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ELECTRICAL EQUIPMENT FOR COAL MINES—MAINTENANCE AND OVERHAUL Part 2—OVERHAUL OF ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES



STANDARDS ASSOCIATION OF AUSTRALIA
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AUSTRALIAN STANDARD

**ELECTRICAL EQUIPMENT FOR COAL
MINES—MAINTENANCE AND
OVERHAUL**

**Part 2
OVERHAUL OF ELECTRICAL
EQUIPMENT FOR EXPLOSIVE
ATMOSPHERES**

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PREFACE

This edition of this standard was prepared by the Association's Committee on Electrical Equipment in Coal Mines. It is for the guidance of users and relevant Regulatory Authorities concerned with the maintenance of electrical equipment in coal mines and is Part 2 of a series of standards on the maintenance and overhaul of electrical equipment used in association with underground mining machines. The parts in the series are as follows:

Part 1—Maintenance of Electrical Equipment for Explosive Atmospheres

Part 2—Overhaul of Electrical Equipment for Explosive Atmospheres

Part 3—Maintenance of Electrical Equipment for Non-explosive Atmospheres*

Part 4—Overhaul of Electrical Equipment for Non-explosive Atmospheres*

This standard is presented in sections, each section dealing with the overhaul requirements appropriate to one of the types of explosion protection which may be used to achieve electrical safety or with basic requirements and considerations which are fundamental to the safe use of electrical apparatus in explosive atmospheres. At present only flameproof enclosures are covered; sections on intrinsic safety, increased safety protection, sand-filled enclosures, and special protection are under consideration.

This standard is identical to the 1979 edition except as follows:

- (a) The method of temporary hole or thread repair (formerly Appendix F) is deleted.
- (b) The maximum allowable depth of corrosion (Appendix H) has been reduced.
- (c) Consequential editorial changes arising from (a) and (b) above.

*Under consideration.

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PART 2—OVERHAUL OF ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

FOREWORD

Whereas various Australian standards and the relevant statutory requirements lay down standard criteria for the manufacture and regulations for the installation and use of electrical equipment, no such reference exists for the maintenance and overhaul of equipment while it is in service. This standard has been prepared to fulfil that need and is complementary to existing standards and regulations.

The increasing quantity and complexity of electrical mining equipment has required the development of organizations both at the mines and remote from them which are engaged in the overhaul of mining machinery.

Where restoration, repair or modification is required, the standard recommends that this work be performed by persons or organizations with the facilities and competence in workmanship to satisfy the requirements of both the user and the Regulatory Authority concerned. Guidelines setting out the manner in which repairs and modifications shall be carried out and certified are included and recognize that equipment currently in use may comply with the issues of relevant Australian standards published prior to 1970 but not with subsequent issues.

It is intended that all work carried out to overhaul or modify explosion-proof equipment shall be performed in an overhaul workshop. Some State Authorities may require the overhaul workshop to be approved.

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SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard sets out requirements for overhaul, repair or modification of electrical equipment for explosive atmospheres in use in and around underground coal mines. It details methods of overhaul, examination and testing required to ensure safety and compliance with relevant existing standards. Guidelines are laid down for practices to be adopted in the overhaul workshop to effectively carry out the work to the satisfaction of both the user and the Regulatory Authorities.

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

- AS 2380 Electrical Equipment for Explosive Gas Atmospheres—Explosion Protection Techniques
Part 1—General Requirements
- AS 2480 Electrical Equipment for Explosive Atmospheres—Flameproof Enclosure—Type of Protection d
- AS 2536 Surface Texture

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

1.3.1 Approved—means approved by the relevant Regulatory Authority.

NOTE: Approval number is issued for any item of apparatus so approved.

1.3.2 Overhaul workshop—a workshop having the necessary facilities for carrying out overhauls, repairs, modifications and tests required by this standard.

NOTE: See Appendix A for typical requirements of an overhaul workshop.

1.3.3 Overhaul examination report form—a form furnished by the overhaul workshop and kept at the mine, on which are recorded the results of inspections as outlined in examination schedule Codes D, D1 and D2 of Clause 2.15.

1.3.4 Overhaul and test certificate—a certificate furnished by the overhaul workshop to the user of the apparatus on which are recorded full details of the overhaul, repairs and tests carried out on the apparatus in the overhaul workshop.

1.3.5 Overhaul—a maintenance sequence during which apparatus is dismantled into individual components, each component is repaired as necessary and the apparatus is re-assembled and then tested in accordance with the relevant requirements of this standard.

1.3.6 Repair—the restoration of the performance of a unit of apparatus by the replacement of missing, worn, broken or damaged components.

1.3.7 Modification—the work to be performed on apparatus which involves the fitting of additional facilities, e.g. extra cable entries, operating mechanisms, or alterations, e.g. upgrading the apparatus.

1.3.8 Flameproof enclosure (Ex d)—an enclosure for electrical equipment that will withstand, without damage, an explosion of a prescribed flammable gas or vapour within the enclosure and will prevent the transmission of flame which will ignite the external prescribed flammable gas or vapour for which it is designed and which operates at such an external temperature that will not ignite a surrounding flammable atmosphere.

NOTES.

1. A flameproof enclosure, in accordance with the foregoing definition, will not necessarily or ordinarily be weatherproof, dustproof, etc.
2. Flameproof enclosures, in accordance with AS 2480, are grouped as follows:
Group I—for application in coal mining.
Group II—for application in other industries.

1.3.9 Joint—the place where corresponding surfaces of the different parts of an enclosure come together, and where flamepaths from the inside to the outside of the enclosure occur.

1.3.10 Length of flamepath (width of joint)—the shortest distance measured along the flamepath from the inside to the outside of the enclosure.

1.3.11 Gap (diametral clearance)—the distance between corresponding surfaces at a point, measured normally to the surfaces. For cylindrical surfaces, the gap is the difference between the two diameters and is usually referred to as the diametral clearance.

1.3.12 Operating rod (spindle)—a component of circular cross-section used for transmitting control movements which may be rotary or linear or a combination of both.

1.3.13 Interlocking mechanism—an approved device designed to prevent persons inadvertently restoring power to an open enclosure or endangering themselves by contact with live equipment.

1.3.14 Intrinsic safety (Ex i)—a circuit or part of a circuit is intrinsically safe when any sparking produced normally by breaking or closing the circuit or accidentally, e.g. by short-circuit or earth fault, is incapable under prescribed test conditions of causing ignition of a prescribed gas or vapour.