



**CSA C22.2 No. 60974-1:19**  
(IEC 60974-1:2017, MOD)  
National Standard of Canada



**CSA C22.2 No. 60974-1:19**  
**Arc welding equipment — Part 1:**  
**Welding power sources**  
(IEC 60974-1:2017, MOD)



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*National Standard of Canada*

*CSA C22.2 No. 60974-1:19*  
**Arc welding equipment — Part 1:**  
**Welding power sources**  
*(IEC 60974-1:2017, MOD)*

**Note:** For brevity, this Standard will be referred to as "CAN/CSA-C22.2 No. 60974-1" throughout.

DECEMBER 13, 2019

This national standard is based on publication IEC 60974-1, fifth edition (2017).

*Prepared by*  
*International Electrotechnical Commission*



*Reviewed by*



Association of Standardization  
and Certification  
NMX-J-038-1-ANCE-2019; Section 1  
First Edition



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National Electrical  
Manufacturers Association  
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Second Edition

ICS 25.160.30



ANSI/NEMA/IEC 60974-1-2019

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## Preface

This is the harmonized ANCE, CSA Group, and NEMA standard for Arc Welding Equipment — Part 1: Welding Power Sources. It is the first edition of NMX-J-038-1-ANCE; Section 1, the first edition of CSA C22.2 No. 60974-1, and the second edition of ANSI/NEMA/IEC 60974-1. This edition of CSA C22.2 No. 60974-1 replaces CAN/CSA-E60974-1:12 (adopted IEC 60974-1:2012) and CSA C22.2 No. 60-M1990.

This harmonized standard is based on IEC publication 60974-1: fifth edition, *Arc welding equipment — Part 1: Welding power sources*, issued February 2017. IEC 60974-1 is copyrighted by the IEC.

This harmonized standard was prepared by the Association of Standardization and Certification (ANCE), CSA Group, and the National Electrical Manufacturers Association (NEMA). The efforts and support of Industry Associations [Cámara Nacional de Manufacturas Eléctricas (CANAME)], and of the Technical Harmonization Committee (THC 26) of the Council on the Harmonization of Electrotechnical Standards of the Nations of the Americas (CANENA), are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This standard was reviewed by the Standardization Committee of the Association of Standardization and Certification, A. C., CONANCE, committee integrated based on the terms of the Federal Law on Metrology and Standardization for developing, approving, and reviewing Mexican Standards, in the framework of the principles of representativeness, balance, and consensus. In accordance with the CONANCE operative procedure, the consensus is the general agreement, characterized by the absence of opposition based on relevant aspects by any party directly affected, after a process of analysis to consider the points of view of all parties involved and conflicting arguments reconciliation.

This standard was reviewed by the CSA Subcommittee on Arc Welding Equipment, under the jurisdiction of the CSA Technical Committee on Industrial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

In Canada, for general information on the Standards of the *Canadian Electrical Code, Part II*, see the preface of CAN/CSA-C22.2 No. 0.

This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group. This Standard has been approved by the American National Standards Institute (ANSI) as an American National Standard. This American National Standard is an adoption of IEC 60974-1 edition 5, *Arc Welding Equipment — Part 1: Welding Power Sources*, and was developed and approved in accordance with procedures set forth by the American National Standards Institute.

This standard was processed and approved by the Accredited Standards Committee W1. Committee approval does not necessarily imply that all Committee members voted for its approval. At the time this standard was published, Accredited Standards Committee W1 consisted of the following members:

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This standard adopts the IEC text with national differences.

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## **ANCE effective date**

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The requirements in this Standard should be used for new product submittals made after the publication date of this Standard. If this Standard is used, a product will be evaluated under all of the requirements of this Standard. If a product within the scope of this Standard was listed to ANSI/IEC 60974-1:2008, compliance with all the requirements in this Standard will be required as a condition of continued Listing after December 31, 2032. If a product within the scope of this Standard was listed to ANSI/UL 60974-1 or ANSI/UL 551, compliance with all the requirements in this Standard will be required as a condition of continued Listing after June 30, 2023.

A product Listed to a previous standard can continue to be Listed until the standard's sunset date (either June 30, 2023, or December 31, 2032, as noted above) if there are only minor changes to the product's construction and all other requirements of the certification body have been met. In general, a minor change will not require a complete sequence of testing. Examples of minor changes include use of an alternate enclosure polymeric material, use of an alternate electrical component such as a relay or switch, and use of an alternate manufacturer for a material or component.

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### ARC WELDING EQUIPMENT —

### Part 1: Welding power sources

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International Standard IEC 60974-1 has been prepared by IEC technical committee 26: Electric welding.

This fifth edition cancels and replaces the fourth edition published in 2012 and constitutes a technical revision.

The significant changes with respect to the previous edition are the following:

- improvement of Figure 1 (6.1.1);
- modification of Table 3 (6.1.4);
- description of energy efficiency measurements in Annex M;
- inclusion of battery supplied welding power sources in the scope. Requirements therefore are described in Annex O.

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

FDIS	Report on voting
26/610/FDIS	26/613/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, the following print types are used:

- conformity statements: in *italic* type.
- terms defined in Clause 3: in **bold** type.

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 publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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**DV.1 DE *Modify the Foreword by adding the following:***

The numbering system in this standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

## 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.

#### **1DV.1 D2 Modify Clause 1 by replacing the third paragraph with the following:**

**Welding equipment that has been designed to comply with this standard and is intended for industrial and professional use, and that meets all the scope limitations of the trinational adoption of IEC 60974-6 is suitable for use by laypersons provided the additional instructions and markings requirements of the trinational adoption of IEC 60974-6 are met.**

#### **1DV.2 DR Modification to Clause 1 by adding the following:**

**This equipment is intended for installation in accordance with the national installation codes for use in ordinary locations. See Annex DVA, Table DVA.3, Ref. No. 1.**

**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.

#### **1DV.3 D2 Modification to Clause 1 by adding the following:**

**In Canada, products covered by the scope of this Standard are also subject to the requirements of Annex DVA, Table DVA.3, Ref. No. 15.**

#### 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 – Part 151: Electrical and magnetic devices* (available at: <http://www.electropedia.org>)