SVENSK STANDARD

SS-EN IEC 60974-1+A11, utg 6:2023

Fastställd	Sida	Ansvarig kommitté
2023-10-18	1 (167)	SEK TK 26

Bågsvetsutrustning – Del 1: Säkerhet hos svetsströmkällor för industriellt och liknande bruk

Arc welding equipment – Part 1: Welding power sources

Som svensk standard gäller europastandarden EN IEC 60974-1:2022. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 60974-1:2022 och EN IEC 60974-1:2022/A11.

Nationellt förord

Europastandarden EN IEC 60974-1:2022

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60974-1, Sixth edition, 2021 - Arc welding equipment – Part 1: Welding power sources**

utarbetad inom International Electrotechnical Commission, IEC.

EN IEC 60974-1:2022/A11:2022 ingår i standarden.

Tidigare fastställd svensk standard SS-EN IEC 60974-1, utg 5:2018 med ändring SS-EN IEC 60974-1, utg 5:2018/A1:2019, gäller ej fr o m 2025-10-25.

ICS 25.160.30

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60974-1

December 2022

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Supersedes EN IEC 60974-1:2018

English Version

Arc welding equipment - Part 1: Welding power sources (IEC 60974-1:2021)

Matériel de soudage à l'arc - Partie 1: Sources de courant de soudage (IEC 60974-1:2021)

Lichtbogenschweißeinrichtungen - Teil 1: Schweißstromquellen (IEC 60974-1:2021)

This European Standard was approved by CENELEC on 2022-10-25. 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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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 60974-1:2022 E

SEK Svensk Elstandard

SS-EN IEC 60974-1+A11, utg 6:2023

European foreword

The text of document 26/724/FDIS, future edition 6 of IEC 60974-1, prepared by IEC/TC 26 "Electric welding" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60974-1:2022.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023-10-25
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2025-10-25

This document supersedes EN IEC 60974-1:2018 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annexes ZZA and ZZB, which are an integral part of EN IEC 60974-1:2022/A11:2022.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60974-1:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60038:2009	NOTE	Harmonized as EN 60038:2011
IEC 60085	NOTE	Harmonized as EN 60085
IEC 60204-1	NOTE	Harmonized as EN 60204-1
IEC 60309-1	NOTE	Harmonized as EN IEC 60309-1
IEC 60335-2-29	NOTE	Harmonized as EN 60335-2-29
IEC 60384-14	NOTE	Harmonized as EN 60384-14
IEC 60947-3	NOTE	Harmonized as EN IEC 60947-3

IEC 60974-3	NOTE	Harmonized as EN IEC 60974-3
IEC 60974-4	NOTE	Harmonized as EN 60974-4
IEC 60974-6	NOTE	Harmonized as EN 60974-6
IEC 60974-9	NOTE	Harmonized as EN IEC 60974-9
IEC 60974-12	NOTE	Harmonized as EN 60974-12
IEC 60990:2016	NOTE	Harmonized as EN 60990:2016 (not modified)
IEC 61000-3-2	NOTE	Harmonized as EN IEC 61000-3-2
IEC 61032:1997	NOTE	Harmonized as EN 61032:1998 (not modified)
IEC 61558-1	NOTE	Harmonized as EN IEC 61558-1
IEC 62281	NOTE	Harmonized as EN IEC 62281
IEC 62841-1	NOTE	Harmonized as EN 62841-1
ISO 13732-1	NOTE	Harmonized as EN ISO 13732-1

IEC 60974-1

Edition 6.0 2021-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Arc welding equipment – Part 1: Welding power sources

Matériel de soudage à l'arc – Partie 1: Sources de courant de soudage

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ARC WELDING EQUIPMENT –

Part 1: Welding power sources

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 60974-1 has been prepared by IEC technical committee 26: Electric welding. It is an International Standard.

This sixth edition cancels and replaces the fifth edition published in 2017 and Amendment 1:2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Table 1 with an alphabetical cross-reference listing of terms added;
b) CLEARANCE and CREEPAGE DISTANCE reference document changed to IEC 60664-1:2020;
c) 6.1.2 and 6.1.3 modified to follow IEC 60664-1 BASIC INSULATION dimensioning for mains supply with rationalized voltages;
d) abnormal capacitor test of 6.2.2 moved to new Subclause 9.5;
e) 6.2.5 and 6.3.6 modified to use TOUCH CURRENT measuring network weighted for letgo-immobilization and supply voltage tolerance requirement added;
f) 16.3 new structure and accuracy requirement for displayed voltage value ;

g) Annex A changed to normative and Table A.2 and Table A.3 added;

h) Annex L editorial update to standardized symbols;

i) redraft of efficiency and IDLE STATE power measurement in Annex M based on IEC 62301:2011;

j) Annex N measurement network weighted for letgo-immobilization added.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
26/724/FDIS	26/727/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

In this document, the following print types are used:

– *conformity statements*: in *italic* type.

– terms used throughout this document which have been defined in Clause 3: SMALL ROMAN CAPITALS.

A list of all parts of the IEC 60974 series can be found, under the general title *Arc welding equipment*, on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

ARC WELDING EQUIPMENT –

Part 1: Welding power sources

1 Scope

This part of IEC 60974 is applicable to power sources for arc welding and allied processes designed for INDUSTRIAL AND PROFESSIONAL USE, and supplied by a voltage not exceeding 1 000 V, BATTERY supplied or driven by mechanical means.

This document specifies safety and performance requirements of WELDING POWER SOURCES and PLASMA CUTTING SYSTEMS.

This document is not applicable to limited duty arc welding and cutting power sources which are designed mainly for use by laymen and designed in accordance with IEC 60974-6.

This document includes requirements for battery-powered WELDING POWER SOURCES and BATTERY packs, which are given in Annex O.

This document is not applicable to testing of power sources during periodic maintenance or after repair.

NOTE 1 Typical allied processes are electric arc cutting and arc spraying.

NOTE 2 AC systems having a nominal voltage between 100 V and 1 000 V are given in Table 1 of IEC 60038:2009.

NOTE 3 This document does not include electromagnetic compatibility (EMC) requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-151, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices* (available at: http://www.electropedia.org)

IEC 60050-851, *International Electrotechnical Vocabulary (IEV) – Part 851: Electric welding* (available at: http://www.electropedia.org)

IEC 60245-6, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 6: Arc welding electrode cables*

IEC 60417, *Graphical symbols for use on equipment* (available at: http://www.graphical-symbols.info/equipment)

IEC 60445, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals, conductor terminations and conductors*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-3, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 60974-7, *Arc welding equipment – Part 7: Torches*

IEC 60974-10, *Arc welding equipment – Part 10: Electromagnetic compatibility (EMC) requirements*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61558-2-4, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers*

IEC 61558-2-6, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers*

IEC 62133-1:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 1: Nickel systems*

IEC 62133-2:2017, *Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems*

IEC 62301:2011, *Household electrical appliances – Measurement of standby power*

ISO 7010:2019*, Graphical symbols – Safety colours and safety signs – Registered safety signs*