

INTERNATIONAL STANDARD

ISO/IEC 11319

First edition
1993-07-15

Information technology — 8 mm wide magnetic tape cartridge for information interchange — Helical scan recording

*Technologies de l'information — Cartouche pour bande magnétique de
8 mm de large pour l'échange d'information — Enregistrement par
balayage hélicoïdal*



Reference number
ISO/IEC 11319:1993(E)

Contents

	Page
Section 1 : General	1
1 Scope	1
2 Conformance	1
3 Normative references	1
4 Definitions	1
4.1 AC erase	1
4.2 Average Signal Amplitude	1
4.3 azimuth	1
4.4 back surface	1
4.5 bit cell	1
4.6 byte	1
4.7 cartridge	1
4.8 Cyclic Redundancy Check (CRC) Character	1
4.9 Error Correcting Code (ECC)	2
4.10 flux transition position	2
4.11 flux transition spacing	2
4.12 magnetic tape	2
4.13 Master Standard Reference Tape	2
4.14 Physical Beginning of Tape (PBOT)	2
4.15 Physical End of Tape (PEOT)	2
4.16 physical recording density	2
4.17 Secondary Reference Amplitude	2
4.18 Secondary Reference Field	2
4.19 Secondary Standard Reference Tape	2
4.20 Standard Reference Current (Ir)	2
4.21 Tape Reference Edge	2
4.22 Test Recording Current	2
4.23 tone	2
4.24 track	2
4.25 Typical Field	2

© ISO/IEC 1993

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

ISO/IEC Copyright Office • Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

5	Environment and safety	2
5.1	Testing environment	3
5.2	Operating environment	3
5.3	Storage environment	3
5.4	Transportation	3
5.5	Safety	3
5.6	Flammability	3
Section 2	Requirements for the case	3
6	Dimensional and mechanical characteristics of the case	3
6.1	General	3
6.2	Overall dimension (figure 3)	4
6.3	Holding areas	4
6.4	Cartridge insertion	5
6.5	Window (figure 4)	5
6.6	Loading grips (figure 3)	6
6.7	Label areas (figure 3)	6
6.8	Datum areas and datum holes (figures 4, 5 and 6)	6
6.9	Support areas	7
6.10	Recognition holes (figures 5, 6 and 7)	7
6.11	Write-inhibit Hole (figures 6 and 7)	8
6.12	Pre-positioning surfaces (figures 3 and 5)	8
6.13	Cartridge lid (figures 3 and 8)	9
6.14	Cartridge reel lock (figure 11)	10
6.15	Reel access holes (figure 5)	11
6.16	Interface between the reels and the drive spindles (figures 17 and 18)	11
6.17	Light path (figures 5, 7, 15 and 16)	12
6.18	Position of the tape in the case (figure 16)	12
6.19	Tape path zone (figures 16 and 17)	13
6.20	Tape access cavity (figure 5)	13
6.21	Tape access cavity clearance requirements (figure 16)	13
Section 3	Requirements for the unrecorded tape	31
7	Mechanical, physical and dimensional characteristics of the tape	31
7.1	Materials	31
7.2	Tape length	31
7.2.1	Length of magnetic tape	31
7.2.2	Length of leader and trailer tapes	31
7.2.3	Splicing tape	31
7.3	Width	31
7.4	Discontinuities	31
7.5	Thickness	31
7.5.1	Thickness of magnetic tape	31
7.5.2	Thickness of leader and trailer tape	31

7.6	Longitudinal curvature	31
7.7	Cupping	32
7.8	Coating adhesion (figure 20)	32
7.9	Layer-to-layer adhesion	32
7.10	Tensile strength	33
7.10.1	Breaking strength	33
7.10.2	Yield strength	33
7.11	Residual elongation	33
7.12	Electrical resistance of the surface	33
7.13	Tape winding	34
7.14	Light transmittance of tape	34
8	Magnetic recording performance	34
8.1	Test conditions	34
8.2	Typical Field	35
8.3	Signal Amplitude	35
8.4	Resolution	35
8.5	Narrow-band signal-to-noise ratio	35
8.5.1	Requirement	35
8.5.2	Procedure	35
8.6	Ease of erasure	35
8.7	Tape quality	35
8.7.1	Missing pulses	35
8.7.2	Missing pulse zone	35
8.8	Inhibitor tape	36
Section 4 : Requirements for an interchanged tape		36
9	Format	36
9.1	General	36
9.2	Information matrix	36
9.2.1	Loading of the information matrix	37
10	Method of recording	40
10.1	Physical recording density	40
10.1.1	Long-term average bit cell length	40
10.1.2	Short-term average bit cell length	41
10.1.3	Rate of change	41
10.2	Bit shift	41
10.3	Read signal amplitudes	41

10.3.1	Amplitude of data signals	41
10.3.2	Amplitude of servo signals	41
10.3.3	Signal amplitude on an analogue tape mark track	41
10.4	Erase	41
11	Track geometry	42
11.1	Track positions	42
11.2.1	Average track pitch	43
11.2.2	Adjacent track pitch	43
11.3	Track width	43
11.4	Track angle	43
11.5	Linearity of track edges	43
11.6	Azimuth	43
12	Format of an information track	43
12.1	Channel bit	43
12.2	Information Segment	43
12.2.1	Bit Synchronization field	44
12.2.2	Information Segment Number	44
12.2.3	Information Segment field	44
12.3	Information Block	45
12.4	Information Zone	46
12.5	Servo Zone	46
12.6	Information Tracks	46
12.6.1	Format ID Track	47
12.6.2	Data Track	47
12.6.3	Tape Mark Track	47
12.6.4	Splice Track	47
13	Tape Mark	48
13.1	Description	48
13.2	Long Tape Mark	48
13.3	Short Tape Mark	48
13.3.1	Normal Short Tape Mark	48
13.3.2	Alternative Short Tape Mark	48
14	ID Information	49
14.1	Column 00, Row 00	49
14.1.1	Block Type - Data Block	49
14.1.2	Block Type - Data Block	49
14.1.3	Block type - Format ID	49

14.1.4	Block type - Pad Block	49
14.2	Column 00, Row 01	49
14.3	Column 00, Row 02	49
14.4	Column 00, Row 03	49
14.5	Column 00, Row 04	50
14.6	Column 00, Rows 05, 06	50
14.6.1	Row 05	50
14.6.2	Row 06	50
14.7	Column 00, Row 07	50
14.8	Column 00, Rows 08, 09, 10	50
14.8.1	Block type - Data Block	50
14.8.2	Block type - non-Data Block	50
14.9	Column 00, Rows 11, 12, 13	50
15	Rewritten Information Blocks	51
16	Physical tape format	51
16.1	Initial Erased Area	51
16.2	Logical Beginning of Tape Area (LBOT Area)	52
16.3	Usable area of the tape	52
16.4	Post Data erased area	52
Annexes		
A	Measurement of light transmittance of tape and leaders	53
B	Measurement of bit shift	56
C	Representation of 8-bit bytes by 10-bit patterns	59
D	Recommendations for transportation	62
E	Inhibitor tape	63

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. 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 voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 11319 was prepared by the European Computer Manufacturers Association (as Standard ECMA-145) and was adopted, under a special "fast-track procedure", by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Sub-Committee 11, *Flexible magnetic media for digital data interchange*, in parallel with its approval by national bodies of ISO and IEC.

Annexes A, B and C form an integral part of this International Standard. Annexes D and E are for information only.

This document is a preview generated by EVS

This page intentionally left blank

Information technology - 8 mm wide magnetic tape cartridge for information interchange - Helical scan recording

Section 1 : General

1 Scope

This International Standard specifies the physical and magnetic characteristics of an 8 mm wide magnetic tape cartridge to enable interchangeability of such cartridges. It also provides a format and recording method, thus allowing, together with ISO 1001 for Magnetic Tape Labelling, full data interchange by means of such magnetic tape cartridges.

2 Conformance

A magnetic tape cartridge shall be in conformance with this International Standard if it satisfies all mandatory requirements specified herein. The tape requirements shall be satisfied throughout the extent of the tape.

3 Normative references

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

ISO/R 527:1966, *Plastics - Determination of tensile properties.*

ISO 1001:1986, *Information processing - File structure and labelling of magnetic tapes for information interchange.*

ISO 1302:1978, *Technical drawings - Method of indicating surface texture on drawings.*

IEC 950:1990, *Safety of Information Technology Equipment, including Electrical Business Equipment.*

4 Definitions

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

4.1 AC erase: A process of erasure utilizing alternating fields of decaying level.

4.2 Average Signal Amplitude: The average peak-to-peak value of the signal output of the read head measured over a minimum of 1,40 mm, exclusive of missing pulses.

4.3 azimuth: The angular deviation, in degrees of arc, of the recorded flux transitions on a track from the line normal to the track centreline.

4.4 back surface: The surface of the tape opposite to the magnetic coating used to record data.

4.5 bit cell: A distance along the track allocated for the recording of a Channel bit.

4.6 byte: An ordered set of bits acted upon as a unit.

4.7 cartridge: A case containing magnetic tape stored on twin reels.

4.8 Cyclic Redundancy Check (CRC) Character: A character used for error detection.