

File structure and labelling of flexible disk cartridges for information interchange —

Part 2: Specification for variable file allocation structure

[ISO title: Information processing — Volume and file structure of
flexible disk cartridges for information interchange]

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- Association for Payment Clearing Services
- British Computer Society
- Business Equipment and Information Technology Association
- Institute of Data Processing Management
- Local Authority Organizations
- National Centre for Information Media and Technology (CIMTECH)
- National Computing Centre Ltd.

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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Brief history	2
Section 1. General	
0 Introduction	3
1 Scope and field of application	3
2 Conformance	3
3 References	4
4 Definitions	4
5 Notations	5
Section 2. Requirements for the medium	
6 Volume structure	5
7 Contents of a file	8
8 Recording of descriptor fields	9
9 FDC Descriptor	9
10 File Allocation Table	10
11 File directories	11
Section 3. Requirements for systems	
12 Requirements for the description of systems	15
13 Requirements for an originating system	15
14 Requirements for a receiving system	16
Section 4	
15 Record structure	16
Annex A Parameter values for FDCs conforming to an International Standard for data interchange	18
Annex B Parameter values for other FDC formats	19
Annex C ISO 646: International Reference Version (IRV)	20
Annex D Example of volume structures and file location	22
Annex E Index of acronyms	25
Table 1	5
Table 2	6
Table 3	9
Table 4	11
Table 5	20
Table 6	21
Table 7	23
Table 8	24
Table 9	24
Publications referred to	Inside back cover

National foreword

This Part of BS 6542 has been prepared under the direction of the Information Systems Technology Standards Committee. It is identical with ISO 9293:1987 “*Information processing — Volume and file structure of flexible disk cartridge for information interchange*” published by the International Organization for Standardization (ISO). Although the scope and field of application of this Part of BS 6542 (see clause 1) are similar to those of BS 6542-1, the use of this Part of BS 6542 has a number of practical advantages over BS 6542-1 which are summarized in clause 0. However, this Part of BS 6542 is not applicable to 200 mm flexible disk cartridges, for which BS 6542-1 should still be used.

In 1989 the European Committee for Standardization (CEN) accepted ISO 9293 as European Standard EN 29293:1989.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

For metric units the comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words “International Standard” appear, referring to this standard, they should be read as “Part of BS 6542”.

Cross-references

International Standard	Corresponding British Standard
ISO 646:1983	BS 4730:1985 <i>Specification for UK 7-bit coded character set</i> (Identical, exercising national options) BS 7024 <i>Guide to construction and use of 130 mm (5.25 in) flexible disk cartridges for data interchange, using modified frequency modulation recording at 7 958 ftprad, 1.9 tpmm (48 tpi) on both sides</i>
ISO 7487-1:1985	Part 1:1988 <i>Dimensional, physical and magnetic characteristics</i> (Identical)
ISO 7487-3:1986	Part 3:1988 <i>Track format B</i> (Identical)
ISO 7665:1983	BS 6542 <i>File structure and labelling of flexible disk cartridges for information interchange</i> Part 1:1984 <i>Specification for sequential file allocation structure</i> (Identical) BS 7023 <i>Guide to the construction and use of 130 mm (5.25 in) flexible disk cartridges for data interchange, using modified frequency modulation recording at 7 958 ftprad, 3.8 tpmm (96 tpi) on both sides</i>
ISO 8378-1:1986	Part 1:1986 <i>Dimensional, physical and magnetic characteristics</i> (Identical)
ISO 8378-3:1986	Part 3:1986 <i>Track format B</i> (Identical) BS 6957 <i>Guide to construction and use of 130 mm (5.25 in) flexible disk cartridges for data interchange, using modified frequency modulation recording at 13 262 ftprad, on 80 tracks on each side</i>

International Standard	Corresponding British Standard
ISO 8630-1:1987	Part 1:1988 <i>Dimensional, physical and magnetic characteristics</i> (Identical)
ISO 8630-3:1987	Part 3:1988 <i>Track format B for 80 tracks</i> (Identical) BS 6958 <i>Guide to construction and use of 90 mm (3.5 in) flexible disk cartridges for data interchange, using modified frequency modulation recording at 7 958 ftprad, 5.3 tpm (135 tpi) on 80 tracks on each side</i>
ISO 8860-1:1987	Part 1:1988 <i>Dimensional, physical and magnetic characteristics</i> (Identical)
ISO 8860-2:1987	Part 2:1988 <i>Track format</i> (Identical)

NOTE In clause 0, paragraph 2, the first item should read "The interchange file will be especially suitable for direct updating by interactive application".

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, the EN title page, pages 2 to 26, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

UDC 681.327.63.04

Descriptors: Data processing, information interchange, flexible disk cartridges, magnetic recording, files, organization of data, volume

English version

Information processing — Volume and file structure of flexible disk cartridges for information interchange

(ISO 9293, 1st edition, 1987)

Traitement de l'information — Volume et structure des fichiers des cartouches à disquette pour l'échange d'information
(ISO 9293, 1ère édition, 1987)

Informationsverarbeitung — Kesssätze und Dateianordnung auf Diskette für den Datenaustausch
(ISO 9293, 1 Ausgabe, 1987)

This European Standard was approved by CEN on 1988-12-21. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the 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 9293, 1st edition 1987 “*Information processing; Volume and file structure of flexible disk cartridges for information interchange*”

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, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Statement

The text of the International Standard ISO 9293, 1st edition, 1987, was approved by CEN as a European Standard without any modification.

Section 1. General

0 Introduction

For many purposes ISO 7665 provides a satisfactory data interchange between different types of information-processing systems. However, it imposes some restrictions on the operation of a system as follows:

- a) Each individual file must be recorded on the disk in a sequential, "batch-processing" mode. After a set of files has been recorded on the disk, a file cannot be extended beyond its pre-determined length.

It is common practice in small systems for the user to interact continuously with the system to update files. Files having a suitable structure for this purpose are not within the provision of ISO 7665.

The interchange cartridge has to be created by an "export" copy process from the application's files, after the application has terminated. A similar "import" process is required in the receiving system.

- b) Limitations on the number of file labels permitted on an interchange FDC prevents the full use of the disk space if the average size of files is significantly less than, say 20 kbytes. For conventional data processing purposes this is usually satisfactory. However, the file sizes typically encountered in text processing and small single-user systems are very much smaller and would lead to very inefficient use of the disk space.

In view of these requirements it was decided to develop a second standard for volume and file structure of flexible disk cartridges, the provisions of which were to be based on already existing practice in general use world-wide. Hence this International Standard has the following beneficial characteristics, in addition to those of ISO 7665.

- The interchange file will be especially for direct updating by interactive application.
- There will be no limit on the number of individual files on an FDC, within the overall limitation of available space for holding files. Any file can be extended whenever required.

These characteristics are advantageous for:

- interchange of sets of text files or of small files, or of multiple-part document files;
- interchange of any file when sender and recipient wish to carry out frequent update of the file between interchange cycles, for example files of commercial transactions.

1 Scope and field of application

This International Standard specifies the volume and file structure of flexible disk cartridges (FDC) for the interchange of information between users of information processing systems. It also specifies an optional record structure.

This International Standard is applicable to various types of flexible disk cartridges including those identified in clause 3, and other types which may be the subject of future International Standards.

This International Standard specifies the location of files of information on a flexible disk cartridge, and also specifies a set of recorded descriptors which identifies:

- the files which may be interchanged;
- the locations of the files;
- the attributes of the files;
- the location of unused space for recording on the FDC;
- the location of defective recording space on the FDC;
- the attributes of the FDC and of the descriptors recorded on it.

This International Standard also specifies requirements for the processes which are provided within information processing systems to enable information to be interchanged between different systems, utilizing recorded flexible disk cartridges as the medium of interchange. For this purpose it specifies the functions within systems which are intended to originate or to receive flexible disk cartridges which conform to this International Standard.

This International Standard provides a method for the allocation of space that is independent of the number of files that are recorded on the volume. It also enables the sizes of the recorded files to be expanded or contracted during processing, subject only to the availability of unused recording space when needed.

The contents and organization of the files are not specified by this International Standard and are subject to agreement between the originator and the recipient of the interchanged FDC.

2 Conformance

2.1 Conformance of a flexible disk cartridge

A flexible disk cartridge shall be in conformance with this International Standard when all information recorded on it conforms to the requirements of section 2 of this International Standard.

A prerequisite to such conformance is the conformance of the flexible disk cartridge to the appropriate International Standard for data interchange of flexible disk cartridges.

2.2 Conformance of an information processing system

An information processing system shall be in conformance with this International Standard if it meets the set of requirements specified in section 3 of this International Standard either for an originating system, or for a receiving system, or for both types of system. A statement of conformance shall identify which of these sets of requirements is met by the system.

Conformance with this International Standard does not require conformance with section 4.

3 References

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

ISO 7487, *Information processing — Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 1,9 tpmm (48 tpi), on both sides*.

— Part 1: *Dimensional, physical and magnetic characteristics*.

— Part 3: *Track format B*.

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 1: *Dimensional, physical and magnetic characteristics*

— Part 3: *Track format B*.

ISO 8630, *Information processing — Data interchange on 130 mm (5.25 in) high density flexible cartridges using modified frequency modulation recording at 13 262 ftprad, 3,8 tpmm (96 tpi), on both sides*.

— Part 1: *Dimensional, physical and magnetic characteristics*¹⁾.

— Part 3: *Track format B for 80 tracks*¹⁾.

ISO 8860, *Information processing — Data interchange on 90 mm (3.5 in) flexible disk cartridges using modified frequency modulation recording at 7 958 ftprad, 5,3 tpmm (135 tpi), on both sides*.

— Part 1: *Dimensional, physical and magnetic characteristics*.

— Part 2: *Track format*.

4 Definitions

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

4.1

byte

a string of binary digits operated upon as a unit. In this International Standard this term designates an 8-bit byte

4.2

data field of a sector

a fixed-length field containing the data of a sector

4.3

data interchange standard

a standard which defines the physical and magnetic characteristics, the recording method, and the track format of a flexible disk cartridge

4.4

defective sector

a sector which cannot be read or written without error

4.5

descriptor

a recorded structure containing descriptive information about the volume or a file

4.6

file

a named collection of information

4.7

formatting

writing the control information establishing the physical addresses of sectors on the surfaces of a flexible disk cartridge

4.8

implementation

a set of processes which enable an information processing system to behave as an originating system, or as a receiving system, or as both types of system

¹⁾ At present at the stage of draft.

4.9 initialization

writing descriptors initially required to be on the FDC, prior to the commencement of general processing or use

4.10 originating system

an information processing system which can record files on an FDC for the purpose of data interchange with another system

4.11 receiving system

an information processing system which can read files from an FDC which has been recorded by another system for the purpose of data interchange

4.12 sector

that part of a track on a flexible disk cartridge that can be accessed independently of other parts of the track by the magnetic heads of the flexible disk drive

4.13 track

that part of a flexible disk that can be accessed by a single magnetic head that is stationary while the disk makes a complete revolution

4.14 user

a person or other entity (for example an application program) that causes the invocation of the services provided by an implementation

in addition the following definitions apply specifically to section 4

4.15 fixed-length record

a record contained in a file in which all records must have the same length

4.16 record

related data treated as a unit of information

4.17 segment

a part of a record

4.18 segmented record

a record contained in a file in which the records may have different lengths and each record may consist of one or more separate segments

4.19 variable-length record

a record contained in a file in which the records may have different lengths but a record must not consist of separate segments

5 Notations

The following notations are used in this International Standard.

5.1 Decimal and hexadecimal notations

Numbers in decimal notation are represented by decimal digits, namely 0 to 9.

Numbers in hexadecimal notation are represented by hexadecimal digits, namely 0 to 9 and A to F, shown in parentheses.

5.2 Other notations

BP: Byte position within a Descriptor, starting with 1

ZERO: A single bit with the value 0

ONE: A single bit with the value 1

$ip(x)$: The integer part of x

$ceil(x)$: The smallest integer that is not less than x

$rem(x, y)$: The remainder of the integer division of x by y , that is, $rem(x, y) = x - y \times ip(x/y)$

5.3 Capital letters

Where a word or a group of words is used to designate a specific concept, for example the name of a descriptor field, it is printed with initial capital letters except for prepositions.

Section 2. Requirements for the medium

6 Volume structure

6.1 Arrangement of data on a flexible disk cartridge

6.1.1 FDC parameters

For the purpose of this International Standard the significant parameters of the data interchange standard are shown in Table 1.

Table 1

FDC parameters	Acronym
Number of Recordable Sides	NOS
Number of Tracks per Side	NOT
Number of Sectors per Track	SPT
Total Number of Sectors of the FDC	TS
Number of Bytes per Data Field of a Sector	SS