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Superseded by AS/NZS 3013:1995

AS 3013—1990

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Australian Standard®

Electrical installations—Wiring systems for specific applications

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STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee EL/37, Special Wiring Systems. It was approved on behalf of the Council of Standards Australia on 8 December 1989 and published on 7 May 1990.

The following interests are represented on Committee EL/37:

Australian Assembly of Fire Officers
Australian Electrical and Electronic Manufacturers Association
Australian Uniform Building Regulations Co-ordinating Council
Building Owners and Managers Association of Australia
Commonwealth Fire Board
Confederation of Australian Industry
CSIRO, Division of Building Construction and Engineering
Electrical Contractors Association of Australia
Electrical Supply Association of Australia
Fire Protection Industry Association of Australia
Insurance Council of Australia
Regulatory authorities (electrical)

This Standard was issued in draft form for comment as DR 88010.

AS 3013—1990

Australian Standard®

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First published as AS 3013—1990.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY NSW
ISBN 0 7262 6079 7

PREFACE

This Standard was prepared by the Standards Australia Committee on Special Wiring Systems to provide a system of classification and testing of the degree of protection inherent in a wiring system with regard to fire and mechanical damage.

The need to maintain circuit integrity in buildings, oil rigs, ships, and other structures under fire conditions is most important for wiring systems associated with fire fighting, evacuation, and other safety functions.

While there are some Standards available for fire testing of cables (e.g. IEC 331, *Fire resisting characteristics of electric cables,* IEC 332, *Tests on electric cables under fire conditions,* and BS 6387, *Specification for performance requirements for cables to maintain circuit integrity under fire conditions),* it was considered that these did not form an adequate basis for a system of classification. For this reason AS 1530.4 has been used as the basis of fire rating of wiring systems in this Standard. Testing in a horizontal furnace has been prescribed since it was considered that this represents the most onerous condition.

This Standard provides a system of classification of the degree of protection inherent in Wiring Systems against accidental mechanical damage. It does not consider protection against deliberate tampering. The levels of mechanical protection are specified in terms of impact energies and cutting forces.

Statements expressed in mandatory terms in Notes to Tables and Figures are requirements of this Standard.

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SECTION 1. SCOPE AND APPLICATION

1.1 SCOPE. This Standard sets out a classification system for wiring systems according to their ability to—

(a) maintain circuit integrity under fire conditions for a specified period; and

(b) maintain circuit integrity against mechanical damage of specified severity.

It specifies type tests to determine the performance of the various types of wiring system.

NOTE: Elements of a wiring system may need replacement after exposure to a hazard.

1.2 APPLICATION. This Standard applies only to wiring systems that are in all other respects safe and suitable for their intended use and comply with other relevant Standards.

The use of wiring systems tested in accordance with this Standard may not be necessary where elements of building construction provide satisfactory protection against the effects of fire and mechanical damage.

NOTES:

1. The degree of protection against fire and mechanical damage required of a wiring systems is dependent on the application. To determine the specific requirements reference should be made to standards dealing with a particular application. (See Appendix G, Paragraph G2.)
2. Appendix G describes methods of protection of wiring systems against the hazards of fire or mechanical shock for which testing may not be considered necessary.

1.3 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS

1074 Steel tubes and tubulars threaded or suitable for threading with pipe threads of Whitworth form

1076 Code of practice for selection, installation and maintenance of electrical apparatus and associated equipment for use in explosive atmospheres (other than mining applications)

1076.1 Part 1: Basic requirements

1304 Welded wire reinforcing fabric for concrete

1530 Methods for fire tests on building materials, components and structures

1530.4 Part 4: Fire-resistance tests of elements of construction

1668 Rules for the use of mechanical ventilation and airconditioning in buildings

1670 Automatic fire detection and alarm systems—System design, installation, and commissioning

1939 Classification of degrees of protection provided by enclosures for electrical equipment

2052 Metallic conduits and fittings

2053 Non-metallic conduits and fittings

2118 SAA Code for Automatic Fire Sprinkler Systems

2220 Rules for emergency warning and intercommunication systems for buildings

2293 Emergency evacuation lighting in buildings

2293.1 Part 1: Design and installation

2941 Fixed fire protection installations—Pumpset systems

3000 SAA Wiring Rules

3009 Electrical installations—Emergency power supplies in hospitals

3116 Approval and test specification for elastomer insulated electric cables and flexible cables for working voltages up to and including 0.6/1 kV

3147 Approval and test specification—Electric cables—Thermoplastic insulated for working voltages up to and including 0.61 kV

3187 Approval and test specification—Mineral-insulated metal-sheathed cables

3198 Approval and test specification for XLPE insulated electric cables for working voltages of 0.6/1 kV

1.4 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 3000 and those below apply.

1.4.1 Wiring system—an arrangement of cables, busbars, fittings, supports, fixings and enclosures, all of which are part of the wiring system.