TECHNICAL REPORT



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Micrographics — Inspection of silvergelatin microforms for evidence of deterioration

Micrographie — Inspection des microformes en argent-gélatine pour mise en évidence de détérioration

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Foreword

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

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this Technical Report may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 12031 was prepared by Technical Committee ISO/TC 171, *Document imaging applications*, Subcommittee SC 1, *Quality*.

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Introduction

The purpose of this Technical Report is to provide a uniform method of selecting and inspecting silver-gelatin microforms for evidence of deterioration. Improper processing, handling, and storage conditions have long been known to promote biological attack and various other kinds of image degradation. Examination of some large collections of microfilmed records within the last decade has revealed a number of instances of spot blemishes. This may be influenced by the number of years and by the number of different processing conditions used. These instances serve to focus attention on the fact that, although film may be processed and stored in the best available conditions, the only assurance that such records are being well maintained is a systematic programme of careful inspection. Silver-gelatin microforms which have been manufactured, exposed, developed, and stored according to existing standards and which have a long life expectancy may not require extensive inspection.

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Micrographics — Inspection of silver-gelatin microforms for evidence of deterioration

1 Scope

This Technical Report applies to all forms of silver-gelatin microfilm, whether in roll, aperture card, jacket or microfiche format. It describes the equipment and procedures necessary to identify and monitor deterioration. This information serves to identify the extent and nature of the problem and will ultimately provide a sound basis for any remedial action that may be required.

2 References

ISO 417:1993, Photography — Determination of residual thiosulfate and other related chemicals in processed photographic materials — Methods using iodine-amylose, methylene blue and silver sulfide.

ISO 543:1990, Photography — Photographic films — Specifications for safety film.

ISO 2859-0:1995, Sampling procedures for inspection by attributes + Part 0: Introduction to ISO 2895 attribute sampling system.

ISO 2859-1:1999, Sampling procedures for inspection by attributes 174-4Parts 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection 5/iso-tr-12031-2000

ISO 2859-2:1985, Sampling procedures for inspection by attributes — Part 2: Sampling plans indexed by limiting quality (LQ) for isolated inspection.

ISO 2859-3:1991, Sampling procedures for inspection by attributes — Part 3: Skip-lot sampling procedures.

ISO 5466:1996, Photography — Processed safety photographic film — Storage practices.

ISO 6196-1:1980, Micrographics — Vocabulary — Part 01: General terms.

ISO 10602:1995, Photography — Processed silver-gelatin type black-and-white films — Specifications for stability.

3 Terms and definitions

For the purpose of this Technical Report, the terms and definitions given in ISO 6196-1 and the following apply.

3.1

frilling

separation of the emulsion from the film base during initial processing

4 Inspection conditions

The inspection room or location selected for inspection should be clean with a relatively dust-free atmosphere and the temperature should not exceed 23 °C and relative humidity should not exceed 50 %. The work-top area should be clean and free of objects and substances that might damage the microfilm.

Changes in temperature and/or humidity during inspection or during transportation from the film storage facility to inspection room should be avoided.

5 Equipment and supplies

5.1 General

The inspection equipment should be such that the film cannot be damaged during the inspection process.

5.2 Light box and film rewinds for 16 mm and 35 mm film

Light boxes of this nature usually are equipped with a light source covered by translucent glass or plastic. Fluorescent lights can be used to minimize the heat build-up of the inspection station. Tungsten or tungstenhalogen lights can also be used.

5.3 Eye loupe (eye glass)

Two eye loupes with magnification of approximately 5× and 15× should be used. The lower magnification will

provide a wider field of view, while the higher magnification will allow much closer inspection of specific defects.

5.4 Microscope

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A microscope with a magnification capability of at least 25×031d 50× will be required for occasional close examination. A fairly intense substage illuminator is essential to penetrate the high density areas of the leader and trailer. A microscope having a surface illuminator may be helpful in evaluating surface characteristics. A camera to

take photomicrographs of the defects may be helpful to record progression of any deterioration of the microfilm.

5.5 Specular light source

Another light source other than room ambient light should be available to inspect the film surface with and without magnification for image degradation, scratches and other defects. This light source is necessary for microfiche, jackets, aperture cards and roll film.

5.6 Black velvet

Placing a swatch of black velvet behind the film may be of help for detecting scratches, water spots, and abrasions.

5.7 Inspection gloves

Clean, lint-free white cotton or nylon gloves should be worn to avoid marking the film with fingerprints. These gloves should be used exclusively for this purpose. It is highly recommended that the gloves be changed regularly.

Sampling method 6

6.1 General

It is preferable that each film be inspected. If this is not possible, a suitable sampling procedure as given in ISO 2859 should be used to provide representative data of the total population of the group or lot sample.

6.2 Division into survey groups

The collection should be divided into groups of similar types. Examples of such similarities are groups stored under the same conditions: similar film sizes such as 16 mm and 35 mm; similar formats and film types, i.e. jackets. aperture cards, polyester film, and acetate film; record series type; etc. As most types of deterioration seem to be progressive with age, some form of separation by date may be significant. In a library or archives setting, an ongoing collection of newspaper files or a series of books or private papers microfilmed over a specific period of time could be considered a significant lot or group.

7 Inspection procedures

7.1 General

The microfilm inspector should be thoroughly familiar with the various types of ageing defects as well as defects normally associated with film processing (see clause 9). The inspector should also be aware that older film should be treated carefully until it has been established that normal handling will not damage the film.

Procedure for all microforms standards.iteh.ai) 7.2

Both sides of the film should be examined. ISO/TR 12031:2000

Rotate film so that the light reflects off the film surface. 419e6dbddad5/iso-tr-12031-2000

Examine the reverse side of the film. Some forms of deterioration can be detected with the unaided eye at this initial stage.

Some defects are more easily seen over the light boxes, without the aid of an eye loupe, while others need to be viewed under stronger magnification. Inspection procedures for microforms having higher reduction ratios may require more critical evaluation.

The inspector should carefully examine the film using both transmitted and reflected light. To detect scratches inspection should be made through film illuminated from behind and toward black velvet.

7.3 Checks for all microforms

Verify that the base is not cellulose nitrate (see annex A.)

NOTE The base of some older collections may be cellulose nitrate.

Smell the film, the carrier, and inside the container for unusual odours. Check especially for acetic odour with triacetate base film.

Check the constitution of the film surface, especially for scratches, coverings, fungus, or coating separation.

Check to see if storage containers, such as film boxes, storage cabinets, and other containers, show any signs of deterioration.

7.4 Additional checks for roll film

Holding the centre of the reel between thumb and index finger, turn the reel with the free hand so that the leader falls free. If it does not fall free, carefully determine the reason. It is not unusual for film that has not been unwound for a long time period to stick slightly. If the leader and following coil cannot be freed without damaging the film, the inspector should consult a film specialist.

Holding the reel in one hand, unwind sufficient leader to examine the black area in the ambient room light for evidence of a silver sheen on the emulsion side of the film.

Place the roll of film on the rewinds with the emulsion side facing up, and slowly advance the film over the light box. At approximately every 3 m of film, stop the film to carefully examine the images with the aid of the eye loupe or microscope, using both transmitted and reflected light for evidence of deterioration on the emulsion side of the film.

Check roll film for possible defective splices due to improper tape or splicing procedures, and for improper material or adhesives that may cause defects.

7.5 Additional checks for jackets

Examine the carrier in ambient room light. The channel joiners may become separated and consequently unable to retain the images in the proper channel.

Check the channel for dust and soiling. The channel and film should not stick together; sticking would indicate improper drying, too-moist storage conditions or films that have been stored in very close contact between film surface and jacket materials due to very flat surfaces, etc. RD PREVIEW

Pay particular attention to the image on the extreme right edge, next to the loading slot because this image is often more exposed to the environment air.

7.6 Additional checks for aperture cards ISO/TR 12031:2000

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Examine the carrier in ambient room light.⁴ Examine the card stock for evidence of deterioration. Some of the adhesives used in older stock may have not aged well. In addition to the image quality, the edges of the film should be checked for possible deterioration.

8 Inspection reporting

8.1 Classification

The inspector should complete the inspection report form. Subjective judgement is required to assess the overall condition rating of the film, using the following categories:

- a) *Excellent*, no deterioration detectable;
- b) Acceptable, minor physical damage without impairment of the information;
- c) *Poor*, film shows deterioration such as discoloration: if the information is not impaired, the film can be stored again. The film should, however, be checked every two years for further deterioration;
- d) *Bad*, information has been impaired and a replacement silver duplicate should be made to prevent further loss of information.
- NOTE Other films of the same series or manufacturing date should be checked for deterioration as well.

8.2 Data collection, general

The most desirable kind of report may differ from organization to organization, and the factors of interest may change as the inspection programme progresses. It is recommended, however, that at least two reporting forms be used: the first to record the basic condition and history of a defined lot or group, and the second to record the findings of the individual microform inspection.

8.3 History and description of group or collection

The following are considered to be the desirable data requirements to identify a group or collection:

- name of organization. This will in all likelihood be included in the form title. However, in the case of records a) centres or archives, it will be necessary to include a section for the department or agency involved;
- record series, group, or collection identification; b)
- c) film identification, sufficient information to retrieve the film series or collection again;
- name of inspector and date of inspection; d)
- film carrier if not roll e)

EXAMPLE jacket and manufacturer, aperture card and manufacturer;

f)	year produced	iTeh STANDARD PREVIEW
	EXAMPLE	1966, 1970, etc.; (standards.iteh.ai)
g)	film type	ISO/TR 12031:2000
	EXAMPLE	camera hegative, duplicate negative, duplicate positive; 4b-ff44-47fc-9c63- 419e6dbddad5/iso-tr-12031-2000
h)	film base	11900d0ddddd/50 i 12031 2000
	EXAMPLE	polyester, acetate;
i)	film size and the	nickness
	EXAMPLE	16 mm, 35 mm, thin, thick;
j)	film usage	
	EXAMPLE	long term, intermediate master;
k)	type of reel, sp	pool, core
	EXAMPLE	plastic, metal.
Op	tional:	
a)	film format	
	EXAMPLE	roll, jackets, aperture cards;
b)	processed by	
	EXAMPLE	in-house, vendor, unknown;