

Australian Standard<sup>®</sup>

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**Electrical equipment for coal  
mines—Transformer substations  
for use underground**

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This Australian Standard was prepared by Committee EL/23, Electrical Equipment in Coal Mines. It was approved on behalf of the Council of Standards Australia on 19 February 1990 and published on 4 June 1990.

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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 and Employment, N.S.W.  
Department of Minerals and Energy, N.S.W.  
Department of Mines, Qld  
Institute of Mining Electrical and Mining Mechanical Engineers  
Joint Coal Board  
Regulatory authorities (electrical)

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AS 1740—1990

Australian Standard®

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## PREFACE

This Standard was prepared by the Standards Australia Committee on Electrical Equipment in Coal Mines to supersede AS 1740—1985.

It is intended for the guidance of manufacturers, users, regulatory authorities and associated interests and for use with other Australian Standards and relevant mining regulations.

The purpose of this edition is to update the requirements to take account of new design parameters and current user needs.

The major changes in this edition include—

- (a) requirements for secondary enclosures having voltages up to 11 kV; and
- (b) the addition of short-circuit tests.

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## STANDARDS AUSTRALIA

## Australian Standard

**Electrical equipment for coal mines—Transformer substations for  
use underground**

## SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE.** This Standard specifies the minimum requirements for transformer substations (hereinafter referred to as a substation(s)) for use in non-hazardous areas and hazardous areas and intended primarily for supplying power to machinery below ground in coal mines.

NOTE: Substations may require approval by the relevant Regulatory Authority.

**1.2 APPLICATION.** Substations intended for use in non-hazardous areas shall comply with Sections 2, 3, 5 and 6.

Substations intended for use in hazardous areas shall comply with Section 2, 4, 5 and 6.

**1.3 REFERENCED DOCUMENTS.** The following documents are referred to in this Standard:

AS

- |        |   |
|--------|---|
| 1029   | Low voltage contactors  |
| 1029.1 | Part 1: Electromechanical—Up to and including 1000 V a.c. and 1200 V d.c.   |
| 1042   | Direct-acting indicating electrical measuring instruments and their accessories   |
| 1147   | Electrical equipment for coal mines—Insulating materials  |
| 1147.1 | Part 1: Materials for insulating power conducting components  |
| 1299   | Electrical equipment for coal mines—Flameproof enclosed plugs and receptacles   |
| 1300   | Electrical equipment for coal mines—Bolted flameproof cable coupling devices  |
| 1775   | Low voltage switchgear and controlgear—Air break switches, isolators and fuse-combination units (up to and including 1000 V a.c. and 1200 V d.c.) |
| 1825   | Electrical equipment for explosive atmospheres—Pressurized enclosures—Type of protection p  |
| 1828   | Electrical equipment for explosive atmospheres—Cable glands   |
| 1864   | High voltage alternating current contactors   |
| 1930   | Circuit-breakers for distribution circuits (up to and including 1000 V a.c. and 1200 V d.c.)  |
| 1931   | High voltage testing techniques   |
| 1931.1 | Part 1: General definitions, test requirements, test procedures and measuring devices   |
| 1939   | Classification of degrees of protection provided by enclosures for electrical equipment   |
| 1972   | Cables for use below ground in coal mines (other than trailing cables)  |
| 2006   | High voltage a.c. switchgear and controlgear—Circuit breakers for rated voltages above 100 kV   |
| 2024   | High voltage fuse/switch combinations and fuse/circuit-breaker combinations   |
| 2081   | Electrical equipment for coal and shale mines—Electrical protection devices   |
| 2081.2 | Part 2: Earth-continuity monitoring devices   |
| 2081.3 | Part 3: Earth-leakage protection devices for use on systems incorporating earth-fault current limiters  |
| 2081.4 | Part 4: Lockout earth-fault protection devices  |
| 2081.5 | Part 5: Earth-fault current limiters  |
| 2086   | High-voltage a.c. switchgear and controlgear—Metal-enclosed—Rated voltages above 1 kV up to and including 72.5 kV.                                |
| 2184   | Low voltage switchgear and controlgear—Moulded-case circuit-breakers for rated voltages up to and including 600 V a.c. and 250 V d.c.             |
| 2374   | Power transformers  |
| 2374.1 | Part 1: General requirements  |
| 2374.5 | Part 5: Ability to withstand short-circuit  |