

**Implementation of ISO/IEC 9529-1 : 1989**

**Information processing  
systems — Data interchange on  
90 mm (3,5 in) flexible disk  
cartridges using modified  
frequency modulation  
recording at 15 916 ftprad,  
on 80 tracks on each side**

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

## National foreword

This British Standard reproduces verbatim ISO/IEC 9529-1 : 1989 and implements it as the UK national standard.

This British Standard is published under the direction of the Information Technology Systems Standards Policy Committee whose Technical Committee IST/4 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

NOTE. International and European Standards, as well as overseas standards, are available from BSI Sales Department, BSI, Linford Wood, Milton Keynes, MK14 6LE.

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

**Amendment No. 1**  
**published and effective from 15 June 1992**  
**to BS ISO/IEC 9529 : Part 1 : 1989**

**Information processing systems – Data  
interchange on 90 mm (3,5 in) flexible disk  
cartridges using modified frequency modulation  
recording at 15 916 ftprad, on 80 tracks on  
each side**  
**Part 1. Dimensional, physical and magnetic  
characteristics**

NOTE. The European Committee for Standardization (CEN) has accepted ISO/IEC 9529-1 : 1989 as a European Standard, designated as EN 29529-1 : 1991, and this amendment effects the implementation of EN 29529-1 : 1991 as a British Standard.

**Revised text**

AMD 7040  
1992

**Front and back covers**

In the top right-hand corner of the front cover and on the top left-hand corner of the back cover, immediately below 'BS ISO/IEC 9529-1 : 1989' insert 'EN 29529-1 : 1991'.

7040  
1992

**Front cover**

Below the title insert the following.

'The European Standard EN 29529-1 : 1991 has the status of a British Standard'.

7040  
1992

**National foreword**

Insert a new second paragraph as follows.

'ISO/IEC 9529-1 : 1989 was accepted as a European Standard by the European Committee for Standardization (CEN) in November 1991. This European Standard is designated EN 29529-1 : 1991 and is entitled 'Information processing systems – Data interchange on 90 mm (3,5 in) flexible disk cartridges using modified frequency modulation recording at 15 916 ftprad, on 80 tracks on each side – Part 1 : Dimensional, physical and magnetic characteristics'.'

AMD 7040  
June 1992

**New EN title page and foreword**

Insert the attached new EN title page and foreword immediately after the national foreword.



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Descriptors: Data processing, information interchange, data recording devices, frequency modulation, magnetic disks, flexible disk cartridges, dimensions, magnetic properties, physical properties

English version

Information processing systems – Data interchange  
on 90 mm (3,5 in) flexible disk cartridges using  
modified frequency modulation recording at  
15 916 ftprad, on 80 tracks on each side –  
Part 1: Dimensional, physical and magnetic characteristics  
(ISO 9529-1 – 1st edition, 1989)

Systèmes de traitement de l'information –  
Echange de données sur cartouches à disquette  
de 90 mm (3,5 in) utilisant un enregistrement  
à modulation de fréquence modifiée à  
15 916 ftprad sur 80 pistes sur chaque face –  
Partie 1: Caractéristiques dimensionnelles,  
physiques et magnétiques  
(ISO 9529-1 – 1ère édition, 1989)

Informationsverarbeitungssysteme –  
Datenaustausch auf 90 mm (3,5 in) Diskette mit  
Modifizierter Wechseltaktschrift mit 15 916  
Flußwechsel/rad, auf 80 Spuren auf jeder Seite –  
Teil 1: Masse, physikalische und  
elektromagnetische Eigenschaften  
(ISO 9529-1 – 1. Ausgabe 1989)

This European Standard was approved by CEN on 1991-11-16.  
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  
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Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CEN**

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

Central Secretariat: rue de Stassart 36, B-1050 Brussels

## Foreword

The Technical Board has decided to submit the International Standard 9529-1 : 1989 'Information processing systems – Data interchange on 90 mm (3,5 in) flexible disk cartridges using modified frequency modulation recording at 15 916 ftprad, on 80 tracks on each side – Part 1: Dimensional, physical and magnetic characteristics (ISO 9529-1 – 1st edition, 1989)' for Formal Vote. The standard was accepted.

For the time being, this document exists only in the English version.

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 the United Kingdom.

# INTERNATIONAL STANDARD

# ISO/IEC 9529-1

First edition  
1989-09-15

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**Information processing systems — Data interchange on 90 mm (3,5 in) flexible disk cartridges using modified frequency modulation recording at 15 916 ftprad, on 80 tracks on each side —**

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

*Systèmes de traitement de l'information — Échange de données sur cartouches à disquette de 90 mm (3,5 in) utilisant un enregistrement à modulation de fréquence modifiée à 15 916 ftprad sur 80 pistes sur chaque face —*

*Partie 1: Caractéristiques dimensionnelles, physiques et magnétiques*



Reference number  
ISO/IEC 9529-1 : 1989 (E)



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## **Foreword**

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) together form a system for worldwide standardization as a whole. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for approval before their acceptance as International Standards. They are approved in accordance with procedures requiring at least 75 % approval by the national bodies voting.

International Standard ISO/IEC 9529-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

## Introduction

ISO/IEC 9529 specifies the characteristics of 90 mm (3,5 in) flexible disk cartridges recorded at 15 916 ftprad using modified frequency modulation recording on, 80 tracks on each side.

ISO/IEC 9529-2 specifies the track layout, the track format and the characteristics of the recorded signals.

ISO/IEC 9529-1 and ISO/IEC 9529-2, together with the labelling scheme specified in ISO 9293, provide for full data interchange between data processing systems.

In accordance with ISO/IEC 9983<sup>1)</sup>, flexible disk cartridges conforming to this part of ISO/IEC 9529 should be designated as “ISO Type 302”.

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1) ISO/IEC 9983 : 1989, *Information processing systems — Designation of unrecorded flexible disk cartridges*.



# Information processing systems — Data interchange on 90 mm (3,5 in) flexible disk cartridges using modified frequency modulation recording at 15 916 ftprad, on 80 tracks on each side —

## Part 1: Dimensional, physical and magnetic characteristics

### Scope

This part of ISO/IEC 9529 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/IEC 9529 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 either intermixed nor reconverted. The original design was made using SI units.

### Conformance

90 mm (3,5 in) flexible disk cartridge shall be in conformance with this part of ISO/IEC 9529 if it meets all mandatory requirements specified herein.

### Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 9529. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 9529 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 683-13:1986, *Heat treatable steels, alloy steels and free-cutting steels - Part 13: Wrought stainless steels*.

ISO 9293:1987, *Information processing - Volume and file structure of flexible disk cartridges for information interchange*.

## 4 Definitions

For the purpose of ISO/IEC 9529 the following definitions apply.

**4.1 recording disk:** A flexible disk which accepts and retains, on the specified side or sides, magnetic signals intended for input/output and storage purposes.

**4.2 hub:** A centring and referencing device attached to the centre of the disk which allows torque to be transmitted to the disk. It ensures centring of the disk on the drive shaft in a unique angular position.

**4.3 shutter:** A device which uncovers the head windows upon insertion, and automatically covers them upon removal from the drive.

**4.4 liner:** Suitable material positioned between the case and the disk to provide cleaning action and protection from abrasion.

**4.5 case:** A protective enclosure including a shutter mechanism, a write-inhibit hole and an identification hole.

**4.6 Master Standard Reference Flexible Disk Cartridge:** A reference flexible disk cartridge selected as the standard for reference fields, signal amplitudes, resolution, peak shift and overwrite. Track 00 and Track 79 on both sides are declared as reference tracks.

The reference tracks are calibrated at 300 r/min.

NOTE - This Master Standard has been established by the Physikalisch-Technische Bundesanstalt (PTB), Bundesallee 100, D-3300 Braunschweig, Germany, F.R.

**4.7 Secondary Standard Reference Flexible Disk Cartridge:** A flexible disk cartridge the performance of which is known and stated in relation to that of the Master Standard Reference Flexible Disk Cartridge.

NOTE - Secondary Standard Reference Flexible Disk Cartridges can be ordered from PTB Lab. 1.41 under Part Number RM 9529 until 1997.

It is intended that these be used for calibrating tertiary cartridges for use in routine calibration.

**4.8 Typical Field:** In the plot of average signal amplitude against recording field at the specified track and flux transition density, the Typical Field is the minimum field which causes an average signal amplitude equal to 95% of the maximum Average Signal Amplitude.

**4.9 Reference Field:** The Reference Field is the typical field of the Master Standard Reference Flexible Disk Cartridge. There are two Reference Fields, one for each side.

**4.10 Test Recording Current:** The Test Recording Current is the current between 148% and 152% of the current which produces the Reference Field at Test Frequency 1f on Track 00. There are two Test Recording Currents, one for each side.

**4.11 Standard Reference Amplitude:** The Standard Reference Amplitudes (SRAs) are the