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**Imaging materials — Information stored on  
magneto-optical (MO) discs — Method for  
estimating the life expectancy based on the  
effects of temperature and relative humidity**

*Matériaux pour l'image — Information stockée sur disques opto-  
magnétiques (MO) — Méthode d'estimation de l'espérance de vie  
basée sur les effets de la température et de l'humidité relative*



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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 2.

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.

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

ISO 18926 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replaces the first edition (ISO 18926:2006), of which it constitutes a minor revision with the following changes:

- the original Annex A has been removed and the remaining annexes have been reidentified;
- in Clause 3, references to ISO/IEC 17346:2005, ISO/IEC 22092:2002 and ISO/IEC 22533:2005 have been added;
- in 6.2.4, Table 2, the bottom line temperature has been changed from 25 °C to 23 °C;
- in 7.3, Formula (4), the temperature has been changed from 25 °C to 23 °C;
- in Annex B, the temperature in the first sentence of the paragraph above Table B.6 has been changed from 298,1 K to 296,1 K;
- in Annex B, the temperature in the second paragraph below Figure B.5 has been changed from 25 °C to 23 °C.

## Introduction

This International Standard is one of a series of standards dealing with the physical properties and stability of imaging materials.



# Imaging materials — Information stored on magneto-optical (MO) discs — Method for estimating the life expectancy based on the effects of temperature and relative humidity

## 1 Scope

This International Standard specifies a test method for estimating the life expectancy (LE) of information stored on rewritable and write-once magneto-optical media. Only the effects of temperature and relative humidity on the media are considered.

## 2 Purpose and assumptions

### 2.1 Purpose

The purpose of this International Standard is to establish a methodology for estimating the life expectancy of information stored on magneto-optical discs. This methodology provides a technically and statistically sound procedure for obtaining and evaluating accelerated test data.

### 2.2 Assumptions

The validity of the procedure defined by this International Standard relies on five assumptions:

- the failure mechanisms acting at the usage conditions are the same as those at the accelerated conditions;
- the linearity of the byte error rate (BER) estimated over the accelerated and design conditions is valid;
- all failure mechanisms have been accounted for and appropriately modelled;
- failure caused by reversible effects such as surface dust is not included;
- failure from repairable parts such as external cartridge components is not included.

## 3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 10089:1991, *Information technology — 130 mm rewritable optical disk cartridge for information interchange*

ISO/IEC 10090:1992, *Information technology — 90 mm optical disk cartridges, rewritable and read only, for data interchange*

ISO/IEC 11560:1992, *Information technology — Information interchange on 130 mm optical disk cartridges using the magneto-optical effect, for write once, read multiple functionality*

ISO/IEC 13549:1993, *Information technology — Data interchange on 130 mm optical disk cartridges — Capacity: 1,3 gigabytes per cartridge*

ISO/IEC 13963:1995, *Information technology — Data interchange on 90 mm optical disk cartridges — Capacity: 230 megabytes per cartridge*

ISO/IEC 14517:1996, *Information technology — 130 mm optical disk cartridges for information interchange — Capacity: 2,6 Gbytes per cartridge*

ISO/IEC 15041:1997, *Information technology — Data interchange on 90 mm optical disk cartridges — Capacity: 640 Mbytes per cartridge*

ISO/IEC 15286:1999, *Information technology — 130 mm optical disk cartridges for information interchange — Capacity: 5,2 Gbytes per cartridge*

ISO/IEC 17346:2005, *Information technology — Data interchange on 90 mm optical disk cartridges — Capacity: 1,3 Gbytes per cartridge*

ISO/IEC 22092:2002, *Information technology — Data interchange on 130 mm magneto-optical disk cartridges — Capacity: 9,1 Gbytes per cartridge*

ISO/IEC 22533:2005, *Information technology — Data interchange on 90 mm optical disk cartridges — Capacity: 2,3 Gbytes per cartridge*

AITCHISON, J. and BROWN, J.A.C., *The Lognormal Distribution*, Cambridge University Press, 1957

## 4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 4.1

#### **baseline**

condition representing the disc at time of manufacture

NOTE This is customarily the initial parameter measurement taken prior to any application of stress. The designation is usually  $t = 0$  for a stress time equal to zero hours.

### 4.2

#### **byte error rate**

##### **BER**

number of bytes in error divided by number of bytes tested

NOTE BER refers to the raw byte error rate, without benefit of any error correction or sector re-allocation.

### 4.3

#### **censored data**

time at which a specimen is removed from life testing due to any reason other than having reached end-of-life

### 4.4

#### **end-of-life**

occurrence of any loss of information

### 4.5

#### **information**

signal or image recorded using the system

### 4.6

#### **$F(t)$**

probability that a random unit drawn from the population fails by the time  $t$ , or the fraction of all units in the population which fail by time  $t$

### 4.7

#### **life expectancy**

##### **LE**

length of time that information is predicted to be retrievable in a system under extended-term storage conditions

#### **4.7.1**

##### **standardized life expectancy**

##### **SLE**

minimum life span, predicted with 95 % confidence, of 95 % of the product stored at a temperature not exceeding 23 °C and a relative humidity (RH) not exceeding 50 %