AS 1345—1982
UDC 621.643—777.6:614.8

Australian Standard 1345—1982

IDENTIFICATION OF THE CONTENTS OF PIPING, CONDUITS AND DUCTS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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This Australian standard was prepared by Committee SF/16, Identification of Pipes. It was approved on behalf of the Council of the Standards Association of Australia on 8 July 1982 and published on 13 September 1982.

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

Association of Hydraulic Services Consultants, Australia

Australian Gas Association

Australian Institute of Petroleum Limited

Confederation of Australian Industry

Department of Public Works, N.S.W.

Institute of Hospital Engineers (Australia)

National Safety Council of Australia

Railways of Australia Committee

Royal Australian Institute of Architects

Safety Institute of Australia

Society of Fire Protection Engineers

	Light Blue	**Air**
	Black	**Other fluids** **including drainage pipes unless the drain is to a particular service**
	Safety Red	**Firefighting materials** **including detection and suppression systems (generally in conjunction with other identification of the contents)**
	Safety Yellow	**Hazardous services** **(generally in conjunction with other identification of the contents)**
	Light Orange	**Electricity**
	White	**Communications**

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PERMANENT
S260

AS 1345C—1982

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PIPELINE IDENTIFICATION

COLOUR	COLOUR NAME	MEANING
	Green	**Water**
	Silver-grey	**Steam**
	Brown	**Oil—mineral, vegetable or animal, and Flammable or combustible liquids**
	Yellow-ochre	**Gases, in either gaseous or liquefied form Vapours and pneumatically conveyed fumes and materials**

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STANDARDS ASSOCIATION OF AUSTRALIA
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AMENDMENT No 2
to
AS 1345—1982
IDENTIFICATION OF THE CONTENTS OF PIPING, CONDUITS AND DUCTS

REVISED TEXT

SUMMARY: This amendment applies to the Foreword, Clauses 2 and 3, and Appendix A.

Published on 3 March 1986.

AMDT No 2 MAR. 1986

Page 4. Foreword.

Insert the following at the end of the page:

Underground and Concealed Services.

The principles of this standard should be applied to the identification of underground and concealed services. However, it is recognized that such application may present difficulties and for this reason no mandatory requirements have been specified.

AMDT No 2 MAR. 1986

Page 5. Clause 2.

Delete existing second paragraph of Clause 2 and *substitute*:

Although the standard is not intended to apply to buried or normally inaccessible services, the principles should be applied to those services where practicable.

AMDT No 2 MAR. 1986

Page 5. Clause 3.

Insert the following reference document:

AS 2648 Underground Marking Tape
Part 1—Non-detectable Tape.

AMDT No 2 MAR. 1986

Page 9. Appendix A.

Insert the following new paragraph:

AS 2648—Underground Marking Tape, Part 1—Non-detectable Tape. This standard specifies requirements for printed underground marking tape suitable for use in conjunction with underground services as a means of indicating the proximity of a service. It applies to tape which is not detectable by metal detectors. Historically, the colour canary yellow has been used to identify pipelines containing gas; however, it is recommended that the colour light beige be used for this purpose, it being the internationally agreed colour.

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STANDARDS ASSOCIATION OF AUSTRALIA
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AMENDMENT No 1
to
AS 1345—1982
IDENTIFICATION OF CONTENTS OF PIPING, CONDUITS AND DUCTS

CORRECTION

SUMMARY: This amendment applies to Figs 1 and 2.

Published on 4 November 1983.

AUSTRALIAN STANDARD

IDENTIFICATION OF THE CONTENTS OF PIPES, CONDUITS AND DUCTS

should be [PIPING. - checked with Don Wilson 8.9.1982]

AS 1345—1982

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Revised 1967
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PREFACE

This edition of this standard was prepared by the Association's Committee on Identification of Pipes, to supersede AS 1345—1972.

The standard is intended to provide rules for the identification for safety purposes of piping, conduits and ducts in industrial and commercial premises, structures, ships and associated shore installations. In this edition, requirements have been introduced for identification of communications and of hazardous services, and an appendix has been added to deal with alternative methods of identification. In addition, the colour for gases has been changed from biscuit (No 369) to light beige (No 366), and the standard no longer refers to potable water.

The committee examined carefully several different modes of approach to this problem of identification of piping but in the long run, as was the case with AS 1345—1972, the committee was guided substantially by ISO/ R 508, Identification Colours for Pipes Conveying Fluids in Liquid or Gaseous Condition in Land Installations and On-board Ships. In defining the colours to be used, the committee made appropriate selections from AS K185, Colours for Specific Purposes. Attention is drawn to the Foreword, which comments on the reasons for following ISO/R 508 and refers to the application of the standard.

The committee believes that the permanence and colourfastness of the colours specified will be sufficient for the purposes required by the standard.

The standard colours are indicated herein both by the relevant colour name and, except for silver, black and white, number and by approximations reproduced in printing inks. In addition, the colour names in ISO/R 508 are given, and an appendix provides the Munsell references and the CIE colorimetric values.

The committee has envisaged that the colour samples will be used for visual matching of proprietary colours by users of the standard, although it should be noted that a particular colour sample may not provide an exact match in terms of the Munsell reference or the CIE colorimetric value. Where a large example of a standard colour is required, reference may be made to the 100 mm × 150 mm individual colour cards available from SAA; for convenient reference a chart has been prepared in conjunction with this standard, showing samples of the colours, the colour name and meaning as set out in the standard. The pipeline identification chart is AS 1345C.

This standard also incorporates identification of ionizing radiation by the use of a modification of the biological hazard symbol specified in ANSI Z35.5, Symbol for Biological Hazard.

There are a number of Australian standards which include reference to identification of piping and materials; these are listed in Appendix A.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
IDENTIFICATION OF THE CONTENTS OF PIPING, CONDUITS AND DUCTS

FOREWORD

Adoption of ISO/R 508.

In preparing this standard, the committee concerned made a full study of ISO/R 508 and finally decided that it should be accepted as the basis for the standard.

The committee observed that ISO/R 508 had been approved by many ISO member bodies, and that it applied to shipping as well as to land installations. Furthermore, the requirements of ISO/R 508 were considered to possess intrinsic merit, in that the number of colours is reduced to a minimum, and the colours given are sufficiently distinct for practical purposes.

The complexity and variety of marking is much less under ISO/R 508 than under other identification systems that were examined, and it should thus be easier to train personnel to interpret the identification system. The committee felt also that the ISO approach would minimize difficulties of colour perception that may arise from fatigue, colour blindness or faded pigments in paint formulation.

The committee concluded that the benefits to be gained by introducing the ISO system would far outweigh any costs of implementation and would avoid the many possible misinterpretations associated with a complex colour system, particularly when a large number of pipes are in close proximity.

Application of this Standard.

A standard of this kind cannot be expected to satisfy every particular industrial requirement. It is to be regarded as setting out certain desirable principles which should be considered in the planning of a scheme for identification of piping. Individual undertakings may find it necessary to depart from these principles in the application of markings in particular localities, so as to obtain maximum advantage of the identification system. However, this should only be done in extremes where adherence to the general principles cannot possibly be maintained.

Basic Principles of Standard Identification System.

The principles set out in the standard include a general classification of fluids encountered in industry, each class being identified by colour, but with a more detailed identification of the nature and form of contents by words and letter symbols.

The committee observed that every possible circumstance could not be covered, but it noted that there were two common cases which might call for some guidance, viz vacuum pipelines and jacketed pipelines. Under the standard, vacuum pipelines are to be considered on the basis of the fluid they carry and are to bear the marking 'vacuum'. Jacketed pipelines should be identified by the ground colour of the more important material being conveyed, together with the wording 'jacketed pipeline'.

Industrial Safety Colours.

The standard should be applied in a manner consistent with the Australian standards relating to industrial safety colours and warning signs in AS 1318 and AS 1319. The references to the use of 'safety colours' in this standard are related as far as practicable to principles established in those standards. For example, red is related to fire fighting equipment and yellow to cases where caution may be required. In certain instances, however, it has been necessary to give a specific meaning to colours which normally possess some general significance; green is used for water in general. If the water should be contaminated, it would be marked with a cautionary signal, i.e. yellow with black stripes, over the green ground colour. Similar use should be made of the ionizing radiation and biological hazard symbols which in this standard should always be accompanied by the ISO accepted safety colour, i.e. yellow.

Supplementary Marking.

This standard provides for the use of words or letter symbols to indicate the specific nature of contents or their physical state. This implies labelling of the pipeline. The method of labelling is left to the discretion of the person designing an identification system; it may, for example, be carried out by signwriting, by adhesive labels or by other forms of label, and account should be taken of the expected life of the form of labelling used.

In certain fields of industry, there are particular requirements dealing with identification by means of colour. In the application of such requirements, consideration may be given to the possibility of superimposing the required form of identification on the ground colour recommended in this standard.

Examples of such requirements known to exist at the present time are:

Identification of piping in aircraft refuelling depots
Department of Transport, Australia—Airport Engineering Instructions, Design and Development, Vol. II, Pt 9, Sect. 23.

Identification of piping within foam houses at bulk oil installations
Department of Industrial Relations, N.S.W.—The Dangerous Goods Act 1975, The Dangerous Goods Regulations 1978, AS 1940, SAA Flammable and Combustible Liquids Code, Clause 9.9.23.

SEE AMENDMENT 2

SPECIFICATION

1 SCOPE. This standard sets out methods of identifying the contents of piping, conduits and ducts by the use of colours, letters and symbols.

2 APPLICATION. The standard applies to piping, conduit, ducts and sheathing used to contain fluids or for the distribution of electrical or communications services in land installations and on board ships.

SEE AMENDMENT 2

Although the standard is not intended to apply to buried or normally inaccessible services, the principles may be applied to these services.

NOTE: For the identification of electrical wiring see AS 3000.

3 REFERENCED DOCUMENTS. The following documents are referred to in this standard:

AS 1135	SAA Non-ferrous Pressure Piping Code
AS 1169	SAA Medical Agents and Gases Safety Code
AS 1318	SAA Industrial Safety Colour Code
AS 1319	Rules for the Design and Use of Safety Signs for the Occupational Environment
AS 1596	SAA LP Gas Code
AS 1697	SAA Gas Pipeline Code
AS 1744	Standard Alphabets for Road Signs
AS 1940	SAA Flammable and Combustible Liquids Code
AS 1942	Rules for the Identification of Refrigerant Gas Cylinders
AS 1943	Rules for the Identification of Industrial Gas Cylinders
AS 1944	Rules for the Identification of Medical Gas Cylinders
AS 1958	SAA Submarine Pipeline Code
AS 2018	SAA Liquid Petroleum Pipeline Code
AS 2120	Rules for Suction Systems for Medical Use in Hospitals
AS 3000	SAA Wiring Rules
AS CB18	SAA Pressure Piping Code Part 1—Ferrous Piping
AS K185	Colours for Specific Purposes
ISO 3864	Safety Colours and Safety Signs*
ANSI Z35.5	Symbol for Biological Hazard
AIP CP5	Code of Practice for Pipeline Identification

AS 2648 SEE AMENDMENT 4

4 DEFINITIONS. For the purpose of this standard, the following definitions apply:

4.1 Basic identification colour—a colour which indicates the basic nature of a service.

4.2 Biological hazard—those infectious agents presenting a risk or potential risk to the well-being of man, either directly through infection or indirectly through disruption of the environment.

4.3 Decorative colour—the colour of a service used for decorative or protective purposes.

4.4 Fluid—a substance consisting of particles that move freely among themselves and which is capable of being conveyed through pipes.

4.5 Gases—fluids in pipelines which are gaseous under normal atmospheric conditions when released.

4.6 Hazard identification—yellow used in conjunction with black to indicate a hazard (either a hazardous service, or a mechanical hazard due to restricted clearances near the pipe).

4.7 Hazardous service—a service, the contents of which present a risk of injury to personnel because of toxicity, biological hazard, corrosiveness, flammability, radioactivity, temperature, pressure or voltage.

NOTE: Within any installation, the definition of a hazard may be a matter of degree.

4.8 Ionizing radiation—any radiation consisting of directly or indirectly ionizing particles or a mixture of both.

4.9 Pipeline marker—a label which is applied to the outside surface of a service to indicate by colour and words printed on it the contents of the service.

4.10 Restricted installation—an installation where access is normally restricted to authorized personnel.

4.11 Service—a pipe, conduit, duct or sheath, the contents of which are to be identified.

4.12 Supplementary colour—a colour or colours additional to a basic identification colour, used to specifically identify a service.

5 BASIS OF IDENTIFICATION.

5.1 General. This standard provides for the identification of services by the use of a basic identification colour only or a basic identification colour with lettering.

In addition, where a service is classified as a hazardous service, provision is made for hazard identification. In certain circumstances, the alternative methods of identification described in Appendix G may be permitted.

5.2 Basic Identification Colour. Basic identification colours, broadly identifying the contents of the service, and the physical characteristics of the colours, together with their meaning, are set out in Table 1.

5.3 Hazardous Service Identification. Where a service is to be marked as being hazardous, it shall have the following marking in black on a yellow background:

(a) Ionizing radiation—the symbol illustrated in Appendix B.

(b) Biological hazard—the symbol illustrated in Appendix C.

(c) Other hazardous services—diagonal lines of equal width and spacing. The reason for the hazard identification may be added in words adjacent to the marking, e.g. temperature, pressure, flammable liquid, voltage, toxicity, actual contents.

*In course of preparation.