AS 1482—1985

Australian Standard®

Electrical equipment for explosive atmospheres—Protection by ventilation—Type of protection v

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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 Industrial Relations, N.S.W.

Department of Defence Support

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ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES— PROTECTION BY VENTILATION— TYPE OF PROTECTION v

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PREFACE

This edition of this standard was prepared by the Association's Committee on Electrical Equipment for Hazardous Locations and it supersedes AS 1482-1973, Protection by Ventilation of Electrical Equipment for Explosive Atmospheres. It is one of a series of standards dealing with the use of electrical equipment in explosive atmospheres.

The standard deals with ventilation of buildings and rooms by gas or vapour dilution. In particular it deals with the control of environmental gases and vapours such that equipment not normally allowed in a Zone 1 area may be used.

This edition is technically identical to the 1973 edition.

The main reason for this new edition was for the purpose of correcting cross-references to other standards. However, the opportunity was used to update some clauses in this standard in line with current standards writing practice.

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SECTION 1. VENTILATION OF BUILDINGS AND ROOMS—GAS OR VAPOUR DILUTION

1.1 SCOPE. This standard sets out requirements for the protection by ventilation of electrical equipment in explosive atmospheres. The standard is in two Sections, as follows:

(a) Section 1—Ventilation of Buildings and Rooms—Gas or Vapour Dilution.

(b) Section 2—Ventilation of Electrical Power Equipment—Heat Dissipation.

Section 1 of this standard relates to the requirements of dilution ventilation and point-extraction ventilation of buildings and rooms.

1.2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1020	SAA Static Electricity Code
AS 1021	Protection by Purging of Electrical Equipment for Explosive Atmospheres
AS 1825	Electrical Equipment for Explosive Atmospheres—Pressurized Enclosures—Type of Protection p
AS 2380	Electrical Equipment for Explosive Gas Atmospheres—Explosion Protection Techniques Part 1—General Requirements
AS 2430	Classification of Hazardous Areas Part 1—Explosive Gas Atmospheres
AS 3000	SAA Wiring Rules
AS 3100	Approval and Test Specification for Definitions and General Requirements for Electrical Materials and Equipment
NFPA 325M	Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids

1.3 DEFINITIONS. For the purpose of this Section the following definitions apply:

1.3.1 Capture velocity—the minimum air velocity required at the point of origin to capture the hazardous gas or vapour effectively.

1.3.2 Dilution ventilation—a process of supplying an area or room with fresh air (or an inert gas) at sufficient flow to reduce to an acceptably safe level the concentration of any flammable gases and vapours initially present, and to maintain this safe level by the supply of a sufficient volume of fresh air.

1.3.3 Fresh air—air drawn from an atmosphere which is free from flammable gases or vapours, dusts or fibres.

1.3.4 Ignition temperature—the minimum temperature required to ignite or cause independent self-sustained (air) combustion of a solid, liquid or gaseous substance.

1.3.5 Inadequately ventilated area—an area where there are obstacles to the free and natural diffusion of gases and vapours and where there is insufficient ventilation.

1.3.6 Mechanically ventilated area—an area where uncontaminated air is continuously introduced in sufficient quantity to prevent the formation of an explosive gas-air mixture.

NOTE: An extraction system may achieve the same result provided that the entering air is uncontaminated.

1.3.7 Naturally ventilated area—an area where there are no obstacles to free natural diffusion of gases and vapours likely to be released in the atmosphere, such as—

(a) outdoor situations; or

(b) a building, room or space substantially open, and free from obstruction.

1.3.8 Safety device—a device provided to protect a system against conditions which could result in fire or explosion.

NOTE: An essential requirement of any safety device when used in a co-ordinated assembly is that the system should 'fail-safe'.

1.4 VENTILATION OF BUILDINGS AND ROOMS

1.4.1 General description. Ventilation should be regarded as the first line of defence against the formation of an explosive concentration of gas or vapour. Recourse to its adoption as an acceptable and sole method of protection shall, however, be subject to the following considerations:

(a) The conditions shall be such as to avoid the possibility of the liberation, accidental or otherwise, of an abnormal volume of gas, or liquid from giving rise to flammable concentrations of any gas or vapour.

(b) The ambient atmosphere in the hazardous location shall be pre-ventilated to reduce the concentration of the gas or vapour to less than 50 percent of the lower explosion limit before the electrical equipment can be energized.

(c) Where ventilation of the point-extraction type is adopted, the inlet shall be situated as near as possible to any point where the escape of vapour or liquid may occur. The whole of the