

Guide to

Construction and use of 6.30 mm (0.25 in) magnetic tape cartridge for data interchange, using GCR recording at 394 ftpmm (10 000 ftpi), 39 cpmm (1000 cpi) —

Part 2: Streaming mode

[ISO title: Information processing — Data interchange
on 6,30 mm (0.25 in) magnetic tape cartridge using GCR
recording at 394 ftpmm (10 000 ftpi), 39 cpmm (1 000 cpi) —
Part 2: Streaming mode]

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Committees responsible for this British Standard

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- Association for Payment Clearing Services
- British Computer Society
- British Telecommunications plc
- Business Equipment and Information Technology Association
- Department of Trade and Industry (National Physical Laboratory)
- HM Customs and Excise
- HM Treasury (Central Computer and Telecommunications Agency)
- Institute of Administrative Management
- Institute of Quality Assurance
- Institution of Electrical Engineers
- Institution of Electronic and Radio Engineers
- Institution of Mechanical Engineers
- National Computing Centre Ltd.
- Post Office

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National foreword

This Part of BS 7080, prepared under the direction of the Information Systems Technology Standards Policy Committee, is identical with ISO 8462-2:1986 “*Information processing — Data interchange on 6,30 mm (0.25 in) magnetic tape cartridge using GCR recording at 394 ftpmm (10 000 ftpi), 39 cpmm (1 000 cpi) — Part 2: Streaming mode*” published by the International Organization for Standardization (ISO).

The purpose of this standard is to define those characteristics necessary for successful data interchange using magnetic tape cartridges. The information contained is intended as a guide to writing complete specifications for manufacture, purchasing and/or testing. The text of the International Standard does not accord with the recommendations for drafting product specifications given in the ISO Directives, or in BS 0-3, but the BSI Technical Committee considers the text is useful as a guide when cartridges are being described or specified. For this reason this British Standard has a different title from the International Standard; it is issued as a British Standard guide and it should only be used as such. It should not be used on its own as a British Standard product specification and, in particular, no claims of compliance with this British Standard should be made.

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.

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)
ISO 2022:1986	BS 6856:1987 <i>Specification for code extension techniques for United Kingdom 7-bit and 8-bit coded character sets</i> (Identical)
ISO 4873:1986	BS 6006:1987 <i>Specification for structure and rules for implementation of United Kingdom 8-bit coded character set</i> (Identical)
ISO 8462-1:1986	BS 7080 <i>Guide to construction and use of 6.30 mm (0.25 in) magnetic tape cartridge for data interchange using GCR recording at 394 ftpmm (10 000 ftpi), 39 cpmm (1 000 cpi)</i> Part 1:1989 <i>Mechanical, physical and magnetic properties</i> (Identical)

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 and ii, pages 1 to 14, 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.

1 Scope and field of application

ISO 8462 specifies the characteristics of a tape cartridge loaded with magnetic tape 6,30 mm (0.25 in) wide intended for digital recording at physical recording densities of 252 ftpmm (6 400 ftpi) and 394 ftpmm (10 000 ftpi).

ISO 8462-1 specifies the mechanical, physical and magnetic properties of a 6,30 mm (0.25 in) wide magnetic tape cartridge and methods for testing the surface quality of the tape. It also specifies the environmental conditions under which the cartridge shall be tested and operated, and recommends conditions for storage.

This part of ISO 8462 specifies a recording method and a data format intended for use in the streaming mode of operation. Two alternative track formats are specified:

- a 4-track format, and
- a 9-track format.

ISO 8462-1 and ISO 8462-2 provide for the physical interchange of cartridges between data processing systems, and specify a data format. A labelling standard for tape cartridges used in the streaming mode is under study. The availability of such a labelling standard will provide for full data interchange between data processing systems.

NOTE Numeric values in the SI and/or Imperial measurement system in this part of ISO 8462 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 reconverted. The original design was made using the Imperial measurement system.

2 Conformance

A 6,30 mm (0.25 in) wide magnetic tape cartridge shall be in conformance with ISO 8462 if it meets either all mandatory requirements of both ISO 8462-1 and ISO 8462-2 specified for the 4-track format or all mandatory requirements of both ISO 8462-1 and ISO 8462-2 specified for the 9-track format. The two formats shall not exist on the same cartridge.

In addition the code used shall conform with one of the codes specified in the documents referenced in clause 3.

3 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 coded character set for information interchange*.

ISO 8462-1, *Information processing — Data interchange on 6,30 mm (0.25 in) magnetic tape cartridge using GCR recording at 394 ftpmm (10 000 ftpi), 39 cpmm (1 000 cpi) — Part 1: Mechanical, physical and magnetic properties*.

4 Hexadecimal notation

Hexadecimal notation is used hereafter to denote the following bytes:

- (00) for (B8 to B1) = 0000 0000
- (01) for (B8 to B1) = 0000 0001
- (02) for (B8 to B1) = 0000 0010
- (03) for (B8 to B1) = 0000 0011
- (04) for (B8 to B1) = 0000 0100
- (05) for (B8 to B1) = 0000 0101
- (06) for (B8 to B1) = 0000 0110
- (07) for (B8 to B1) = 0000 0111

5 Reference plane

The Reference Plane shall be the top of the base plate (plane B in ISO 8462-1).

The Reference Edge shall be that edge of the tape which is nearer to the top of the base plate.

The location of the centrelines of the tracks is referred to the Reference Plane.

6 Track geometry

6.1 Track location

The positions of the nine tracks are defined by specifying the distance of their centrelines from the Reference Plane (see Figure 1).

6.2 Number of tracks

6.2.1 4-track format

In the 4-track format only tracks 0, 1, 2 and 3 are usable. Tracks are recorded sequentially from track 0 (see also 10.1).

6.2.2 9-track format

In the 9-track format all nine tracks are usable. Tracks are recorded sequentially from track 0 (see also 10.2).

6.3 Track width

The recorded track width shall be

- for a 4-track format: $0,914 \pm 0,025$ mm (0.036 ± 0.001 in);
- for a 9-track format: $0,343 \pm 0,013$ mm (0.0135 ± 0.0005 in).

7 Recording

7.1 Method of recording

The recording method shall be the “Non Return To Zero Mark” (NRZ1) method where a ONE is represented by a change of direction of longitudinal magnetization.

7.2 Physical recording densities

The maximum nominal physical recording density shall be 394 ftpmm. The nominal bit cell length shall be $2,54\text{ }\mu\text{m}$.

Two other densities occur with the recording method described in this part of ISO 8462, namely:

- 197 ftpmm (5 000 ftpi)
- 131 ftpmm (3 333 ftpi)

7.3 Average bit cell length variations

7.3.1 Average bit cell length

The average bit cell length is the sum of the distances between the flux transitions in n bit cells divided by $(n - 1)$. The tests below may be made in any continuously recorded pattern, provided that the first and the last bit cell each contain a flux transition.

7.3.2 Long-term average bit cell length

The long-term average bit cell length is the average bit cell length taken over at least 900 000 bit cells. The long-term average bit cell length shall be within $\pm 4\%$ of the nominal bit cell length.

7.3.3 Short-term average bit cell length

The short-term average bit cell length is the average bit cell length taken over 126 to 130 bit cells. The short-term average bit cell length shall be within $\pm 7\%$ of the long-term average bit cell length.

7.4 Flux transition spacing

In the following tests the results are expressed as the ratio of measurements; the effects of variations in long-term average bit-cell length and short-term average bit-cell length are thereby eliminated.

7.4.1 Instantaneous flux transition spacing

The instantaneous spacing between flux transitions is influenced by the reading and writing processes, the pattern recorded (pulse-crowding effect) and other factors.

Instantaneous spacings between flux transitions shall satisfy the following conditions (see Figure 2).