



Approved as an American National Standard  
ANSI Approval Date: 2/9/2021  
National adoption of IEC 60974-7, edition 4  
with modifications and revision of  
ANSI/NEMA/IEC 60974-7-2009

**ANSI/NEMA/IEC 60974-7-2021**  
*Arc Welding Equipment Part 7: Torches*  
*(Adoption with Modifications and Revision)*

*Published by*

**National Electrical Manufacturers Association**  
1300 North 17<sup>th</sup> Street, Suite 900  
Rosslyn, Virginia 22209

[www.nema.org](http://www.nema.org)

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## FOREWORD FOR U.S. ADOPTION

This American National Standard is an adoption of IEC 60974-7, edition 4, *Arc Welding Equipment – Part 7: Torches*, and was developed and approved in accordance with procedures set forth by the American National Standards Institute. It is the intention that this American National Standard be a standalone document, replacing the use of IEC 60974-7 in the U.S. As such, any reference in this Standard to an IEC 60974 part is understood to mean a reference to the equivalent ANSI/IEC 60974 part, where it exists.

This Standard contains all the original text as-is from IEC 60974-7, edition 4, in addition to a number of U.S. Differences to the IEC Standard that were identified by Accredited Standards Committee W1, *Requirements for Apparatus Designed for Use in Arc Welding, Plasma Arc Cutting, and Allied Processes*. Each U.S. Difference is found both in a compilation of U.S. Differences following this foreword and inserted in the appropriate place(s) in the Standard relating to the difference. Each insertion is in red text and is marked by three lines on its left (two thin, one thick). Each difference is identified with the following format:

[Clause/Subclause Number]DV.[Number of Difference for the Given Clause/Subclause]

Following this format, the example 17.1DV.3 signifies that it is the third U.S. Difference to subclause 17.1.

Suggestions for the improvement of this Standard are welcome and should be submitted to the Secretariat of Accredited Standards Committee W1 as follows:

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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:

Greg Corban, Chair  
 Mike Madsen, Vice-Chair  
 Khaled Masri, Secretary

<b>Name</b>			<b>Organization</b>	<b>Voting Status</b>	<b>Interest Category</b>
Andrew	Davis		American Welding Society	Alt. Voting	ANSI - GEN INTEREST
David	Werba		American Welding Society	Voting	ANSI - GEN INTEREST
David	Beneteau		CenterLine (Windsor) Limited	Voting	ANSI - GEN INTEREST
Jean-Pierre	Boivin		CSA Group - Certification	Voting	ANSI - USER
Ramana	Tangirala		CSA Group - Standards	Alt. Voting	ANSI - USER
Sam	Zaffino		CSA Group - Certification	Alt. Voting	ANSI - USER
Lorenzo	Tiracchia		CSA Group - Standards	Voting	ANSI - GEN INTEREST
Carlos	De Lima		ESAB Welding & Cutting Products	Voting	ANSI - PRODUCER
Gregory	Corban		Hypertherm Incorporated	Voting	ANSI - PRODUCER
Patrick	Salas		Hypertherm Incorporated	Alt. Voting	ANSI - PRODUCER
Tak Ming	Liu		Hypertherm Incorporated	Alt. Voting	ANSI - PRODUCER
Amanda	Dotten		Intertek	Alt. Voting	ANSI - USER
Peter	Sedor		Intertek	Voting	ANSI - USER
Samir	Farah		Lincoln Electric	Voting	ANSI - PRODUCER
Frank	Stupczy		Lincoln Electric	Alt. Voting	ANSI - PRODUCER
Terry	Christianson		Miller Electric Mfg. LLC An ITW	Alt. Voting	ANSI - PRODUCER
	-Plato		Welding Company		
Joe	Krueger		Miller Electric Mfg. LLC An ITW	Alt. Voting	ANSI - PRODUCER
			Welding Company		
Michael	Madsen		Miller Electric Mfg. LLC An ITW	Voting	ANSI - PRODUCER
			Welding Company		
John	Freudenberg		Northeast Product Safety Society	Voting	ANSI - GEN INTEREST
Christopher	Doty		UL LLC	Voting	ANSI - USER

## COMPILATION OF U.S. DIFFERENCES

NOTE This section is an integral part of American National Standard ANSI/NEMA/IEC 60974-7. See the section "Foreword for U.S. Adoption" for an explanation of the format used to identify U.S. Differences.

ForewordDV.1 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.

GlobalDV.1 Throughout this document, replace the phrase "this part of IEC 60974" with "this part of ANSI/NEMA/IEC 60974"

GlobalDV.2 Throughout this document, the following IEC and U.S. terms are equivalent:

- a) "MIG" and "GMAW"
- b) "MAG" and "GMAW"
- c) "MIG/MAG" and "GMAW"
- d) "TIG" and "GTAW"
- e) "metal inert gas arc welding" and "gas metal arc welding"
- f) "metal active gas arc welding" and "gas metal arc welding"
- g) "tungsten inert gas" and "gas tungsten arc welding"
- h) "tungsten inert gas arc welding" and "gas tungsten arc welding"

2DV.1 Modify clause 2 by replacing the IEC 60974-1 reference with a reference to ANSI/NEMA/IEC 60974-1 and adding the following text and note:

All subsequent references in this Standard to IEC 60974-1 shall be a reference to ANSI/NEMA/IEC 60974-1.

NOTE ANSI/NEMA/IEC 60974-1-2019 contains the entire original text from IEC 60974-1:2017 plus U.S. Differences.

2DV.2 Modify clause 2 by adding the following text:

The following Standards are referenced in U.S. Differences:

ANSI/UL 94, *Test for Flammability of Plastic Materials for Parts in Devices and Appliances*  
ANSI/UL 969, *Marking and Labeling Systems*  
IEC 61032, *Protection of persons and equipment by enclosures – Probes for verification*

11.3DV.1 Modify clause 11.3 by replacing it as follows:

### 11.3 Torch handle

Non-metallic torch handles preventing access to potentials above SELV shall be evaluated in accordance with the vertical burn test in ANSI/UL 94 and shall meet the requirements of V-0 or V-1.

*Conformity is checked* by verifying the flammability rating of the non-metallic materials in accordance with ANSI/UL 94.

12DV.1 Modify clause 12 by deleting (c) and the example following it

12DV.2 Modify clause 12 by adding the following text:

Markings shall meet the legibility, durability, and permanence requirements of the Standard for *Marking and Labeling Systems*, ANSI/UL 969.

If a manufacturer produces or assembles a torch at more than one factory, each finished torch shall have a distinctive marking that identifies it as the product of a particular factory.

If precautionary markings are present, these markings shall contrast with the background and be visible or made aware to the operator when using the torch. Markings shall be located on a permanent part of the torch, i.e., on a part that cannot be removed without the use of a tool. Markings shall meet the legibility, durability, and permanence requirements in ANSI/UL 969.

Precautionary markings appearing on products shall, as a minimum, contain English text. This text may be supplemented with the use of symbols, examples of which are provided in ANSI/NEMA/IEC 60974-1, Annex L, and in NEMA EW 6.

NOTE The methodology for the design, application, use, and validation of precautionary markings is found in ANSI Z535.4.

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

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## ARC WELDING EQUIPMENT –

### Part 7: Torches

#### 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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International Standard IEC 60974-7 has been prepared by IEC technical committee 26: Electric welding.

This fourth edition cancels and replaces the third edition published in 2013 and constitutes a technical revision.

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

- a) definitions 3.11 and 3.20 were revised;
- b) requirements for ARC STRIKING AND STABILIZING VOLTAGE rating have been added to the sequence of type tests (see 6.2);
- c) the AC test voltage requirement for TORCHES that utilize ARC STRIKING AND STABILIZING VOLTAGES has been revised (see 7.5.2);
- d) the test configuration of isolated circuits for TORCHES that utilize ARC STRIKING AND STABILIZING VOLTAGES has been revised (see 7.5.2);

- e) the metal tube used for the heating tests has additional allowable means of cooling methods (see 8.3.2 and 8.3.5);
- f) for FUME EXTRACTION TORCHES, the instructions for use include additional information (see Clause 13, item i)).

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

FDIS	Report on voting
26/673/FDIS	26/678/RVD

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

This document 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 used throughout this Standard which have been defined in clause 3: SMALL ROMAN CAPITALS.

This document is to be used in conjunction with IEC 60974-1:2017.

A list of all parts in the IEC 60974 series, published under the general title *Arc welding equipment*, can be found 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 "<http://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.

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### Part 7: Torches

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- g) "tungsten inert gas" and "gas tungsten arc welding"
- h) "tungsten inert gas arc welding" and "gas tungsten arc welding"

#### 1 Scope

This part of IEC 60974 specifies safety and construction requirements for TORCHES used for arc welding and allied processes. This document is applicable to MANUAL, MECHANICALLY GUIDED, AIR-COOLED, LIQUID-COOLED, MOTORIZED, SPOOL-ON and FUME EXTRACTION TORCHES.

In this document, a TORCH consists of the TORCH BODY, the CABLE-HOSE ASSEMBLY and other components.

This document is also applicable to a CABLE-HOSE ASSEMBLY connected between a power source and ancillary equipment.

This document is not applicable to electrode holders for manual metal arc welding or air-arc cutting/gouging.

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

NOTE 2 Other components are listed in Table A.1.

NOTE 3 In this document, all procedures and requirements are the same for "TORCHES" and "GUNS". For convenience, the term "TORCH" is used in the following text.