AS 2430, Part 1—1982
UDC 628.512.001.33.006

Australian Standard 2430, Part 1–1982

CLASSIFICATION OF HAZARDOUS AREAS

Part 1—EXPLOSIVE GAS ATMOSPHERES

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

This Australian standard was prepared by Committee MS/11, Classification of Hazardous Areas. It was approved on behalf of the Council of the Standards Association of Australia on 11 May 1982 and published on 5 July 1982.

The following interests were represented on the committee responsible for the preparation of this standard:

Australian Electrical and Electronic Manufacturers Association

Australian Gas Association

Australian Institute of Petroleum Limited

Australian Liquefied Petroleum Gas Association

Confederation of Australian Industry

Department of Industrial Relations, N.S.W.

Department of Minerals and Energy, Victoria

Department of Mineral Resources, N.S.W.

Department of Mines, Qld

Department of Industry and Commerce

Department of Transport and Construction

Grain Elevators Board of New South Wales

Insurance Council of Australia

Royal Australian Chemical Institute

The Pipeline Authority

Cylinder location ruling

A problem in the location of LPG cylinders and ignition sources has manifested itself during reinspections for certification.

Briefly, the Dangerous Goods Regulation 1978 makes reference to two Australian Standards. AS 1596 requires "in situ" LPG cylinders to be 5 m from an ignition source, but AS 2430 Part 1 only specifies a distance of 1 m around the cylinder as being a hazardous zone.

The Chief Inspector has now ruled that cylinders may be installed not closer than 1 m to electrical equipment, as provided by AS 2430. The distance to open flames (e.g., gas water heater) shall be 5 m, as provided in AS 1596.

This ruling supersedes any advice given previously by the Dangerous Goods Branch.

AUSTRALIAN STANDARD

CLASSIFICATION OF HAZARDOUS AREAS

Part 1 EXPLOSIVE GAS ATMOSPHERES

AS 2430, Part 1–1982

First published 1981
Second edition 1982

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

ISBN 0 7262 2561 4

PREFACE

This edition of this standard was prepared by the Association's Committee on Classification of Hazardous Locations to supersede AS 2430, Part 1—1981. The standard is intended for the guidance of industry and relevant statutory authorities concerned with the classification of hazardous areas. It is Part 1 of a series dealing with specific hazardous atmospheres.

This standard deals with the classification of hazardous areas according to the probability of the existence of an explosive mixture of gas, vapour or mist with air in the atmosphere.

The content of this standard is solely concerned with the classification of hazardous areas and not with the types of equipment or ignition sources which can be used in such areas. Such types of equipment are covered in standards published by the specific technology group, i.e. electrical, mechanical, gas, chemical.

The major changes in this edition are as follows:

(a) The classification for LP gas dispensing equipment has been amended and relocated under Paragraph A5.

(b) The classification for fume cupboards has been amended.

(c) The exemption given in Paragraph A6.3.1 to installations complying with AS 1697 has been deleted.

(d) The table in Appendix B of properties of some combustible liquids, vapours and gases has been deleted and a reference to NFPA 325M substituted.

(e) Examples have been added to the grades of sources of release described in Clause 2.2.

This standard may require reference to the following standards:

AS 1021	Protection by Purging of Electrical Equipment for Explosive Gas Atmospheres
AS 1425	The Use of LP Gas in Internal Combustion Engines
AS 1482	Protection by Ventilation of Electrical Equipment for Explosive Atmospheres
AS 1596	SAA LP Gas Code
AS 1825	Pressurized Enclosure of Electrical Equipment for Explosive Atmospheres
AS 1896	Methods of Test for Ignition Temperature of Gases and Vapours
AS 1940	SAA Flammable and Combustible Liquids Code
AS 2030	SAA Gas Cylinders Code
AS 2106	Methods for the Determination of the Flashpoint of Flammable Liquids (Closed Cup)
AS 2229	Electrical Systems for Dispensing Equipment for Explosive Atmospheres Part 1—Flammable Liquid Dispensing Equipment Part 2—Liquefied Petroleum Gas Dispensing Equipment
NFPA 325M	Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
CLASSIFICATION OF HAZARDOUS AREAS

PART 1 — EXPLOSIVE GAS ATMOSPHERES

FOREWORD

Many gases, vapours and dusts which are generated, processed, handled and stored in industry are combustible. When ignited they may burn rapidly and with considerable explosive force if mixed with air in the appropriate proportions.

Areas where gases and vapours, dusts, flyings and fibres occur in dangerous quantities are classified as hazardous. This standard deals with the zonal classification of hazardous areas where explosive gas atmospheres are present. For classification of hazardous dust atmospheres, refer to AS 2430, Part 2.

The word 'zone' is internationally accepted as indicating the probability of the presence of a flammable, combustible or explodable material, and the extent, dimension, shape of hazardous area and volume in which the hazardous material can be expected.

This standard covers the following zones:

ZONE 0: In which an explosive gas atmosphere is present continuously, or is expected to be present for long periods, or for short periods which occur with high frequency.

ZONE 1: In which an explosive gas atmosphere can be expected to occur periodically or occasionally during normal operation.

ZONE 2: In which an explosive gas atmosphere is not expected to occur in normal operation and if it occurs is likely to be present only infrequently and for short duration.

NOTE: Zones 3, 4 and 5 are covered in AS 2430, Part 2.

Area classification is a method of analysing the environment where explosive atmospheres may occur, to allow the proper selection of apparatus to be installed in or used in that environment. Such environments are those where a risk of fire or explosion can occur only if an explosive gas atmosphere and a source of ignition can coexist. The aim of the classification procedure is to ensure the satisfactory presence of apparatus in these environments.

Where it is necessary to use apparatus in an environment in which there may be an explosive atmosphere and it is not possible to —

(a) eliminate the likelihood of an explosive atmosphere occurring around the source of ignition; or

(b) eliminate the source of ignition;

then measures should aim at reducing the likelihood of occurrence of either or both of the above factors so that the likelihood of coincidence is so small as to be acceptable.

In most practical situations where flammable materials and apparatus are used it is difficult to ensure that an explosive atmosphere will never occur. It may also be difficult to ensure that apparatus will never give rise to a source of ignition. Reliance is therefore placed on the use of apparatus which has an extremely low likelihood of creating a source of ignition in situations where an explosive atmosphere has a high likelihood of occurring. Conversely, where the likelihood of an explosive atmosphere's occurring is reduced, apparatus which has an increased likelihood of becoming a source of ignition may be used. To apply this approach the first step is to assess the likelihood of an explosive atmosphere's occurring in accordance with the definitions of the zones of hazard.

The area classification should be carried out by those who have full knowledge both of the processes, systems and equipment concerned and of safety and personnel. The agreement reached on the area classification should be formally recorded.

The properties (which are relevant to area classification) of all process materials should be listed and should include flashpoint, boiling point, melting point, ignition temperature, ignition energy, vapour pressure, vapour density and flammability limits.

The initial step is to decide if a process item contains flammable material and if a release can occur. The procedure outlined herein should be applied to each item of equipment. The type and extent of the zonal areas can then be established.