
**Information technology — Data interchange
on 12,7 mm, 384-track magnetic tape
cartridges — Ultrium-1 format**

*Technologies de l'information — Échange de données sur cartouches à
bande magnétique 12,7 mm, 384 pistes — Format Ultrium-1*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of the joint technical committee is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 22050 was prepared by ECMA (as ECMA-319) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

Annexes A to F form a normative part of this International Standard. Annexes G to I are for information only.

Information technology — Data interchange on 12,7 mm, 384-track magnetic tape cartridges — Ultrium-1 format

Section 1 — General

1 Scope

This International Standard specifies the physical and magnetic characteristics of magnetic tape cartridges, using magnetic tape 12,65 mm wide so as to provide physical interchange of such cartridges between drives. It also specifies the quality of the recorded signals, the recording method and the recorded format, thereby allowing data interchange between drives by means of such cartridges. The format supports variable length Logical Records, high speed search, and the use of a registered algorithm for data compression.

This International Standard specifies four types of cartridges depending on the length of tape contained in the case. These four types are referred to as Type A, Type B, Type C and Type D; their nominal capacity is 100 Gbytes, 50 Gbytes, 30 Gbytes and 10 Gbytes, respectively.

NOTE - One Gbyte contains 1 000 000 000 bytes.

Information interchange between systems also requires, at a minimum, agreement between the interchange parties upon the interchange code(s) and the specification of the structure and labeling of the information on the interchanged cartridge.

This International Standard shall be used only in conjunction with ISO/IEC 22091.

Together with a standard for volume and file structure, e.g. Standard ISO 1001, this document provides for full data interchange between data processing systems.

2 Conformance

2.1 Magnetic tape cartridge

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

2.2 Generating system

A system generating a magnetic tape cartridge for interchange shall be in conformance with this International Standard if all the recordings that it makes meet the mandatory requirements of this International Standard.

2.3 Receiving system

A system receiving a magnetic tape cartridge for interchange shall be in conformance with this International Standard if it is able to handle any recording made on the tape according to this International Standard.

3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1001:1986	<i>Information processing — File structure and labelling of magnetic tapes for information interchange</i>
ISO 527 (all parts)	<i>Plastics — Determination of tensile properties</i>
ISO 3574:1999	<i>Cold-reduced carbon steel sheet of commercial and drawing qualities</i>
ISO 4287:1997	<i>Geometrical product specification (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters</i>
ISO/IEC 646:1991	<i>Information technology — ISO 7-bit coded character set for information interchange</i>

ISO/IEC 11576:1994	<i>Information technology — Procedure for the registration of algorithms for the lossless compression of data</i>
ISO/IEC 14443-2:2001	<i>Identification cards — Contactless integrated circuit(s) cards — Proximity cards — Part 2: Radio frequency power and signal interface</i>
ISO/IEC 22091:2002	<i>Information technology — Streaming Lossless Data Compression algorithm (SLDC)</i>
IEC 60950-1:2001	<i>Information technology equipment — Safety — Part 1: General requirements</i>
ASTM D4065-01:1995	<i>Standard Practice for Plastics: Dynamic Mechanical Properties: Determination and Report of Procedures</i>
ASTM D4092-01:1996	<i>Standard Terminology: Plastics: Dynamic Mechanical Properties</i>

4 Terms and definitions

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

4.1 Access Point

A point, at the start of a sequence of Processed Records, at which the presentation of Symbols to a reprocessing algorithm is required to start at a known state to enable recovery, regardless of whether the data of interest in a retrieval operation starts at that point or at a subsequent point.

4.2 algorithm

A set of rules for transforming the logical representation of data.

4.3 algorithmically processed data

Data that has been processed by a defined processing algorithm.

4.4 a.c. erase

A process of erasure utilising alternating fields of decaying level.

4.5 Average Signal Amplitude

The average peak-to-peak value of the output signal from the read head at the fundamental frequency of the specified physical recording density over a minimum of 25,4 mm of track, exclusive of missing pulses.

4.6 back surface

The surface of the tape opposite to the magnetic coating which is used to record data.

4.7 Beginning of Tape (BOT)

The reference point on the tape nearest to the leader pin assembly.

4.8 Beginning of Wrap (BOW)

The Logical Point that indicates the beginning of a wrap: LP3 for forward wraps, LP4 for reverse wraps.

4.9 bit

A single digit in the binary number system, a ZERO or a ONE.

4.10 bit cell

A distance along the track between adjacent RLL encoded bits.

4.11 Broad Band Signal-to-Noise Ratio (BBSNR)

The average read signal power divided by the average integrated broad band (floor) RMS noise power and expressed in dB.

4.12 byte

An ordered set of eight bits (12 Channel bits) that are acted on as a unit.

4.13 cartridge

A case holding a single supply reel of magnetic tape and leader tape with an attached leader pin assembly at the BOT end.