

Australian Standard[®]

**Electrical equipment for explosive
atmospheres — Explosion-
protection techniques**

Part 2: Flameproof enclosure d

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 23 October 1991 and published on 16 December 1991.

The following interests are represented on Committee EL/14:

Australian Electrical and Electronic Manufacturers Association

Australian Institute of Petroleum

Confederation of Australian Industry

Department of Mineral Resources, N.S.W.

Department of Resource Industries, Qld

Electrical Contractors Association of Australia

Electricity Supply Associations of Australia

Institute of Instrumentation and Control

Insurance Council of Australia

The Workcover Authority, N.S.W

Regulatory authorities (electrical)

Testing interests.

Additional interests participating in preparation of Standard:

University of New South Wales.

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Electrical equipment for explosive atmospheres — Explosion-protection techniques

Part 2: Flameproof enclosure d

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PREFACE

This Standard was prepared by the Standards Australia Committee on Electrical Equipment in Hazardous Areas, to supersede AS 2480—1986, *Electrical equipment for explosive atmospheres — Flameproof enclosure — Type of protection d*. This Standard is intended for the guidance of manufacturers, users, statutory authorities and associated interests. It is Part 2 of a series of Standards dealing with the explosion-protection of electrical equipment intended for use in hazardous areas.

In its terminology, definitions and general treatment of the subject, this Standard is similar to the following Standards issued by the International Electrotechnical Commission and the European Committee for Electrotechnical Standardization.

IEC 79-1 *Electrical apparatus for explosive gas atmospheres*
Part 1: *Construction and verification test of flameproof enclosures of electrical apparatus*

EN 50 018 *Electrical apparatus for potentially explosive atmospheres; flameproof enclosure d*

Acknowledgment is made of the assistance received from these sources.

The major changes to this edition are as follows:

- (a) General requirements are covered by reference to AS 2380.1, *Electrical equipment for explosive atmospheres — Explosion-protection techniques, Part 1: General requirements*
- (b) The average surface roughness of joints is not to exceed 6.3 μm .
- (c) Measurement of minimum width of joints and maximum gap have been clarified.
- (d) Amended requirements for plugs and socket-outlets have been included.
- (e) Tests to determine explosion pressure and the non-transmission of an internal ignition have been altered to align with the current IEC requirements.
- (f) Provisions for testing to acetylene have been included.
- (g) Requirements for breathing and draining devices as well as non-metallic enclosures, and parts of, have been included as informative appendices.

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CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 REFERENCED DOCUMENTS	4
1.3 DEFINITIONS	5
1.4 GROUPING	5
1.5 TEMPERATURE CLASSIFICATION	5
SECTION 2 CONSTRUCTIONAL REQUIREMENTS	
2.1 GENERAL	8
2.2 NON-THREADED JOINTS	8
2.3 THREADED JOINTS	9
2.4 GASKETS AND O-RINGS	9
2.5 CEMENTED JOINTS	9
2.6 OPERATING RODS (SPINDLES)	10
2.7 SHAFTS AND BEARINGS	10
2.8 LIGHT TRANSMITTING PARTS	10
2.9 BREATHING AND DRAINING DEVICES	11
2.10 FASTENERS	11
2.11 MECHANICAL STRENGTH OF THE ENCLOSURE	11
2.12 CONNECTION OF CONDUCTORS AND CABLES	12
2.13 PLUGS AND SOCKET OUTLETS	12
SECTION 3 MARKING	
3.1 GENERAL	22
SECTION 4 VERIFICATION AND TESTS	
4.1 GENERAL	23
4.2 TYPE TESTS	23
4.3 ROUTINE TESTS	25
APPENDICES	
A PIN CONFIGURATIONS AND DIMENSIONS	27
B BREATHING AND DRAINING DEVICES	31
C NON-METALLIC ENCLOSURES AND NON-METALLIC PARTS OF ENCLOSURES	34

STANDARDS AUSTRALIA

Australian Standard
Electrical equipment for explosive atmospheres—
Explosion-protection techniques

Part 2: Flameproof enclosure d

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for the flameproof enclosure of electrical equipment, type of protection d, intended for use in hazardous areas.

The Standard provides for the grouping of enclosures according to the dimensions of the gaps between joint surfaces, and an indication is given of the explosive gas atmosphere for which each group is appropriate. Some additional requirements may be necessary for non-metallic materials and these are left to the discretion of the testing authority (see Appendix C).

This Standard does not apply to enclosures kept charged with air or other non-flammable gas so as to prevent the entry of flammable gas, or to enclosures containing hydrocarbon oil and parts of equipment into which gaseous products from the oil may enter.

Electrical equipment with type of protection d shall be designed for operation within the ambient temperature range specified in AS 2380.1. For ambient temperatures below -20°C, stronger enclosures may be required due to the higher explosion pressures generated at low temperatures and the possibility of brittle failure of enclosure materials. For ambient temperatures above 60°C, it may be necessary to use smaller joint gaps because the maximum safe gap tends to decrease with an increase in ambient temperature.

The specific requirements in this Standard are additional to the general requirements in AS 2380.1, except for Clause 2.11.2 which does not apply.

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

AS

1146	Method for impact test on plastics
1146.2	Part 2: Charpy impact resistance
1299	Electrical equipment for coal mines—Flameproof restrained plugs and receptacles
1300	Electrical equipment for coal mines—Bolted flameproof cable coupling devices
1721	General purpose metric screw threads
1722	Pipe threads of Whitworth form
1722.1	Part 1: Sealing pipe threads
1828	Electrical equipment for explosive atmospheres—Cable glands
2052	Metallic conduits and fittings
2380	Electrical equipment for explosive atmospheres—Explosion-protection techniques
2380.1	Part 1: General requirements
2380.6	Part 6: Increased safety
2536	Surface texture
3000	SAA Wiring Rules

ISO

1210	Determination of flammability characteristics of plastics in the form of small specimens in contact with a small flame
1817	Rubber, vulcanized—Determination of the effect of liquids
2738	Permeable sintered metal materials—Determination of density, oil content, and open porosity
4003	Permeable sintered metal materials—Determination of bubble test pore size
4022	Permeable sintered metal materials—Determination of fluid permeability
4892	Plastics—Methods of exposure to laboratory light sources