AS/NZS 4871.1:2010

Australian/New Zealand Standard™

# Electrical equipment for mines and quarries

## Part 1: General requirements


This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-023, Electrical Equipment in Mines and Quarries. It was approved on behalf of the Council of Standards Australia on 13 April 2010 and on behalf of the Council of Standards New Zealand on 23 April 2010.
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The following are represented on Committee EL-023:

Australian Chamber of Commerce and Industry
Australian Coal Association
Australian Industry Group
Aviation and Marine Engineers Association, New Zealand
Department of Mines and Energy, Qld
Department of Primary Industries, Mineral Resources, NSW
Electrical Apparatus Service Association
Electrical Regulatory Authorities Council
Mining Electrical and Mining Mechanical Engineering Society
Ministry of Economic Development, New Zealand
National Association of Testing Authorities Australia
Simtars (Department of Mines and Energy, Qld)
Solid Energy, New Zealand
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# Part 1: General requirements

Originated as part of AS 1039—1972, AS 1740—1975, AS 2595.1—1983 and AS 2989—1987.
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# PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-023, Electrical Equipment in Mines and Quarries to supersede AS/NZS 4871.1:2002, *Electrical equipment for coal mines, for use underground,* Part 1: *General requirements.*

The objective of this Standard is to set out the minimum design, manufacturing, testing and performance requirements for electrical equipment intended for use in mines and quarries.

This Standard is Part 1 of the series AS/NZS 4871, *Electrical equipment for mines and quarries*.

The AS/NZS 4871 series comprises the following parts:
Part 1: General requirements (this Part)
Part 2: Distribution, control and auxiliary equipment
Part 3: Substations
Part 4: Mains powered electrical mobile machines
Part 5: Battery powered electrical mobile machines
Part 6: Diesel powered machinery and ancillary equipment

This Standard differs from the 2002 edition as follows:

(a) The title and scope changed from coal mining to cover all mining and quarrying activities.

(b) Addition of Part 6.

(c) Expansion of general requirements in Part 1 to avoid duplication in the other parts.

(d) General improvements including: Changes to earth-fault protection to allow a more flexible systems approach to protection settings, improvements to the testing requirements moved to Appendix H, alignment of protection requirements with the new release of AS 2081 series (to be published), alignment with AS 60204, guidance on hazards associated with variable speed drives, expansion of risk management.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

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# Australian/New Zealand Standard
# Electrical equipment for mines and quarries

## Part 1: General requirements

## SECTION 1 SCOPE AND GENERAL

### 1.1 SCOPE

This Standard sets out the general requirements for the design, construction and testing for electrical equipment intended for mining and quarrying activities and covers any plant intended to be relocated from time to time in association with mining activities. This includes the types of equipment as covered in AS/NZS 4871.2 to AS/NZS 4871.6. These requirements are in addition to those in AS 60204.1 and AS 60204.11, which cover electrical safety of machinery. This Standard does not apply to hand held equipment.

NOTES:

1 For permanently fixed equipment not directly associated with mining and quarrying activities, such as, equipment in offices or amenities and fixed processing plant, reference should be made to AS/NZS 3000, AS 3007 and AS 2067.

2 The requirements of this Standard may be read in conjunction with, but do not take precedence over, regulations of a regulatory authority that may apply in a specific area.

### 1.2 APPLICATION

This Standard applies to electrical equipment for use in mines and quarries and which is directly associated with plant used for mining and quarrying activities. Additional requirements for particular applications are specified in the other Parts of this series of Standards as follows:

Part 2: Distribution, control and auxiliary equipment
Part 3: Substations
Part 4: Mains powered electrical mobile machines
Part 5: Battery powered electrical mobile machines
Part 6: Diesel powered machinery and ancillary equipment

NOTE: Information to be supplied by the purchaser is given in Appendix A.

Where there is conflict between AS 60204 series Standards and AS 4871 series Standards, then AS 4871 series Standards shall apply.

### 1.3 SERVICE CONDITIONS

Electrical equipment complying with this Standard shall be suitable, within the limits of its ratings, for installation under the following service conditions:

(a) *Range of ambient temperature*—Ambient temperatures within the range of –5°C to 40°C.

NOTE: Where higher temperatures are possible, consideration should be given to the design of equipment.

(b) *Humidity*—The relative humidity of the mine environment may vary between 30% and dew point.