

ANSI/PIMA IT9.27-1999

# American National Standard

*for Imaging Materials –  
Life Expectancy of Information Stored in  
Recordable Compact Disc Systems –  
Method for Estimating, Based on Effects  
of Temperature and Relative Humidity*

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in Recordable Compact Disc Systems –  
Method for Estimating, Based on Effects  
of Temperature and Relative Humidity**

Secretariat

**Photographic & Imaging Manufacturers Association, Inc.**

Approved October 5, 1999

**American National Standards Institute, Inc.**

## American National Standard

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**Foreword** (This foreword is not part of American National Standard ANSI/PIMA IT9.27-1999.)

This standard was prepared by the Joint Technical Commission of PIMA IT9-5 on Optical & Magnetic Imaging Materials and the SC-03 Subcommittee on Audio Preservation and Restoration of the Audio Engineering Society Standards Committee.

The standard contains three informative annexes, which are not considered part of this standard.

Suggestions for improvement of this standard will be welcome. They should be sent to the Photographic & Imaging Manufacturers Association, Inc., 550 Mamaroneck Avenue, Suite 307, Harrison, NY 10528-1612, e-mail: natlstds@pima.net.

This standard was processed and approved for submittal to ANSI by PIMA Technical Committee IT9 on the Physical Properties and Permanence of Imaging Materials. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the IT9 Committee had the following members:

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Steven Puglia, Vice Chairman

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# Life Expectancy of Information Stored in Recordable Computer Disc Systems – Method for Estimating, Based on Effects of Temperature and Relative Humidity

## 1 Scope

This standard specifies test methods for estimating the life expectancy of information stored in recordable compact disc systems. Only the effects of temperature and relative humidity on the media are considered.

### 1.1 Purpose

The purpose of this standard is to establish a methodology for estimating the life expectancy of information stored in recordable compact disc systems. This methodology provides a technically and statistically sound procedure for obtaining and evaluating accelerated test data.

The methodology deals only with the effects of temperature and humidity on the retrievability of stored information. For this reason, this standard is primarily directed to those storage applications, e.g., libraries and archives, in which exposure to other influences potentially detrimental to information life expectancy, such as chemical agents, intense light sources, and improper handling, is controlled and minimized.

### 1.2 Assumptions

The validity of the procedure defined by this standard relies on three assumptions;

- Sample life distribution is appropriately modeled by the lognormal distribution;
- The kinetics of the dominant failure mechanism is appropriately modeled by an Eyring acceleration model;
- The dominant failure mechanism acting at the usage condition is the same as that at the accelerated conditions.

Publications by Hamada [1]<sup>1)</sup> and Stinson [2] provide data indicating that these assumptions are applicable to CD-R systems.

## 2 Normative references

The following American Standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most

<sup>1)</sup> The number in the brackets refers to the reference in clause 2.