AS/NZS 2290.1:2014

Australian/New Zealand Standard™

Electrical equipment for coal mines—Introduction, inspection and maintenance

Part 1: For hazardous areas

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-023, Electrical Equipment for Mines and Quarries. It was approved on behalf of the Council of Standards Australia on 3 December 2013 and on behalf of the Council of Standards New Zealand on 12 December 2013.
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The following are represented on Committee EL-023:

Australian Cablemakers Association
Australian Chamber of Commerce and Industry
Australian Coal Association
Australian Industry Group
Aviation and Marine Engineers Association
Consult Australia
Department of Mines and Petroleum, WA
Department of Natural Resources and Mines, Qld
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Part 1: For hazardous areas

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-023, *Electrical Equipment for Mines and Quarries*, to supersede AS/NZS 2290.1:2005, *Electrical equipment for coal mines—Introduction and maintenance*, Part 1: *For hazardous areas.*

The objective of this Standard is to facilitate the safe, efficient and productive use of electrical explosion-protected equipment and cables in underground coal mine hazardous areas, by specifying requirements and recommendations for the inspection and maintenance of such equipment.

This Standard is part of a series of standards on the maintenance and overhaul of electrical equipment used in association with underground mining machines. The series is as follows:

(a) AS/NZS 2290.1, *Electrical equipment for coal mines—Introduction and maintenance*, Part 1: *For hazardous areas* (this Standard).

(b) AS 2290.3, *Electrical equipment for coal mines—Maintenance and overhaul*, Part 3: *Maintenance of gas detecting and monitoring equipment*.

In addition, this Standard aligns with AS/NZS 3800:2012, *Electrical equipment for explosive atmospheres—Repair and overhaul*.

The principal differences between this edition and the 2005 edition are as follows:

(i) Life-cycle management of explosion-protected equipment has been embraced.

(ii) The range of inspections has been expanded to include initial and periodic inspections.

(iii) A risk-based process is required for the identification of ‘readily accessible components’ and the determination of ‘inspection frequency’; however, recommended inspection schedules for individual explosion-protection techniques have been retained.

(iv) An electrical engineering manager has been specified as the process owner and responsible decision maker.

(v) General inspection requirements that are applicable to all explosion-protection techniques have been included.

(vi) The range of explosion-protection techniques has been expanded to address currently installed equipment.

(vii) This Standard has been aligned with the AS/NZS 60079 series, where compatible with Group I requirements.

(viii) An alternate risk assessment method encompassing equipment protection levels (EPLs) for Ex equipment is discussed in an informative appendix.

NOTE: See Appendix M.

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

Statements expressed in mandatory terms in footnotes to tables are deemed to be requirements of this Standard.

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FOREWORD

Electrical installations in hazardous areas have features specially designed to make them suitable for operation in such areas. For safety reasons, it is essential that the integrity of those special features is maintained throughout the life of the installations. Therefore they require an initial inspection and regular periodic inspections by competent persons in accordance with this Standard.

NOTE: Correct functional operation of hazardous area installations does not mean, and should not be interpreted as meaning, that the integrity of the special features referred to above is preserved.

The use of this Standard and safe electrical engineering practice will assist in the management of electrical hazards.

The implementation of this Standard will contribute significantly to the—

(a) prevention of ignition of explosive gases or dusts;

(b) prevention of electric shock and burns;

(c) prevention of arcing faults that have sufficient energy to invalidate the type of explosion-protection as a result of damage to the enclosure or generation of an excessive pressure rise beyond that for which the electrical enclosure was designed; and

(d) prevention of fires caused by the malfunction of electrical equipment.

The risk management process should be utilized to identify relevant controls. There are a number of controls associated with using electricity in hazardous areas, including the following:

(i) Fit-for-purpose electrical explosion-protected equipment.

(ii) Fit-for-purpose cables for hazardous areas in a mining environment.

(iii) Fit-for-purpose electrical protection.

(iv) Fit-for-purpose earthing systems.

(v) Reduction of the potential for phase-to-phase arcing faults.

(vi) Fit-for-purpose lightning protection.

(vii) Fit-for-purpose tools and test equipment.

(viii) Isolation and electrical testing procedures.

(ix) Removal/restoration of power procedures.

(x) Proper classification of hazardous areas.

(xi) Correct first aid treatment for persons who receive an electric shock and burns.

This Standard covers many of these particular aspects, but also takes a holistic approach to the electrical system and recognizes that many of the controls interact and that each of the life cycle stages interact. It is up to the user of this Standard to make judgements and decisions with all of this in mind.

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