

WITHDRAWN AS
SEPTEMBER 1984
S/K BY
AS 2380.4-1984

AS 1021 — 1980
UDC 621.3 — 213.34

Australian Standard 1021-1980

ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES— PROTECTION BY PURGING

AS 1021—1980
Electrical equipment for
explosive atmospheres—
explosion-protection
techniques

AS 2380.4—1994
Pressurized rooms or
pressurized enclosures

(In Professional Packages 24A,
40A) 27pp G

Specifies requirements for the
design, construction and
testing of rooms and enclosures
of electrical equipment in
which the entry of flammable
gas or vapour is prevented by
maintaining the air (or other
non-flammable gas) within the
room or enclosure at a specified
pressure above that of the
external atmosphere.

Requirements for the use of
pressurized rooms and
enclosures in Class II,
combustible dust areas are also
included.

(EL/14): Supersedes AS 1021—1980
and AS 1825—1982; DR 89196;
Publication date 1994-09-19.



STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Coal Association
Australian Electrical Manufacturers Association
Confederation of Australian Industry
Co-opted specialist interests
Department of Productivity
Departments of Explosives
Departments of Labour and Industry
Departments of Mines
Electrical Contractors Associations of Australia
Insurance Council of Australia
Oil companies
Statutory Electricity Authorities
Sydney County Council (Testing interests)

This standard, prepared by Committee EL/14, Electrical Equipment in Hazardous Locations, was approved on behalf of the Council of the Standards Association of Australia on 28 November 1979, and was published on 1 March 1980.

To keep abreast of progress in industry, Australian standards are subject to continuous review and are kept up-to-date by the issue of amendments or revised editions as necessary. It is important therefore that standards users ensure that their standards are up-to-date. Full details of all SAA publications will be found in the Annual List of Australian Standards; these details are supplemented by listings in the SAA monthly journal 'The Australian Standard'. Information on the Annual List and 'The Australian Standard' may be obtained from any sales office of the Association, where details are also available of the current status of individual standards. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

AUSTRALIAN STANDARD

**PROTECTION BY PURGING
OF ELECTRICAL EQUIPMENT
FOR EXPLOSIVE
ATMOSPHERES**

AS 1021 — 1980

First published	1971
Second edition	1980

**PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.**

ISBN 0 7262 1844 8

PREFACE

This standard was prepared by the Association's Committee on Electrical Equipment in Hazardous Locations, for the guidance of manufacturers, users, statutory authorities and associated interests and for use in association with the SAA Wiring Rules (AS 3000, Part 1). It includes a procedure for reducing the explosion hazard of electrical equipment used in explosive atmospheres, by purging the enclosure, and prescribes requirements in respect of design, construction, marking, and testing.

In this new edition, the published amendments to the 1971 edition have been incorporated, and substantial changes have been made to the Foreword and to Clause 1.4 (grouping). Consequential alterations have been made to the Figures. The Clause dealing with maximum temperature of enclosure (3.2.4) has been expanded as has the marking clause (3.9). A new clause (3.6) deals with safety provisions and devices.

In its terminology, definitions and general treatment of the subject, this standard is similar to a corresponding standard issued by the National Fire Protection Association, U.S.A., viz NFPA Standard No 496—1967 (endorsed as American Standard ANSI 496—1967), Purged Enclosure for Electrical Equipment in Hazardous Locations, and acknowledgment is made of the assistance received from this source.

This standard requires reference to the following Australian standards:

- AS 1076 Code of Practice for Selection, Installation and Maintenance of Electrical Apparatus and Associated Equipment for Use in Explosive Atmospheres (Other Than Mining Applications)
Part 1—Basic Requirements
- AS 1825 Pressure Enclosure of Electrical Equipment for Explosive Atmospheres
- AS 1829 Intrinsically Safe Electrical Apparatus for Explosive Atmospheres
- AS 1874 Aluminium Ingots and Aluminium Alloy Ingots and Castings
- AS 1881 Zinc Alloy Ingots (For Pressure Diecasting) and Zinc Alloy Pressure Diecastings
- AS 855 Method of Test for Ignition Temperature of Gases and Vapours
- AS 2238 Electrical Apparatus with Type of Protection 'n' for Explosive Atmospheres
- AS 3000, Part 1 SAA Wiring Rules
- AS C98 Flameproof Enclosure of Electrical Equipment for Explosive Atmospheres
- AS C100 Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment

CONTENTS

	<i>Page</i>
FOREWORD	4
 SECTION 1. SCOPE AND GENERAL	
1.1 Scope	6
1.2 Basic Principles	6
1.3 Definitions	6
1.4 Grouping and Classification of Electrical Apparatus	7
1.5 Properties of Combustible Liquids, Vapours and Gases	7
 SECTION 2. REDUCTION OF HAZARD	
2.1 General	9
2.2 Class I Zone 1 to Non-hazardous	9
2.3 Modification of Hazard	9
2.4 Equipment Enclosure in a Class I Zone 2 Area	10
 SECTION 3. DESIGN AND CONSTRUCTION	
3.1 General	13
3.2 All Enclosures	13
3.3 Instrument Enclosures and Small Enclosures	18
3.4 Large Enclosures	21
3.5 Controlrooms	23
3.6 Safety Provisions and Devices	25
 SECTION 4. TESTS	
4.1 General	26
4.2 Agreement with Drawings	26
4.3 Tests for Temperature Classification	26
4.4 Purge and Pressure Test	26
4.5 Mechanical Pressure Test	27
 APPENDIX A GENERAL DESCRIPTION OF NORMAL ROUTINE TESTING PROCEDURE APPLIED BY THE ELECTRICAL TESTING AUTHORITY	
APPENDIX A	28

© Copyright — STANDARDS ASSOCIATION OF AUSTRALIA 1980

Users of standards are reminded that copyright subsists in all SAA publications. No part of this publication may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing of the Standards Association of Australia.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
PROTECTION BY PURGING
OF ELECTRICAL EQUIPMENT FOR
EXPLOSIVE ATMOSPHERES

FOREWORD

The purpose of this standard is to establish requirements for the purging of electrical equipment enclosures which will enable such equipment to be used in flammable and explosive atmospheres without risk of fire or explosion, i.e. as required by certain Mining Regulations or by the SAA Wiring Rules (AS 3000, Part 1) for defined hazardous areas.

NOTE: It is unlikely that these requirements for purged enclosures will be applicable to underground coalmining.

This standard is confined to the purging system and associated enclosure concerned with the electrical equipment to be protected. Careful consideration must be given to the auxiliary apparatus needed for the supply of the purging medium to the enclosure.

Electrical protection, airflow velocity and pressure-measuring devices are provided for the operation of alarm and/or trip devices whenever the purging medium within the enclosure falls below the minimum permitted.

The equipment enclosure is designed so that a minimum positive pressure of 50 Pa above the atmospheric pressure surrounding the enclosure can be established and maintained prior to and during the operation of the electrical apparatus which is enclosed.

The purging system is designed so that on admission of the purging medium to the enclosure, the atmosphere then existing within the enclosure is completely displaced or scavenged and there is a continuous flow of the purging medium.

The velocity profile of the purging medium within the enclosure is so arranged that any pockets or hazardous concentration of flammable gases or vapours does not exist within the enclosure.

It should be noted that temperature limits in relation to the ignition temperature of gases and vapours apply to any apparatus referred to herein, equally with those applicable for flameproof apparatus, under similar conditions.

It must be recognized that safe use of electrical equipment in flammable or explosive gas atmospheres may depend on many factors besides the use of purged enclosures, e.g.: