SLOVENSKI STANDARD
SIST EN 60094-5:1999

01-april-1999

Magnetic tape sound recording and reproducing systems -- Part 5: Electrical magnetic tape properties (IEC 60094-5:1988)

Magnetic tape sound recording and reproducing systems -- Part 5: Electrical magnetic tape properties

Systeme für Tonaufzeichnung und -wiedergabe auf Magnetband -- Teil 5: Elektrische Eigenschaften von Magnetbändern

Systèmes d'enregistrement et de lecture du son sur bandes magnétiques -- Partie 5: Propriétés électriques des bandes magnétiques

Ta slovenski standard je istoveten z: **EN 60094-5:1993**

ICS:

33.160.30	Avdio sistemi	Audio systems

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EUROPEAN STANDARD EN 60094-5

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Descriptors: Sound recording, magnetic tape, electrical property

ENGLISH VERSION

Magnetic tape sound recording and reproducing systems
Part 5: Electrical magnetic tape properties
(IEC 94-5:1988)

Systèmes d'enregistrement et de lecture du son sur bandes magnétiques
Cinquième partie: Propriétés électriques des bandes magnétiques
(CEI 94-5:1988)

Systeme für Tonaufzeichnung und -wiedergabe auf Magnetband
Teil 5: Elektrische Eigenschaften von Magnetbändern

(IEC 94-5:1988)

This European Standard was approved by CENELEC on 1993-09-22. CENELEC 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.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

FOREWORD

As a consequence of the IEC-CENELEC Agreement, HD 311.5 S1:1989 (IEC 94-5:1988) was submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard was approved by CENELEC as EN 60094-5 on 22 September 1993.

The following dates were fixed:

- latest date of publication of an identical national standard	(dop)	1994-10-01
- latest date of withdrawal of conflicting national standards	(dow)	-

Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

ENDORSEMENT NOTICE

The text of the International Standard IEC 94-5:1988 was approved by CENELEC as a European Standard without any modification.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication	Date	Title	EN/HD	Date
50(806)	1975	International Electrotechnical Vocabulary (IEV) Chapter 806: Recording and reproduction of sound and video	-	-
94-1	1981	Magnetic tape sound recording and reproducing systems Part 1: General conditions and requirements	EN 60094-1	1993
94-2	1975	Part 2: Calibration tapes (corrigendum april 1976)	EN 60094-2*	1993
94-6	1985	Part 6: Reel-to-reel systems	HD 311.6 S1	1987
94-7	1986	Part 7: Cassette for commercial tape records and domestic use	EN 60094-7	1993
94-8	1987	Part 8: Eight-track magnetic tape cartidge for commercial tape records and domestic use	-	-
94-9	1988	Part 9: Magnetic tape cartridge for professional use	-	-
386	1972	Method of measurement of speed fluctuations in sound recording and reproducing equipment	-	-
651	1979	Sound level meters	HD 425 S1	1983

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* EN 60094-2 includes A2:1991 to IEC 94-2

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Systèmes d'enregistrement et de lecture du son sur bandes magnétiques –

Cinquième partie: Propriétés électriques des bandes magnétiques

Magnetic tape sound recording and reproducing systems –

Part 5: Electrical magnetic tape properties

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MAGNETIC TAPE SOUND RECORDING AND REPRODUCING SYSTEMS

Part 5: Electrical magnetic tape properties

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.
4) The IEC has not laid down any procedure concerning marking as an indication of approval and has no responsibility when an item of equipment is declared to comply with one of its recommendations.

PREFACE

This standard has been prepared by Sub-Committee 60A: Sound Recording, of IEC Technical Committee No. 60: Recording.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting
60A(CO)71 60A(CO)114A	60A(CO)88 and 88A 60A(CO)116

Full information on the voting for the approval of this standard can be found in the Voting Reports indicated in the above table.

IEC Publication 94 and its supplements are under revision. The new IEC Publication 94 will be issued in several parts, of which this is Part 5.

It will have the following parts:

Part 1: General conditions and requirements

General: electrical requirements for the magnetic tape recording and reproducing systems; mechanical requirements for the magnetic tape; tape identification; programme identification (Fourth edition, 1981).

Part 2: Calibration tapes

Minimum requirements for calibration tapes for making adjustments and comparative assessments of the reproducing performance (First edition, 1975).

Part 3: Methods of measuring the characteristics of recording and reproducing equipment for sound on magnetic tape (First edition, 1979).

Part 4: Mechanical magnetic tape properties

Characteristics to be specified and relevant methods of measurement. Equipment to be used to determine the mechanical properties of magnetic tapes (First edition, 1986).

Part 5: Electrical magnetic tape properties

Characteristics to be specified, methods of measurement and equipment to be used for the determination of the electrical properties of magnetic tape for analogue sound recording and reproduction (object of this standard).

Part 6: Reel-to-reel systems

Mechanical requirements and dimensions, including reels, hubs and relevant track allocations (First edition, 1986).

Part 7: Cassette for commercial tape records and domestic use

Mechanical requirements and dimensions, including track allocation (First edition, 1986).

Part 8: Eight-track magnetic tape cartridge for commercial tape records and domestic use

Mechanical requirements and dimensions, including track allocation (First edition, 1987).

Part 9: Magnetic tape cartridge for professional use

Mechanical requirements and dimensions, including track allocation (First edition, 1988).

Part 10: Time and address codes (First edition, 1987)

Part 11: Address code for compact cassettes (First edition, 1988)

The following IEC publications are quoted in this standard:

Publication Nos. 50 (806) (1975): International Electrotechnical Vocabulary (IEV), Chapter 806: Recording and reproduction of sound and video.
94-1 (1981): Magnetic tape sound recording and reproducing systems, Part 1: General conditions and requirements.
94-2 (1975): Part 2: Calibration tapes.
94-6 (1985): Part 6: Reel-to-reel systems.
94-7 (1986): Part 7: Cassette for commercial tape records and domestic use.
94-8 (1987): Part 8: Eight-track magnetic tape cartridge for commercial tape records and domestic use.
94-9 (1988): Part 9: Magnetic tape cartridge for professional use.
386 (1972): Method of measurement of speed fluctuations in sound recording and reproducing equipment.
651 (1979): Sound level meters.

MAGNETIC TAPE SOUND RECORDING AND REPRODUCING SYSTEMS

Part 5: Electrical magnetic tape properties

SECTION ONE – GENERAL

1.1 *Scope*

This standard applies to non-perforated magnetic tape used for professional and domestic analogue sound recording and reproduction.

1.2 *Object*

The object of this standard is to list and define the characteristics, methods of measurement and equipment necessary to determine the electrical properties of magnetic tapes. It will also enable users of magnetic tapes to compare the technical product data of different manufacturers, produced in accordance with this standard.

SECTION TWO – TECHNICAL REQUIREMENTS AND INFORMATION CONCERNING TESTING CONDITIONS

2.1 *Standard atmospheric conditions*

Ambient temperature 20^{+5}_{-5} °C

Relative humidity 60 ± 15 %

Where necessary the tests shall be preceded by a period of conditioning to ensure that the test specimen has reached equilibrium with the environment.

2.2 *Mechanical characteristics of tape transports*

a) Tape speed

The tape transports shall be capable of operating at the mandatory rated tape speed specified in Table I.

TABLE I

Rated tape speeds

Tape application	Speed (cm/s)
Professional 6.30 mm wide tapes	38.1 ± 0.2%
Domestic 6.30 mm wide tapes	9.53 ± 0.2%
Domestic 3.81 mm wide tapes	4.76 ± 0.2%

Other tape speeds may be required when additional optional information is given.

The tape speed fluctuations (wow and flutter) shall be not more than 0.15% when measured in accordance with IEC Publication 386.

b) Tape widths

Tape transports shall be capable of accommodating tape widths of 6.30 mm and/or 3.81 mm with tolerances as specified in IEC Publication 94-1.

In addition tape transports may be used to accommodate the other tape widths and track allocations specified in IEC Publication 94-1 or IEC Publications 94-6 to 94-9.

c) Tape guides

Tape guides shall be such as to ensure stability of measurement without affecting the inherent characteristics of the tape.

d) Tape tensions

The tape tensions at the recording and replay heads shall be 1.0 ± 0.4 N for 6.30 mm wide tapes and 0.5 ± 0.2 N for 3.81 mm wide tapes.

It is recommended that pressure pads should not be used.

e) Heads

For details see Table II and Appendix B.

TABLE II

Type of head

Type of tape	Erase All tests	Record All tests		Replay All tests			Country of origin
	Track configuration	Track configuration	Gap length (µm)	Gap length (µm)	Track configuration	Relative part of IEC Publication 94	
Professional 6.30 mm wide	Full width	Full width	7 (A) 18 (B)	3 (A)	Two track two channel Nos. 1 and 2	6 Figure 8	Germany
Domestic 6.30 mm wide	Full width	Full width	7 (A) 2 (B)	2 (A)	Four track two channel Nos. 1 and 3	6 Figure 9	Japan
Domestic 3.81 mm wide	Full width	Full width	4 (A) 1,5 (B)	1 (A)	Four track two channel Nos. 1 and 2	7	Japan

A = mandatory
B = optional (for use when additional information is given at the discretion of the tape manufacturer)

f) Tape wrap

The total angular displacement of the tape around the head. The tape wrap shall be 6 ± 2° (0.105 ± 0.035 rad) around each head.

The heads shall be set or adjustments provided so that:

i) the face of the head contacting the tape is parallel to the corresponding faces of the guides;

ii) the head is positioned so that the tape wrap is symmetrical with respect to the gap;

iii) the head gap alignment can be set accurately and rigidly. If the tape under test has a coating thickness greater than that of the reference tape being used, the wrap symmetry with respect to the gap shall be adjusted for maximum short wavelength response.