SLOVENSKI STANDARD
SIST EN 60889:2002

01-september-2002

Nadomešča:
SIST HD 532 S1:1996

Trdo vlečena aluminijska žica za nadzemne vode

Hard-drawn aluminium wire for overhead line conductors

Hartgezogene Aluminiumdrähte für Freileitungsseile

Fil d'aluminium écroui dur pour conducteurs de lignes aériennes

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Ta slovenski standard je istoveten z: **EN 60889:1997**

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ICS:

29.060.10	Žice	Wires
29.240.20	Daljnovodi	Power transmission and distribution lines
77.150.10	Aluminijski izdelki	Aluminium products

SIST EN 60889:2002 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60889

January 1997

UDC 621.315.1-034.715
ICS 29.060.10
Descriptors: Electric overhead line, electric conductor, electric wire, aluminium, property, test

Supersedes HD 532 S1:1989

English version

Hard-drawn aluminium wire for overhead line conductors

(IEC 889:1987)

Fil d'aluminium écroui dur pour conducteurs de lignes aériennes (CEI 889:1987)

Hartgezogene Aluminiumdrähte für Freileitungsseile (IEC 889:1987)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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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

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Foreword

The text of the International Standard IEC 889:1987, prepared by IEC TC 7, Bare aluminium conductors, was approved by CENELEC as HD 532 S1 on 1989-06-12.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60889 on 1996-10-01.

The following date was fixed:

— latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-09-01

Annexes designated "normative" are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 889:1987 was approved by CENELEC as a European Standard without any modification.

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1 Scope

This standard is applicable to hard-drawn aluminium wires for the manufacture of stranded conductors for overhead power transmission purposes. It specifics the mechanical and electrical properties of wires in the diameter range 1.25 mm to 5.00 mm.

2 Values for hard-drawn aluminium wire

For calculation purposes the following values for hard-drawn aluminium wire shall be used.

Resistivity at 20 °C, maximum:	28.264 nΩm (corresponding to 61.0 % IACS)[a]
Density at 20 °C:	2.703 kg/dm^3
Coefficient of linear expansion:	23×10^{-6} per degree Celsius
Constant-mass temperature coefficient of resistance at 20 °C:	0.004 03 per degree Celsius

[a] International Annealed Copper Standards.

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3 Material

The wires shall be of aluminium of the requisite purity to achieve the mechanical and electrical properties specified hereinafter. The aluminium content shall be not less than 99.5 %.

4 Freedom from defects

The wires shall be smooth and free from all imperfections not consistent with good commercial practice.

5 Diameter and tolerance on diameter

The nominal diameter of the wires shall be expressed in millimetres to two decimal places.

Each measurement of wire diameter shall not depart from the nominal diameter by more than the following amounts:

Nominal diameter		Tolerance
Over (mm)	Up to and including (mm)	
—	3.00	± 0.03 mm
3.00	—	± 1 %

For the purpose of checking compliance with the above requirement, the diameter shall be determined by two measurements at right angles taken at the same cross-section.

6 Length and tolerance on length

The nominal length of each coil or reel of wire and the tolerance on length shall be the subject of agreement between manufacturer and purchaser.

7 Joints

Joints may be made prior to final drawing. A joint could also be made in the finished wire, provided that:

a) the coil is 500 kg or heavier,

b) there is not more than one joint in such coils,

c) not more than 10 % of such coils shall contain a joint,

d) when requested by the purchaser, the manufacturer shall provide evidence that the joints have a tensile strength of not less than 130 MPa.

The coils containing a joint made in the finished wire shall be clearly identified.

8 Sampling

Samples for the tests specified in Clauses **10** and **11** shall be taken by the manufacturer from 10 % of the individual lengths of wire included in any one consignment.

Alternatively, or when a quality assessment procedure is operated, the sampling rate shall be the subject of agreement between manufacturer and purchaser.

9 Place of testing

Unless otherwise agreed between purchaser and manufacturer at the time of ordering, all tests shall be carried out at the manufacturer's works.

10 Mechanical tests

10.1 Tensile test

One specimen cut from each of the samples taken under Clause **8** shall be subjected to a tensile test in accordance with ISO Standard 6892. The rate of separation of the jaws of the testing machine shall be not less than 25 mm/min and not greater than 100 mm/min.

The tensile strength shall be not less than the appropriate value given in Table 1.

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10.2 Wrapping test

One specimen cut from each of the samples taken under Clause 8 shall be subjected to a wrapping test in accordance with ISO Standard 7802.

Eight turns shall be wrapped round a mandrel of diameter equal to the wire diameter at a speed not exceeding 60 rev/min. Six turns shall then be unwrapped and again closely wrapped.

The wire shall not break.

11 Resistivity test

The electrical resistivity of one specimen cut from each of the samples taken under Clause 8 shall be determined by the routine method specified in IEC Publication 468: Method of Measurement of Resistivity of Metallic Materials. The resistivity at 20 °C shall be not greater than 28.264 nΩm.

12 Certificate of compliance

The manufacturer shall, if requested, supply the purchaser with a certificate giving the results of all the tests carried out on the samples.

Table I — Mechanical properties of hard-drawn aluminium wire

Nominal diameter		Minimum tensile strength
Over (mm)	Up to and including (mm)	(MPa)
—	1.25	200
1.25	1.50	195
1.50	1.75	190
1.75	2.00	185
2.00	2.25	180
2.25	2.50	175
2.50	3.00	170
3.00	3.50	165
3.50	5.00	160

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Annex ZA (normative)
Normative references to international publications with their corresponding 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 (including amendments).

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

Publication	Year	Title	EN/HD	Year
IEC 468	1974	Method of measurement of resistivity of metallic materials	—	—
ISO 6892	1984	Metallic materials — Tensile testing[a]	—	—
ISO 7802	1983	Metallic materials — Wire — Wrapping test	—	—

[a] This subject was harmonized by CEN as EN 10000-2-1:1990.

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