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Australian Standard 1299—1984

ELECTRICAL EQUIPMENT FOR COAL MINES —

FLAMEPROOF RESTRAINED PLUGS AND RECEPTACLES

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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The following interests are represented on Committee EL/23:

Australian Chamber of Commerce

Australian Coal Association

Australian Electrical and Electronic Manufacturers Association

Confederation of Australian Industry

Department of Industrial Relations, N.S.W.

Department of Mines, Qld

Elcom Collieries, N.S.W.

Institute of Mining Electrical and Mining Mechanical Engineers

Joint Coal Board

Queensland Confederation of Industry

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AUSTRALIAN STANDARD

ELECTRICAL EQUIPMENT FOR COAL MINES – FLAMEPROOF RESTRAINED PLUGS AND RECEPTACLES

AS 1299—1984

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PREFACE

This edition of this standard was prepared by the Association's Committee on Electrical Equipment in Coal Mines to supersede AS 1299—1981, Flameproof Restrained Plugs and Receptacles for Use in Coal Mines. It is intended for the guidance of manufacturers, users, statutory authorities and associated interests and for use with SAA standards and relevant mining regulations.

The major changes in this edition are as follows:

(a) The deletion of creepage and clearance distances from this standard and the substitution of a cross-reference to AS 1593.

(b) A relaxation in the tensile strength requirement for the engaging portion of the plug.

(c) The amendment to the silverplating requirements so that these apply only if silverplating is relied upon to satisfy the tests.

(d) The reduction of the minimum cross-sectional area of flexible earth conductors from 4 mm^2 to 2.5 mm^2.

(e) Amendments to the list and order of type tests, and a general rationalization of the tests.

(f) The addition of pass/fail criteria to some type tests.

(g) Amendment to the short-circuit test in order to make provision for 60 A devices to be tested at a lower current.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

ELECTRICAL EQUIPMENT FOR COAL MINES—FLAMEPROOF RESTRAINED PLUGS AND RECEPTACLES

SECTION 1. SCOPE AND GENERAL REQUIREMENTS

1.1 SCOPE. This standard specifies the dimensional and test requirements for flameproof restrained type plugs and receptacles, incorporating three power contacts, one auxiliary contact, a scraping earth contact and an earthed phase barrier, intended for use in coal mines. Provision is also made for plug coupling units which enable lengths of trailing cable to be coupled together.

Restrained plugs and receptacles to this standard are not intended to be coupled or uncoupled while the circuit is energized.

The standard prescribes the dimensions necessary to provide for the interconnection of restrained plugs and receptacles of different makes; it also deals with some electrical and mechanical requirements including the provision of earthed phase barriers for protection against interphase faults. It does not, however, purport to otherwise specify a fully detailed design.

The standard provides for plug and receptacle discrimination, i.e. an arrangement whereby fitting of plugs and receptacles of different rated voltages is physically prevented from engagement.

NOTES:

1. The term 'receptacle' as used in this standard is synonymous with the term 'socket' in AS 1852. The term 'receptacle' has been chosen to avoid confusion with the individual sockets within the plug.
2. Appendix A lists information which should be supplied by a user with any inquiry or order.
3. A typical plug and receptacle assembly is shown in Fig. 1.1 and a typical plug coupling unit is shown in Fig. 1.2.
4. The flameproof properties exist only when a plug is fitted to an approved receptacle.

1.2 APPLICATION. Restrained plugs, receptacles and coupling units shall comply with the general requirements of this Section and with the relevant requirements of Section 2.

1.3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1147 Plastic Insulating Materials of Mouldings for Cable Connecting Devices for Use in Coal Mines

AS 1593 Electrical Protection for Explosive Atmospheres—Increased Safety Apparatus—Type of Protection e

AS 1802 Trailing Cables for Mining Purposes (Including Underground Coal Mines, Metalliferous Mines, Open-cut Mines, Quarries and Dredges)

AS 1828 Cable Glands for Explosive Gas Atmospheres

AS 1852 International Electrotechnical Vocabulary

AS 1856 Electroplated Coatings of Silver for Engineering Applications

AS 1972 Cables for Use Below Ground in Coal Mines (Other Than Trailing Cables)

AS 2480 Electrical Equipment for Explosive Atmospheres—Flameproof Enclosure—Type of Protection d

AS 3147 Approval and Test Specification for PVC Insulated Electric Cables and Flexible Cables for Working Voltages of 0.6/1 kV

AS K185 Colours for Specific Purposes

1.4 DEFINITIONS. For the purpose of this standard the following definitions apply:

1.4.1 Approved—approved by a Regulatory Authority.

1.4.2 Cable gland—a device to secure the end of a cable, by means appropriate to the type of cable, and may include provision for making earthing connections.

1.4.3 Contact pin—a rigid conducting member for electrical power circuits intended to be inserted in a main contact socket for suitable form so as to make electrical contact.

1.4.4 Contact socket—a resilient conducting member for electrical power circuits intended to receive a suitable main contact pin so as to make electrical contact.

1.4.5 Cable reel receptacle, left hand—one that is fitted to a standard drive shuttle car. (See Figs 1.5 and 1.6).

1.4.6 Cable reel receptacle, right hand—one that is fitted to an opposite standard drive shuttle car. (See Figs 1.5 and 1.6.)

1.4.7 Phase barrier—a conductive barrier which is electrically connected to earth, and is situated in the contact insulation in both the restrained plug and receptacle for the purpose of preventing an interphase fault within the unit.

1.4.8 Pilot contact pin—a rigid conducting member for other than electrical power circuits intended to be inserted in a pilot contact socket of suitable form so as to make electrical contact.

1.4.9 Pilot contact socket—a resilient conducting member for other than electrical power circuits intended to receive a suitable pilot contact pin.

1.4.10 Plug—that portion of a restrained plug and receptacle having contacts consisting of sockets and which is attached to a trailing cable and is designed for engagement within the receptacle.

1.4.11 Receptacle—that portion of a restrained plug and receptacle having contacts consisting of pins and which is designed to receive the plug.

1.4.12 Regulatory Authority—the relevant authority responsible for the implementation of Government