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Imaging materials — Polyester-base magnetic tape — Storage practices

*Matériaux pour image — Bande magnétique à base de polyester —
Pratiques d'emmagasinement*



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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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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.

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.

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

International Standard ISO 18923 was prepared by Technical Committee ISO/TC 42, *Photography*.

This International Standard is one of a series of standards dealing with the physical properties and stability of imaging materials. To facilitate identification of these International Standards, they are assigned a number within the block from 18900 to 18999 (see annex A).

Annexes A to E of this International Standard are for information only.

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Introduction

Magnetic tape is an important material in the capturing of information and has had widespread use in audio, video, and computer applications over the past 60 years. Preservation of this information is becoming of increasing concern to society, particularly as the recorded information becomes older and frequently of greater value to libraries, archives, museums, government agencies, and commercial organizations. Magnetic tape is also widely used by individual consumers to preserve records of personal or entertainment value.

The retrievability of the information on magnetic tape is dependent upon that of the complete magnetic system. This includes the stability of the tape itself, the equipment on which it is run and, in some systems, upon the necessary software. It is recognized that tape records will eventually have to be copied or transferred to another material when the system becomes obsolete. Nevertheless, it is advantageous to prolong the tape life so that the material does not become the controlling factor.

Although there have been many studies of tape stability, International Standards do not exist against which tape life can be evaluated. Likewise, International Standards are not available on the life expectancy of hardware and the problems associated with hardware wearing out or becoming obsolete. Therefore, the best approach for tape users is to store magnetic tape under conditions that will extend its life and to handle tape so that it will not be subjected to stress and undergo physical breakdown during use. This International Standard addresses the concerns of storage.

A major component of magnetic tape is the plastic base. Early audio-magnetic tape was manufactured on a variety of base materials, including paper, various vinyl esters, and cellulose esters. After extended storage, or storage under adverse conditions, the cellulose-triacetate base decomposes and produces acetic acid (see informative annex B). However, since the 1960s, magnetic tape has been coated onto a polyester base that has excellent long-term stability. This International Standard was developed specifically for polyester-base tapes. However, it is also applicable to the storage of triacetate-base tapes even though the triacetate base is not as stable.

The second component of magnetic tape is the oxide (or metal particle) binder layer which determines the magnetic characteristics. A magnetic characteristic of importance in the aging behaviour of tape is the development of print-through of analog tape. However, both research and use have clearly demonstrated that the critical concerns are primarily changes in physical properties, not the loss of magnetic characteristics. Upon use and aging, there may be changes in the friction properties, abrasivity, binder-base adhesion, and binder cohesion that render the tape unusable. Many of these changes occur as a result of binder degradation. Unfortunately, the user has no practical means of determining the stability of the composite tape and must rely on the studies of the manufacturer.

Regardless of the inherent stability of the binder layer, it is known that good storage conditions will extend the life of all tapes. While a good storage environment cannot reverse all the degradation that has already occurred, it can slow down additional deterioration.

NOTE Some degraded tape can be rendered temporarily playable by a variety of specialized procedures.

Two storage conditions are described in this International Standard. Medium-term storage conditions are recommended for tape with an expected useful life of ten years, while extended-term storage conditions are intended for tape with an expected life of fifty years. The conditions given in this storage recommendation represent a compromise between maximizing the tape life, considerations of convenience, and the cost of building and maintaining a storage facility.