AS 3007.1—1987

Australian Standard®

Electrical installations—Surface mines and associated processing plant

Part 1: Scope and definitions

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This Australian standard was prepared by Committee EL/33, Electrical Installations for Outdoor Sites Under Heavy Conditions (Including Open–cast Mines and Quarries). It was approved on behalf of the Council of the Standards Association of Australia on 27 February 1987 and published on 4 May 1987.

The following interests are represented on Committee EL/33:

Association of Consulting Engineers Australia

Australian Electrical and Electronic Manufacturers Association

Australian Institute of Mining and Metallurgy

Confederation of Australian Industry

Department of Industrial Relations, N.S.W.

Department of Mines, Qld

Department of Mines, Tas.

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Electrical installations—Surface mines and associated processing plant

Part 1: Scope and definitions

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PREFACE

This standard was prepared by the Association's Committee on Electrical Installations for Outdoor Sites Under Heavy Conditions (Including Open–cast Mines and Quarries) to supersede AS 3007, Part 1–1982.

It is essentially identical with IEC 621–1* which was prepared by the corresponding IEC Technical Committee, i.e. TC 71. Where this standard deviates technically from IEC 621–1 by way of different or additional requirements, this is indicated by a rule in the margin against the clause, or part thereof, affected. A summary of such technical variations is given in the Annex.

The Australian Committee (EL/33) has actively participated in the work of IEC TC 71 which has as its objective the development of uniform and internationally acceptable rules for the safe use of electricity in open–cast mines, quarries, stockpiles and the like. Such applications present particularly onerous conditions for the electrical apparatus and systems, including continual alteration of the location of the apparatus and systems, extension of the operational area, and adverse environmental conditions. Because of the size of the plant and the need for mobility, supply is frequently at high voltage over long distances, by means of trailing cable. This should be compared with other industries where the electrical installations are generally fixed.

The AS 3007 series specifies requirements for the installation and operation of electrical apparatus and systems in the above–mentioned locations, with the object of ensuring the safety of persons, livestock and property. AS 3007.1 (this standard) outlines the scope of the composite standard and provides definitions for some of the terms used. AS 3007.2 specifies the measures which are required for protection against electric shock in normal service from direct contact with live parts; for protection against electric shock from parts which may become live in the event of a fault (indirect contact); and for protection against the effects of overcurrent resulting from overload or short circuit conditions. AS 3007.3 specifies general requirements for the equipment and ancillaries associated with the electrical installation. AS 3007.4 sets out the requirements which are specific to particular installations, together with any exemptions from the general requirements of AS 3007.2 and AS 3007.3 which apply for such installations. AS 3007.5 sets out the normal operating procedures which should be carried out to ensure the safety of personnel.

The AS 3007 series recognizes several types of power supply system and specifics the protective measures which are necessary for each system. Requirements for the protection of personnel from indirect contact (see Section 2 of AS 3007.2) are based on the concept of permissible voltage versus time limits, which take into account the patho–physiological effects of electric current passing through the human body, the typical industry conditions, and the probability of persons being in contact with the plant. In this and other respects the AS 3007 series differs in approach from the practically evolved requirements of AS 3000, SAA Wiring Rules.

It will therefore be necessary for the regulatory authorities concerned to clearly delineate the respective areas of application for the AS 3007 series and for AS 3000.

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* A new edition in course of publication based on Document 71(Central Office)33.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
ELECTRICAL INSTALLATIONS —
SURFACE MINES AND ASSOCIATED PROCESSING PLANT

PART 1 — SCOPE AND DEFINITIONS

1 SCOPE AND REFERENCED DOCUMENTS.

1.1 Scope. This standard (and other standards in the AS 3007 series) applies to the installation and operation of electrical apparatus and systems associated with outdoor sites under heavy conditions, including open-cast mines, quarries, stockpiles and the like. It applies particularly to electrical apparatus and systems used for the following:

(a) Winning, stacking and primary processing machinery.

(b) Secondary processing machinery.

(c) Transport conveying systems.

(d) Pumping and water supply systems.

(e) Power generating and distribution equipment.

(f) Control, signal, supervisory and communication systems.

(g) Ancillaries.

The AS 3007 series does not cover temporary and provisional places of work in the open, such as building sites and earth-moving sites, unless the equipment used is similar to that used in surface mining applications.

1.2 Referenced documents. The following standards are referred to in this standard:

AS 1852 (151)	International Electrotechnical Vocabulary Chapter 151 - Electrical and Magnetic Devices
AS 1852 (826)	International Electrotechnical Vocabulary Chapter 826 - Electrical Installations of Buildings
AS 3007.2	Electrical Installations - Surface Mines and Associated Processing Plant Part 2 - General Protection Requirements
IEC 71-1	Insulation Co-ordination Part 1: Terms, Definitions, Principles and Rules
IEC 621-1	Electrical Installations For Outdoor Sites Under Heavy Conditions (Including Open-cast Mines and Quarries) Part 1: Scope and Definitions.

2 OBJECT. The object of the AS 3007 series is to set out guiding principles for the installation and operation of electrical equipment so as to ensure the safety of persons, livestock and property, and the proper functioning of the plant.

3 DEFINITIONS. For the purpose of the AS 3007 series the definitions given in Clauses 3.1 to 3.65 apply. An alphabetical index of the defined terms is given in Appendix A.

Certain definitions have been taken from relevant chapters of AS 1852, International Electrotechnical Vocabulary. Such definitions are identified by reference to the applicable IEV designation, e.g. IEV XXX-XX-XX.

For the definitions of other terms reference should be made to the appropriate chapter of AS 1852 and to Australian or IEC standards dealing with the particular subjects concerned.

In the following definitions the terms 'Safety' and 'Protection' are to be interpreted as follows:

(a) The term 'Safety' is used in a broad sense covering the safety of persons, livestock and property. In this respect the safety of property also includes those cases where safety depends on continuity of supply.

(b) The term 'Protection' is also used in a broad sense covering all measures and actions taken to protect against or prevent injury. It also includes all equipment used in connection with these measures - serving its purpose of assuring the safety of persons, livestock and electrical equipment.

3.1 Open-cut mine (open-cast mine) - an open-air site for the extraction of materials or minerals, such as coal, bauxite, iron ore, etc.

3.2 Quarry - an open-air site for the extraction of materials such as limestone, gravel, clay, etc.

3.3 Electrical installation - an assembly of associated electrical equipment to fulfil a specific purpose or purposes and having co-ordinated characteristics.

3.4 Electrical equipment - any item used for such purposes as generation, conversion, transmission, distribution or utilization of electrical energy, such as machines, transformers, apparatus, measuring instruments, protective devices, equipment for wiring systems, appliances. (IEV 826-07-01)

3.5 Operating area (normal operating area) - an electrical area with a high level of protection against direct contract which is accessible to operating personnel in the normal performance of their duties.

NOTE: The required degree of protection against direct contact is specified in Section 1 of AS 3007.2.

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