Australian Standard™

Safety in welding and allied processes

Part 2: Electrical

Standards Australia

This Australian Standard was prepared by Committee EL-019, Electrical Welding Plant. It was approved on behalf of the Council of Standards Australia on 28 March 2003 and published on 2 June 2003.

The following are represented on Committee EL-019:

Australian Chamber of Commerce and Industry

Australian Industry Group

Australian Manufacturing Workers Union

Welding Technology Institute of Australia

Additional interests participating in the preparation of this Standard:

Hunter Industry Electrical Safety Network, N.S.W.

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Part 2: Electrical

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PREFACE

This Standard was prepared by the Standards Australia Committee EL-019, Electrical Welding Plant, to supersede AS 1674.2—1990.

The objective of this Standard is to provide a significant improvement in the safety of welding in hazardous environments, where, in recent years, there have been a number of deaths by electrocution.

The major change from the previous edition is the classification of welding environments according to risk of electrocution. Three types of environment are now described. This replaces references in the previous edition to normal environments and confined spaces. As well as a normal environment, an environment with an increased risk of electric shock is described, where the risk of the welder being in contact with the workpiece is high. This environment has been recognized in ISO Standards for many years, but is new to Australian practice. It was also felt necessary to include a category of environment where, because of perspiration or wetness, the risk of serious electric shock is high. Precautions to avoid electric shock are listed for each type of environment. In particular, maximum open circuit voltages are specified for each environment type.

In addition to the new classifications and a number of editorial revisions, the following technical changes are also included:

(a) The selection of a power source based upon the degree of protection offered by its casing (Clause 3.2.1).

(b) Descriptions of ISO markings for suitability for hazardous environments, degree of protection and internal insulation (Clause 3.2.2).

(c) The isolation switch described in the previous edition has been supplemented with other hazard-reducing devices, including voltage reduction devices and trigger switches (Clause 3.2.7).

(d) Descriptions of suitable cables for welding circuits with high-frequency or other arc-initiating equipment (Clause 3.2.8).

(e) Clarification of responsibilities for the installation and assembly of welding equipment (Clause 4.1).

(f) Recommendation on earthing the workpiece (Clause 4.3).

(g) Revision of descriptions of the risk of electrocution for common welding and allied processes (Appendix A).

(h) A description of how stray currents arise and their consequences (Paragraph A6).

(i) The description of how electric shocks are received during welding is clarified and amplified (Appendix B).

The term ‘informative’ has been used in this Standard to define the application of the appendix to which is applies. An ‘informative’ appendix is only for information and guidance.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out safety requirements for arc welding and allied processes, to reduce the possibility of electric shock and minimize associated hazards. It includes requirements for cable connections for alternating and direct current power sources, as well as requirements for hazard-reducing devices and other ancillary equipment. It also describes practices and safeguards that should be adopted by welders and provides examples of situations that present an increased risk of electric shock.

NOTES:

1 Other aspects of welding safety are covered in other Standards.

2 Typical electrical hazards are described in Appendix A.

3 Some fatal electrical accidents are reported in Appendix B.

4 Information on health aspects of electric fields, magnetic fields and pacemakers is given in Appendix C.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1674	Safety in welding and allied processes
1674.1	Part 1: Fire precautions
1939	Degrees of protection provided by enclosures for electrical equipment (IP Code)
1966	Electric arc welding power sources
1966.1	Part 1: Transformer type
1966.2	Part 2: Rotary type
1966.3	Part 3: Plasma arc cutting and welding types
2812	Welding, brazing and cutting of metals—Glossary of terms
2826	Manual metal-arc welding electrode holders
AS/NZS	
1336	Recommended practices for occupational eye protection
1337	Eye protectors for industrial applications
1338	Filters for eye protectors
1338.1	Part 1: Filters for protection against radiation generated in welding and allied operations
1995	Welding cables

