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Imaging materials — Magnetic hard drives used for image storage — Care and handling

Matériaux d'imagerie — Disques durs magnétiques utilisés pour le stockage d'images — Soins et manipulation

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 42, *Photography*.

Introduction

Magnetic hard disk drives (HDD) are used widely for short and extended-term storage of data, including audio, still, and moving images. HDDs are popular because they are small, inexpensive, self-contained, and have very high storage capacities. The most common form of HDD comes in a semi-sealed metal housing that measures 25 mm × 100 mm × 130 mm. Each unit has a connector for power and a connector for receiving and transmitting data and commands. Each HDD of this form contains one to as many as five 89 mm diameter magnetic disks (sometimes called platters) coated on an aluminium substrate. The location of working HDDs can be internal or external to computer workstations, and can be connected singly or in groups.

There are three broad categories of HDDs.

a) Consumer. Consumer HDDs are the most common types of HDDs. They are low in cost and are made for consumer and office work.

b) Enterprise. Enterprise HHDs cost more, are subjected to additional testing at the factory, and are intended for higher performance and reliability, and more intensive usage. They are typically used as part of data centre storage systems. They usually run at a higher rotational speed.

c) Miniature. Miniature HDDs have disks with smaller diameters and are used in mobile computers, including laptop computers and mobile consumer electronic devices.

There are several operating modes for HDDs, and these are described in Clause 3. In general, the three most common modes of HDDs are

a) online,

b) online but inactive, and

c) off-line.

The main longevity issues for HDDs are failures due to natural disasters, manufacturing defects, faulty electronic components, or obsolescence of the software interface. Proper care and handling helps reduce the risk of failure from physical impact, environmental extremes, and contamination, but proper care and handling by itself will not prevent failure. Migration and the making of backup copies are also strategies to mitigate against failure. Many HDD users migrate their entire digital collections every five years. Medium- and long-term storage of data on HDDs is not endorsed. Medium- and long-term storage of data on HDDs requires frequent backup copying, system mirroring, or other procedure to mitigate the significant problems posed by the use of HDDs.

HDDs used for storage purposes should not be left inactive for several years as no experience documents the reliability of HDDs in an extended idle storage mode. Also, all electronic media, including HDDs, have the possibility of failure. Therefore, all data shall be duplicated.

This International Standard focuses on the care and handling of HDDs, as well as the preservation of data stored on HDDs. The physical media is only one component in the preservation of data on HDDs. Data preservation is dependent on a total system to ensure data integrity.

