a fire-resistant rating of at least four hours.

To give your microfilm duplicates the best protection against fire, you should store them off-site.

**Humidity** You should control the humidity level in your microfilm storage facility rigidly. It should not exceed 40 percent and, ideally, should be kept within a range of 30 to 40 percent to protect the various film bases. Cellulose base film can be stored safely in humidity as low as 15 percent, but polyester base film should not be stored in humidity under 30 percent.

You should keep the humidity level as constant as possible and should not allow variations to exceed 5 percent in a 24-hour period. Extreme swings in the level of humidity will harm your microfilm.

When the humidity is below the minimum level, the film may become brittle and the emulsion may dry out and crack or peel. When humidity is too high, the emulsion will absorb moisture; the emulsion may then expand and distort the image, or the emulsion surfaces may stick together. When humidity is too high, fungus may grow on the film and redox blemishes are likely to form.

**Temperature** You should store microfilm at a constant temperature of less than 70° F (21° C), ideally at about 65°. The temperature, like the humidity, should not fluctuate widely. Fluctuations



should not exceed 5 percent in a 24-hour period. High temperatures can shrink and buckle the film base, thereby distorting the image. High temperatures can also promote the growth of fungus. Low temperatures will make the film brittle.

### **Monitoring conditions**

Once a facility is set up, you should monitor it closely to keep it adequate. You should, at a minimum, install a fire alarm system. You should also install a thermograph and hygrometer to track the levels of temperature and humidity, so you can keep them constant and within the proscribed limits.

In addition, every other year, you should take random samples of microfilm—1 to 2 percent at least—to inspect for damage. If you find deterioration, you must check a higher percentage of film to gauge the extent of the damage. Look for signs of deterioration like discoloration, blemishes, evidence of oxidation reduction (redox), fogging, fungus, buckling, brittleness, faded images, and adhesion. Take corrective action before you incur a serious loss of information—often you will have to duplicate the affected rolls. Remember to wear gloves when you inspect the film, and do not run it through a reader.

### **For more information**

This leaflet is one of a series of leaflets issued by the Archives and Records Management Service Area at the South Carolina Department of Archives and History.

The Archives and Records Management Service Area has statutory responsibility for advising government offices on micrographics. It also issues publications and gives advice and help on records management and archival administration.

For more information, please contact the South Carolina Department of Archives and History, Archives and Records Management Service Area, 1919 Blanding Street, Columbia, SC 29201. (803) 734-7914. ■

**Public information  
leaflets from  
the Archives**

- no. 1 *Legal requirements for microfilming public records (1992)*
- no. 2 *On choosing records for microfilming (1992)*
- no. 3 *Service bureau or in-house microfilming (1992)*
- no. 4 *Targeting and certification of microfilm (1996 revised)*
- no. 5 *Choosing a microfilm camera (1992)*
- no. 6 *Quality testing of microfilm (1992)*
- no. 7 *Microfilm and microforms (1992)*
- no. 8 *Choosing a micrographics service bureau (1992)*
- no. 9 *Choosing microfilm readers and reader/printers (1992)*
- no. 10 *Computer assisted retrieval systems (1992)*
- no. 11 *Microfilm storage (1992)*
- no. 12 *Preservation microfilming (1992)*
- no. 13 *Optical Disk: policy statement and recommended practices (1996 revised)*
- no. 14 *Storing records in the State Records Center (1993)*
- no. 15 *The deposit of security microfilm (1993)*
- no. 16 *Disaster preparedness and recovery in state and local government records offices (1993)*
- no. 17 *How to conduct a records inventory (1993)*
- no. 18 *How to establish records retention schedules (1993)*
- no. 19 *Photographic media (to be announced)*
- no. 20 *Editing and splicing roll microfilm of long-term or archival value (1994)*
- no. 21 *Managing E-Mail (to be announced)*
- no. 22 *Standards for microfilm service bureau certification (1996)*