

1. PURPOSE

The purpose of this document is to ensure that pipes, conduits and ducts are labeled to:

- identify the contents and the direction of flow;
- ensure uniform and consistent methodology; and
- meet the requirements of the Australian Standards and (and where applicable) legislation.

2. SCOPE

This document applies to all staff, students, contractors and other personnel at workplaces under the management or control of the University of Melbourne.

The document applies to the:

- installation of new pipes, conduits and ducts;
- replacement of pipes, conduits and ducts; and
- maintenance of existing pipes, conduits and ducts.

3. LEGAL REQUIREMENTS

The *Dangerous Goods (Storage and Handling) Regulations 2022* (Vic) and the *Occupational Health and Safety Regulations 2017* (Vic) require the identification of installed systems holding dangerous goods and hazardous substances.

AS 1345 specifies means for identifying the contents of pipes, conduits, ducts and sheathing used to contain fluids, or for the distribution of electrical or communications services in land installations and on board ships, by the use of colors, words and symbols. It is not intended to apply to buried or normally inaccessible services. However, the general principles may be applied when considering those services.

Legislation and Australian Standards referenced in this guidance include:

- *Dangerous Goods Act 1985* (Vic)
- *Dangerous Goods (Storage and Handling Regulations) 2022* (Vic)
- *Gas Safety Act 1997* (Vic)
- *Occupational Health and Safety Regulations 2027* (Vic)
- *Plumbing Regulations 2008* (Vic)

- AS 1345: Identification of the contents of pipes, conduits and ducts
- AS 2700: Colour standards for general purposes
- AS 3500.1: Plumbing and drainage. Water services

4. IDENTIFICATION SYSTEM

AS 1345 comprises three elements for the identification of pipes, conduits and ducts. These include the:

- base identification colour;
- pipe marker; and
- supplementary colours.

AS 1345 determines the location and the form of the three elements. This includes the:

- general requirements; and
- form of marking.

4.1 Base identification colour

The base identification colour is a single colour that is intended to provide immediate information on the contents of the pipe. When applying the base identification colour the pipe, conduit or duct can be:

- completely painted with the identifying colour; or
- regularly banded with the identifying colour.

The following table lists the base identification colours and their application. The colours in bold in the table represent the preferred colour.

With the exception of grey or recycled water (non-drinking water supply) the colours in the table are defined in AS 1345. Base colour requirements for grey or recycled water (non-drinking water supply) are defined in AS 3500.1.

No preferred colour has been nominated for grey or recycled water (non-drinking water supply).

Note: Where there is an inconsistency between AS 1345 and AS 3500.1, then the requirements of AS 3500.1 will be followed.

CONTENTS OF PIPE, CONDUIT OR DUCT	COLOUR NAME	AS 2700 COLOUR CODE	APPLICATION – EXAMPLES
Water	Green 	Jade – G21 Emerald – G13 Shamrock – G23	Drinking water Waste water (but not sewage) Cooling water, including seawater Heating water Storm water Hydraulic power supply Recycled water
Grey or recycled water (non-drinking water supply)	Purple 	Purple – P12 (no darker) Jacaranda – P24 (no darker) Lilac – P23 (no lighter)	Recycled water Class A Recycled water Class B Recycled water Class C Recycled water Class D
Steam	Silver-grey 	Silver Grey – N24	Live steam Process steam Exhaust steam Space heating steam
Oils, flammable and combustible liquids	Brown 	Golden Tan – X53 Tan – X51 Brown – X54 Nut Brown – X55	Fuel and lubricating oils Animal and vegetable oils for food processing Petrol, diesel and other light fraction oils Other flammable or combustible liquid substances
Gases	Yellow-ochre 	Sand – Y44 Straw – Y24 Sandstone – Y53 Raffia – X31 Biscuit – X42	Fuel gases Process gases Liquefied gases under pressure Pneumatic transport of particulate solids Exhaust gases and fumes Medical gases
Acids and alkalis	Violet 	Lilac – P23	All corrosive liquids and gases
Air	Light blue 	Aqua – B25 Bluebell – B41	Compressed air Instrument air Vacuum Ventilation Pneumatic cover
Other liquids	Black 	Black – N61	Chemical mixtures in water or organic solvent Liquid foodstuffs Sewage, organic waste Chemical and process wastes
Fire services	Red 	Signal Red – R13 Scarlet – R12 Waratah – R14	Dedicated water, foam other fire extinguishing supply lines
Electric power	Orange 	Orange – X15 Marigold – X13	Electricity supply circuit
Communication	White 	White – N14	Telephone and other communication circuits Extra low voltage supply

4.2 Pipe marker

The pipe marker is a printed label that identifies the contents and/or hazardous nature of the contents of the pipe, conduit or duct. A pipe marker has the following characteristics:

- background colour is the same as the base identification colour;
- lettering in either white or black;
- lettering that is large enough to be read by normal eyesight;
- contrasting border around the label in white or yellow;
- chevron within the border indicating the direction of flow within the pipe.

4.3 Supplementary colour and hazard identification

A supplementary colour is a further band or panel of colour that indicates an additional attribute of the contents of the pipe. Services to which a supplementary colour might apply include:

- materials for human consumption such as:
 - potable water;
 - foodstuffs; and
 - medical gases.

Hazard identification is a symbol that identifies the type of hazard contained in the pipe. Symbols used include:

GENERAL HAZARD	RADIOLOGICAL HAZARD	BIOLOGICAL HAZARD
		

5. LOCATION AND FORM OF IDENTIFICATION MARKINGS

5.1 General requirements

AS 1345 states the following:

“Identification markings comprising either bands of base identification colour or pipe markers as required shall be located adjacent to all junctions, valves, service appliances, bulkheads, wall penetrations and the like, and at spacings not greater than 8 meters along the service.”

An exception to the above is uninterrupted lengths of services visible along their length. These services may have identification markers up to 50 meters apart.

5.2 Form of marking

Apart from small services the form of marking comprises **one** of the following:

1. The base identification colour applied to the full length of the service.
2. The base identification colour in bands not less than 375 mm in length in accordance with the *general requirements* listed above.
3. A pipe marker located in accordance with *general requirements* listed above.
4. A pipe marker with band of supplementary colour or hazard identification.
5. A combination of either point (3) or point (4) with point (1).