SLOVENSKI STANDARD
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Information processing - Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7958 ftprad, 3,8 tpmm (96 tpi), on both sides - Part 1: Dimensional, physical and magnetic characteristics (ISO 8378-1:1986)

Information processing - Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7958 ftprad, 3,8 tpmm (96 tpi), on both sides - Part 1: Dimensional, physical and magnetic characteristics (ISO 8378-1:1986, ed. 1)

Informationsverarbeitung - Datenaustausch auf 130 mm (5.25 in) Disketten mittels modifizierter Frequenzmodulationsaufzeichnung bei 7958 ftprad, 3,8 tpmm (96 tpi), auf beiden Seiten - Teil 1: Mechanische, physikalische und Großenanforderungen (ISO 8378 -1:1986, Ausg. 1)

Traitement de l'information - Echange de données sur cartouches a disquette de 130 mm (5,25 in) utilisant un enregistrement a modulation de fréquence modifiée a 7958 ftprad, 3,8 tpmm (96 tpi), sur deux faces - Partie 1: Caractéristiques dimensionnelles, physiques et magnétiques (ISO 8378-1:1986, éd. 1)

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English version

Information processing. Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 3,8 tpmm (96 tpi), on both sides. Part 1: dimensional, physical and magnetic characteristics (ISO 8378-1, 1st edition, 1986)

Traitement de l'information. Echange de données sur cartouches à disquette de 130 mm (5,25 in) utilisant un enregistrement à modulation de fréquence modifiée à 7 958 ftprad, 3,8 tpmm (48 tpi), sur deux faces. Partie 1: caractéristiques dimensionnelles, physiques et magnétiques (ISO 8378-1, 1ère édition, 1986)

Informationsverarbeitung. Datenaustausch auf 130 mm (5.25 in) Disketten mittels modifizierter Frequenzmodulationsaufzeichnung bei 7958 ftprad, 3,8 tpmm (48 tpi), auf beiden Seiten. Teil 1: Mechanische, physikalische und Grössenanforderungen (ISO 8378-1, 1 Ausgabe, 1986)

This European Standard was accepted by CEN on 1988-12-21 and is identical to the ISO standard as referred to.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language may be translation under the responsibility of a CEN member into its own language and notified to CEN Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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BRIEF HISTORY

The Technical Board has decided to submit the International Standard

ISO 8378-1, 1st edition 1986 "Information processing; Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 957 ftprad, 3,8 tpmm (96 tpi) on both sides; Part 1: Dimensional, physical and magnetic characteristics"

to the formal vote. The result of this vote was positive.

For the time being, this document exists only in the English and the French versions.

According to the CEN/CENELEC Common Rules, the following countries are bound to implement this standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

STATEMENT

The text of the International Standard ISO 8378-1, 1st edition, 1986, was approved by CEN as a European Standard without any modification.

International Standard ISO 8378/1

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 3,8 tpmm (96 tpi), on both sides — Part 1 : Dimensional, physical and magnetic characteristics

Traitement de l'information — Échange de données sur cartouches à disquette de 130 mm (5,25 in) *utilisant un enregistrement à modulation de fréquence modifiée à* 7 958 ftprad, 3,8 tpmm (96 tpi), *sur les deux faces — Partie 1 : Caractéristiques dimensionnelles, physiques et magnétiques*

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Descriptors : data processing, information interchange, data recording devices, magnetic disks, dimensions, physical properties, magnetic properties.

ISO 8378/1-1986 (E)

Price based on 16 pages

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8378/1 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 3,8 tpmm (96 tpi), on both sides — Part 1 : Dimensional, physical and magnetic characteristics

0 Introduction

ISO 8378 specifies the characteristics of 130 mm (5.25 in) flexible disk cartridges recorded at 7 958 ftprad, 3,8 tpmm (96 tpi), using modified frequency modulation (MFM) recording on 80 tracks on each side.

ISO 8378/2 and ISO 8378/3 each specify the quality of recorded signals, the track layout, and a track format to be used on 130 mm (5.25 in) flexible disk cartridges, intended for data interchange between data processing systems.

ISO 8378/1 and ISO 8378/2, together with the labelling scheme specified in ISO 7665, provide for full data interchange between data processing systems.

ISO 8378/1 and ISO 8378/3, together with the labelling scheme specified in ISO 9293, provide for full data interchange between data processing systems.

1 Scope and field of application

This part of ISO 8378 specifies the dimensional, physical and magnetic characteristics of the cartridge so as to provide physical interchangeability between data processing systems.

NOTE — Numeric values in the SI and/or Imperial measurement system in this part of ISO 8378 may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should be neither intermixed nor re-converted. The original design was made using Imperial units and further developments were made using SI units.

2 Conformance

A flexible disk cartridge shall be in conformance with ISO 8378 when it meets all the requirements of this part of ISO 8378 and all those of either ISO 8378/2 or ISO 8378/3.

3 References

ISO 7665, *Information processing — File structure and labelling of flexible disk cartridges for information interchange.*

ISO 8378, *Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 3,8 tpmm (96 tpi), on both sides —*

Part 2 : Track format A.

Part 3 : Track format B.

ISO 9293, *Information processing — Volume and file structure of flexible disk cartridges for information interchange.*

4 Definitions

For the purpose of this part of ISO 8378 the following definitions apply.

4.1 flexible disk : A flexible disk which accepts and retains on the specified side or sides magnetic signals intended for input/output and storage purposes of information data processing and associated systems.

4.2 reference flexible disk cartridge : A flexible disk cartridge arbitrarily selected for a given property for calibrating purposes.

4.3 secondary reference flexible disk cartridge : A flexible disk cartridge intended for routine calibrating purposes, the performance of which is known and stated in relation to that of the reference flexible disk cartridge.

4.4 signal amplitude reference flexible disk cartridge : A reference flexible disk cartridge selected as a standard for recording field and signal amplitude.

NOTE — A master standard for signal amplitudes, reference fields, overwrite and resolution characteristics has been established by the Physikalisch-Technische Bundesanstalt (PTB) Bundesallee 100 in Braunschweig, Germany, F. R. Secondary reference flexible disk cartridges can be ordered from PTB Lab 1.41 under part number RM 7487 as long as available.

4.5 typical field (for each side) : The minimum recording field, which, when applied to a flexible disk cartridge, causes a signal output equal to 95 % of the maximum average signal

amplitude when taken as a function of the recording field at the specified track and flux transition frequency of that flexible disk cartridge.

4.6 reference field : The typical field of the signal amplitude reference flexible disk cartridge.

4.7 test recording current (for each side) : The current between 145 % and 155 % of the current which produces the reference field at 125 000 flux transitions per second (ftps) on track 00 on both sides.

4.8 standard reference amplitude (SRA) (for each side) : The average signal amplitudes derived from the reference tracks on the signal amplitude reference flexible disk cartridge using the appropriate test recording current.

SRA_{1f} is the average signal amplitude from a recording written using 125 000 ftps.

SRA_{2f} is the average signal amplitude from a recording written using 250 000 ftps.

4.9 average signal amplitude : The arithmetically averaged value for a track of the output voltages measured peak-to-peak over the whole track.

4.10 in-contact : An operating condition in which the magnetic surface of the disk intended for data storage is in physical contact with the magnetic heads.

4.11 formatting : Writing the proper control information, establishing the physical tracks, and designating the addresses of physical records on the flexible disk's surfaces.

4.12 initialization : Writing the volume label, the ERMAP label and other information initially required to be on the flexible disk cartridge prior to the commencement of general processing or use.

4.13 recording area : That area of each disk surface with which the head may come into contact.

5 General description

5.1 General figures

A typical flexible disk cartridge is represented in figures 1 to 3 as follows :

Figure 1 — Flexible disk cartridge, shows the cartridge seen from above, side 0 up.

Figure 2 — Section A-A, is a cross-section along line A-A in figure 1.

Figure 3 — Protective envelope with cartridge, shows a protective envelope with cartridge, side 1 up.

5.2 Main elements

The main elements of this flexible disk cartridge are

— the recording disk;

— the liner;

— the jacket.

The cartridge is stored in an envelope.

5.3 Description

The jacket is of a square form. It includes a central window, an index window and a head window in both sides.

The liner is fixed to the inside of the jacket. It comprises two layers of material between which the disk is held. The liner has the same openings as the jacket.

The disk has only a central and an index window.

5.4 Optional features

The interchange characteristics of the jacket allow for variations of its construction as follows :

a) the jacket may include flaps (for example three flaps as shown in the diagram, or more);

b) the jacket may include notches along the reference edge;

c) the centre of the disk may be reinforced by hub support rings (see annex D).

6 General requirements

6.1 Environment and transportation

6.1.1 Testing environment

Tests and measurements made on the cartridge to check the requirements of ISO 8378 shall be carried out under the following conditions :

— temperature : 23 ± 2 °C (73 ± 4 °F);

— relative humidity : 40 to 60 %;

— conditioning before testing : 24 h minimum.

The temperature and the relative humidity shall be measured in the air immediately surrounding the cartridge.

The stray magnetic field at any point on the disk surface, including that resulting from the concentrating effect of the recording head, shall not exceed 4 000 A/m (50 Oe).

6.1.2 Operating environment

Cartridges used for data interchange shall be operated under the following conditions :

— temperature : 10 to 51,5 °C (50 to 125 °F);

— relative humidity : 20 to 80 %;

— wet-bulb temperature : less than 29 °C (84 °F).

The temperature and the relative humidity shall be measured in the air immediately surrounding the cartridge. It is recommended that the rate of change of the temperature should not exceed 20 °C (36 °F) per hour.

For reliable interchange, it is recommended that the temperature and relative humidity conditions when reading are not at the opposite extremes to the conditions when writing.

There shall be no deposit of moisture on or in the cartridge.

The stray magnetic field at any point on the disk surface, including that resulting from the concentrating effect of the recording head, shall not exceed 4 000 A/m (50 Oe).

6.1.3 Storage environment

During storage the cartridges shall be kept under the following conditions :

— temperature : 4 to 51,5 °C (40 to 125 °F);

— relative humidity : 8 to 80 %.

Each cartridge shall be in an envelope and in an upright position.

There shall be no deposit of moisture on or in the cartridge.

The ambient stray magnetic field at any point on the disk surface shall not exceed 4 000 A/m (50 Oe).

NOTE — Cartridges which have been stored at temperatures and humidities outside the operating conditions may exhibit degraded performance characteristics. Such cartridges should be subjected to a conditioning period of not less than 24 h within the operating environment prior to use.

6.1.4 Transportation

Responsibility for ensuring that adequate precautions are taken during transportation shall be with the sender. During transportation the cartridge shall be in its envelope and in a protective package. The latter shall be free from dust or extraneous matter. It shall have a clean interior and a construction to minimize ingress of dust and moisture. It is recommended that a sufficient space exists between cartridge and outer surface of the final container so that risk of damage due to stray magnetic fields will be negligible.

It is recommended that the following conditions are not exceeded :

— temperature : −40 to 51,5 °C (−40 to 125 °F);

— maximum rate of temperature change : 20 °C (36 °F) per hour;

— relative humidity : 8 to 90 %.

There should be no deposit of moisture on or in the cartridge.

6.1.5 Handling

The cartridge shall stay out of its envelope for the shortest time possible. When handling the cartridge the operator shall not touch the exposed magnetic surfaces of the disk and shall avoid exposing the cartridge to direct sunlight, moisture and dust.

6.2 Materials

6.2.1 Jacket

The jacket may be constructed from any suitable material.

6.2.2 Liner

The material of the liner shall be able to retain dust without damage to the disk.

6.2.3 Disk

The disk may be constructed from any suitable material (for example bi-axially oriented polyethylene terephthalate) coated on both sides with a strong and flexible layer of magnetic material (for example γ-Fe_2O_3).

6.2.4 Envelope

The envelope may be manufactured from any suitable material (for example paper).

6.3 Direction of rotation

The direction of rotation shall be counterclockwise when looking at side 0.

7 Dimensional characteristics

The dimensional characteristics listed in the following clauses are indicated in figures 4 to 7.

Figure 4 — Jacket dimensions, shows the jacket.

Figure 5 — Cartridge thickness, shows a partial cross-section of the jacket.

Figure 6 — Disk dimensions, shows the disk.

Figure 7 — Disk thickness, shows a cross-section of the disk.

All dimensions are referred to the reference edge of the cartridge (see figure 4).

7.1 Jacket

7.1.1 Form

The jacket shall have a square form with angles of 90° ± 30′, and a side length

l_1 = 133,3 ± 0,4 mm (5.250 ± 0.015 in)