IEC 60974-4

Edition 4.0 2025-06
REDLINE VERSION

INTERNATIONAL STANDARD

Arc welding equipment –
Part 4: Periodic inspection and testing

ICS 25.160

ISBN 978-2-8327-0481-3

IEC 60974-4:2025-06 RLV(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ARC WELDING EQUIPMENT –

Part 4: Periodic inspection and testing

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60974-4:2016. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60974-4 has been prepared by IEC technical committee 26: Electric welding. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2016. This edition constitutes a technical revision.

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

- examples for the measurements in respect of EN 50699,
- consideration of measuring equipment in respect of IEC 61557 series,
- more determinations of NO-LOAD VOLTAGE for welding equipment built according to IEC 60974-1:1998 and IEC 60974-1:1998/AMD1:2000 or earlier,
- new Annex D providing additional information to be considered when testing battery-powered WELDING POWER SOURCES and connected chargers.

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

Draft	Report on voting
26/769/FDIS	26/777/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/publications.

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- terms defined in Clause 3: in SMALL ROMAN CAPITALS.

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- reconfirmed,
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- revised.

ARC WELDING EQUIPMENT –

Part 4: Periodic inspection and testing

1 Scope

This part of IEC 60974 specifies test procedures for PERIODIC INSPECTION and, after REPAIR, to ensure electrical safety. These test procedures are also applicable for MAINTENANCE.

This document is applicable to power sources for arc welding and allied processes designed in accordance with IEC 60974-1 or IEC 60974-6. Stand-alone ancillary equipment designed in accordance with other parts of IEC 60974 ~~may~~ can be tested in accordance with relevant requirements of this part of IEC 60974.

This document includes requirements for battery-powered ARC WELDING POWER SOURCES, which are given in Annex D.

NOTE 1 The WELDING POWER SOURCE can be tested with any ancillary equipment fitted that can affect the test results.

This document is not applicable to testing of new power sources or engine-driven power sources.

NOTE 2 For a power source not built in accordance with IEC 60974-1, see Annex C.

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*

~~IEC 60050-195, *International Electrotechnical Vocabulary – Part 195: Earthing and protection against electric shock*~~

~~IEC 60050-851, *International Electrotechnical Vocabulary – Part 851: Electric welding*~~

IEC 60974-1:~~2012~~2021, *Arc welding equipment – Part 1: Welding power sources*

IEC 60974-6:2015, *Arc welding equipment – Part 6: Limited duty equipment*

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

IEC 61557-2:2019, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 2: Insulation resistance*

IEC 61557-4:2019, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 4: Resistance of earth connection and equipotential bonding*

IEC 61557-16:2023, *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures – Part 16: Equipment for testing the effectiveness of the protective measures of electrical equipment and/or medical electrical equipment*

IEC 60974-4

Edition 4.0 2025-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Arc welding equipment –
Part 4: Periodic inspection and testing

Matériel de soudage à l'arc –
Partie 4: Inspection et essais périodiques

ICS 25.160

ISBN 978-2-8327-0462-2

IEC 60974-4:2025-06(en-fr)

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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MATÉRIEL DE SOUDAGE À L'ARC –

Partie 4: Inspection et essais périodiques

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L'IEC 60974-4 a été établie par le comité d'études 26 de l'IEC: Soudage électrique. Il s'agit d'une Norme internationale.

Cette quatrième édition annule et remplace la troisième édition parue en 2016. Elle constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- exemple de mesurages en référence à l'EN 50699,
- prise en compte de l'équipement de mesure en référence à la série IEC 61557,

- autres déterminations de la TENSION A VIDE pour le matériel de soudage construit conformément à l'IEC 60974-1:1998 et l'IEC 60974-1:1998/AMD1:2000 ou une édition antérieure;
- nouvelle Annexe D contenant des informations supplémentaires à prendre en compte lors des essais des SOURCES DE COURANT DE SOUDAGE sur batterie et des chargeurs connectés.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
26/769/FDIS	26/777/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

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- *déclarations de conformité: caractères italiques*.
- termes définis in à l'Article 3: en PETITES MAJUSCULES EN CARACTERES ROMAINS.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé, ou
- révisé.

MATÉRIEL DE SOUDAGE À L'ARC –

Partie 4: Inspection et essais périodiques

1 Domaine d'application

La présente partie de l'IEC 60974 spécifie les procédures d'essai pour l'INSPECTION PERIODIQUE, afin d'assurer la sécurité électrique après REPARATION. Ces procédures d'essai s'appliquent également à la MAINTENANCE.

Le présent document s'applique aux sources de courant pour le soudage à l'arc et les techniques connexes conçues conformément à l'IEC 60974-1 ou l'IEC 60974-6. Les équipements auxiliaires indépendants conçus conformément à d'autres parties de l'IEC 60974 peuvent être soumis à l'essai conformément aux exigences correspondantes de la présente partie de l'IEC 60974.

Le présent document inclut des exigences concernant les SOURCES DE COURANT DE SOUDAGE A L'ARC sur batterie, qui figurent à l'Annexe D.

NOTE 1 La SOURCE DE COURANT DE SOUDAGE peut être soumise à l'essai avec tout équipement auxiliaire monté qui peut influencer les résultats d'essai.

Le présent document ne s'applique pas aux essais des nouvelles sources de courant ou aux groupes électrogènes.

NOTE 2 Pour une source de courant qui n'est pas conçue conformément à l'IEC 60974-1, voir Annexe C.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60050-151, *Vocabulaire Électrotechnique International (IEV) – Partie 151: Dispositifs électriques et magnétiques*

IEC 60974-1:2021, *Matériel de soudage à l'arc – Partie 1: Sources de courant de soudage*

IEC 60974-6:2015, *Matériel de soudage à l'arc – Partie 6: Matériel à service limité*

IEC 61140, *Protection contre les chocs électriques – Aspects communs aux installations et aux matériels*

IEC 61557-2:2019, *Sécurité électrique dans les réseaux de distribution basse tension au plus égale à 1 000 v c.a. et 1 500 v c.c. – Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection – Partie 2: Résistance d'isolement*

IEC 61557-4:2019, *Sécurité électrique dans les réseaux de distribution basse tension au plus égale à 1 000 v c.a. et 1 500 v c.c. – Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection – Partie 4: Résistance de conducteurs de terre et d'équipotentialité*

IEC 61557-16:2023, *Sécurité électrique dans les réseaux de distribution basse tension au plus égale à 1 000 V en courant alternatif et 1 500 V en courant continu – Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection – Partie 16: Équipement pour les essais de bon fonctionnement des mesures de protection des appareils électriques et/ou des appareils électromédicaux*