Australian Standard®

Electrical equipment for explosive atmospheres — Selection, installation and maintenance

Part 10: Equipment in combustible dust (Class II) areas

This Australian Standard was prepared by Committee EL/14, Electrical Equipment in Hazardous Areas. It was approved on behalf of the Council of Standards Australia on 24 November 1988 and published on 20 March 1989.

The following interests are represented on Committee EL/14:

Australian Coal Association

Australian Electrical and Electronic Manufacturers Association

Australian Institute of Petroleum

Confederation of Australian Industry

Department of Defence

Department of Industrial Relations and Employment, N.S.W.

Department of Labour, Vic.

Department of Minerals and Energy, N.S.W.

Department of Mines, Qld

Electrical Contractors Associations of Australia

Electricity Supply Association of Australia

Institute of Instrumentation and Control

Insurance Council of Australia

Regulatory authorities (electrical)

Testing interests

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PREFACE

This Standard was prepared by the Standards Australia Committee on Electrical Equipment in Hazardous Areas for the guidance of manufacturers, designers, installers, users, statutory authorities and associated interests.

This Standard is part of a series of Standards which deal with the selection, installation and maintenance of electrical equipment for use in areas where combustible materials are generated, processed, handled or stored and which therefore are potentially hazardous.

This Part deals with equipment in combustible dust (Class II) areas.

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SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Standard specifies requirements for the selection, installation and maintenance of electrical equipment for use in areas where combustible dust may be present in such quantities as are likely to produce a fire or explosion hazard. Such areas are hereinafter referred to as Class II areas.

NOTE: AS 2430.2 deals with the classification of Class II areas.

This Standard does not apply to —

(a) areas where inherently explosive dusts are present;

(b) underground workings of coal mines; and

(c) areas which may be affected by oxygen enrichment.

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

AS
1020 The control of undesirable static electricity
1722 Pipe threads of Whitworth form
1722.1 Part 1: Sealing pipe threads
1768 Lightning protection
1828 Electrical equipment for explosive atmospheres — Cable glands
1905 SAA Fire Door Code
1939 Classification of degrees of protection provided by enclosures for electrical equipment
2052 Metallic conduits and fittings
2053 Non-metallic conduits and fittings
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243 Electrical equipment for explosive atmospheres — Encapsulated apparatus — Type of protection m
3.1 Electric flexible cords
3000 SAA Wiring Rules
3112 Approval and Test Specification — Plugs and socket-outlets

NFPA
68 Guide for explosion venting

1.3 DEFINITIONS. For the purpose of this Standard, the definitions below apply.

1.3.1 Area, hazardous — area in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of potential ignition sources.

NOTES:
1. For the purpose of this Standard an area is regarded as a three dimensional region or space.
2. Examples of potential ignition sources are electrical equipment, electrostatic discharges, naked flames, chemical reactions, sparks from grinding and welding operations, and hot surfaces.

1.3.2 Combustible dust — dust that is combustible or ignitable in mixtures with air.

NOTES:
1. Examples of such dusts are starch and coal dust.
2. Layered dusts under certain conditions may glow without ignition.

1.3.3 Compounded joint — joint which is formed in an enclosure which requires a sealant material (e.g. silicone rubber) other than a gasket in order to maintain its dust-excluding properties.

1.3.4 Dust — small solid particles that settle out under their own weight but that may remain suspended for some time.

NOTE: The term 'dust' includes fibres and flyings.

1.3.5 Enclosure, dust-excluding ignition-proof (DIP enclosure) — enclosure which excludes dust, and which will not permit arcs, sparks or heat otherwise generated or liberated inside the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specified dust on or in the vicinity of the enclosure.

NOTE: AS 2236 contains requirements for DIP enclosures.

1.3.6 Equipotential bonding — electrical connection which ensures that various exposed conductive parts, and extraneous conductive parts, of electrical equipment remain at a substantially equal potential.

1.3.7 Fibre — unit of matter characterized by flexibility, fineness and high ratio of length to thickness.

1.3.8 Flyings — waste fibres which fly out into the atmosphere during carding, drawing, spinning and other processes.

1.3.9 Inherently explosive dusts — dusts of explosives which require only a specific level of energy for ignition.

NOTES:
1. Examples of such dusts are gunpowder, propellant powder and lead styphnate.
2. Such dusts are hazardous whether airborne or not.