
International Standard



6596/1

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Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using two-frequency recording at 7 958 ftprad, 1,9 tpmm (48 tpi), on one side — Part 1 : Dimensional, physical and magnetic characteristics

Traitement de l'information — Échange de l'information sur cartouches à disquette de 130 mm (5,25 in) utilisant un enregistrement à deux fréquences à 7 958 ftprad, 1,9 tpmm (48 tpi), sur une face — Partie 1 : Caractéristiques dimensionnelles, physiques et magnétiques

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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.

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 6596/1 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

ISO 6596/1 was first published in 1982. This second edition cancels and replaces the first edition, the following clauses of the previous edition have been technically revised: 6.1.1.9, 8.2.1.3, annex D, figure 4, figure 8 and figure 14.

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Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using two-frequency recording at 7 958 ftprad, 1,9 tpmm (48 tpi), on one side — Part 1 : Dimensional, physical and magnetic characteristics

0 Introduction

ISO 6596 specifies the characteristics of 130 mm (5.25 in) flexible disk cartridges recorded at 7 958 ftprad on one side using two-frequency recording.

ISO 6596/2 specifies the quality of recorded signals, the track layout, and the track format to be used on a 130 mm (5.25 in) flexible disk cartridge, recorded at 7 958 ftprad, 1,9 tpmm (48 tpi), on one side, using two-frequency recording, which is intended for data interchange between data processing systems.

Together with the labelling scheme to be specified in ISO 7665, ISO 6596/1 and ISO 6596/2 provide for full data interchange between data processing systems.

1 Scope and field of application

This part of ISO 6596 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 International Standard may have been rounded 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 reconverted. The original design was made using Imperial units and further developments were made using SI units.

2 References

ISO 646, *Information processing — ISO 7-bit coded character set for information interchange*.

ISO 2022, *Information processing — ISO 7-bit and 8-bit coded character sets — Code extension techniques*.

ISO 4873, *Information processing — 8-bit code for information interchange — Structure and rules for implementation*.

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

3 Definitions

For the purpose of this International Standard the following definitions apply.

3.1 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.

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

3.3 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.

3.4 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 5.11 under part number RM 6596 as long as available.

3.5 typical field : 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.

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

3.7 test recording current : 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.

3.8 standard reference amplitudes : The average signal amplitudes derived from the signal amplitude reference flexible disk cartridge at the densities obtained when writing with 125 000 ftps on track 00 and with 250 000 ftps on track 34 using the test recording current (see 8.2).

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

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

3.11 formatting : Writing the proper control information, establishing the 35 physical tracks, and designating addresses of physical records on the flexible disk's surface.

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

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

4 General description

4.1 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.

4.2 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.

4.3 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 window and an index window.

4.4 Optional features

The interchange characteristics of the jacket allow for variations in its construction. It may include flaps (for example, three flaps as shown in the figures, or none) and notches along the reference edge.

5 General requirements

5.1 Environment and transportation

5.1.1 Testing environment

Tests and measurements made on the cartridge to check the requirements of this International Standard 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 on the recording head, shall not exceed 4 000 A/m (50 Oe).

5.1.2 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.

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 on the recording head, shall not exceed 4 000 A/m (50 Oe).

5.1.3 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.

The stray magnetic field shall not exceed 4 000 A/m (50 Oe).

NOTE — Cartridges which have been stored at temperatures and humidities outside the operating condition but within the storage 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.

5.1.4 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 construction preventing ingress of dust and water. 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 should not be 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 %

No moisture shall condense in or on the cartridge.

5.1.5 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.

5.2 Materials

5.2.1 Jacket

The jacket may be constructed from any suitable material.

5.2.2 Liner

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

5.2.3 Disk

The disk may be constructed from any suitable material (for example, bi-axially oriented polyethylene terephthalate) coated at least on one side with a strong and flexible layer of magnetic material (for example γ -Fe₂O₃).

5.2.4 Envelope

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

5.3 Direction of rotation

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

6 Dimensional characteristics

The dimensional characteristics listed in the sub-clauses below are indicated in figures 4 to 7 as follows :

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).

6.1 Jacket

6.1.1 Form

The jacket shall have a square form with angles of $90^\circ \pm 30'$ and a side length

$$l_1 = 133,3 \pm 0,4 \text{ mm } (5.250 \pm 0.015 \text{ in})$$

6.1.2 Thickness

6.1.2.1 Jacket wall and liner

In an area defined by

$$r_1 = 35 \text{ mm } (1.38 \text{ in})$$

$$r_2 = 50 \text{ mm } (1.97 \text{ in})$$

and with a probe having a diameter of 15 mm (0.59 in) applied against the cartridge with a force of 1 N (3.6 ozf), the thickness of the jacket wall and liner shall be

$$e_1 = 0,45 \pm 0,15 \text{ mm } (0.018 \pm 0.006 \text{ in})$$