AS/NZS 4645.2:2018

Australian/New Zealand Standard™

Gas distribution networks

Part 2: Steel pipe systems

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

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The following are represented on Committee AG-008:

Access Canberra
Australian Industry Group
Australian Pipelines and Gas Association
Department of Planning and Environment (Division of Energy, Water and Portfolio Strategy) NSW
Energy Networks Australia
Engineers Australia
Gas Association of New Zealand
Gas Energy Australia
Gas Technical Regulators Committee
International Copper Association Australia
LPG Association of New Zealand
New Zealand Institution of Gas Engineers
Plastics Industry Pipe Association of Australia
Plastics New Zealand
Welding Technology Institute of Australia
WorkSafe New Zealand (Energy Safety)

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee AG-008 Gas Distribution, through its subcommittee AG-008-02, Installation and Maintenance of Steel Pipe Systems for Gas, to supersede AS/NZS 4645.2:2008.

The objective of this Standard is to provide for the protection of the general public, gas distribution network operating personnel and the environment, and to ensure safe and reliable operation of gas distribution networks that reticulate gas to consumers.

This Standard covers steel piping within gas distribution networks covered by AS/NZS 4645.1, where the maximum allowable operating pressures up to or equal to 1050 kPa and the hoop stress is less than or equal to 20% SMYS of the pipe. Steel piping systems for gas outside these limits are generally covered by the AS 2885 suite of Standards and for some jurisdictions. AS/NZS 4645.1 provides for limited use up to 1965 kPa.

This series of Standards includes the following parts:

AS/NZS
4645 Gas distribution networks
4645.1 Part 1: Network management
4645.2 Part 2: Steel pipe systems (this Standard)
4645.3 Part 3: Plastics pipe systems

The Standard is not a design handbook, nor a manual on distribution practices. It does not remove the need for qualified and experienced engineering design, installation and operation or for competent engineering judgment and does require interpretation and implementation by competent engineers.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard. Alternative means of conformance may be acceptable provided the required safety outcomes can be demonstrated with AS/NZS 4645.1.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

Page

Page

FOREWORD

This Standard achieves its purpose through five fundamental principles as follows:

(a) A gas distribution network is designed and constructed to have sufficient controls to withstand the threats to which it may be subjected during construction, testing and operation.

(b) Before a gas distribution network is placed into operation it needs to be inspected and tested to prove its integrity.

(c) Important matters relating to safety, engineering design, materials, testing, operation and inspection needs to be reviewed, documented and approved by a responsible person(s). The responsible person(s) is defined in each case.

(d) Operations and maintenance needs to provide for continued monitoring and safe operation of the gas distribution network.

(e) Where changes occur in or to a gas distribution network, which alter the design assumptions or affect the original integrity, appropriate steps need to be taken to assess the changes, to ensure continued safe operation of the network.

The Australian and New Zealand Technical Regulators have advised that this Standard will only apply to the life cycle of new gas distribution networks and modifications or augmentations to existing assets within gas distribution networks. However, the sections on operations, maintenance, repair, decommissioning, gas quality and risk assessment may be suitable for application to existing assets in existing networks.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Gas distribution networks

Part 2: Steel pipe systems

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies materials, design, construction, installation, testing and maintenance requirements for steel piping systems for use in conjunction with AS/NZS 4645.1, for the distribution of fuel gas suitable for domestic, commercial or industrial uses, where—

(a) the pressure of the gas is not greater than 1050 kPa and the operating temperature range of the materials is from −30°C to 60°C; and

(b) where the hoop stress level is not greater than 20% of the specified minimum yield stress (SMYS) of the pipe used in that system.

NOTE: The relevant statutory authority may regard this Standard as appropriate for fluids other than fuel gas.

1.2 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

NOTE: Documents for informative purposes are listed in the Bibliography.

AS

1074 Steel tubes and tubulars for ordinary service

1110 ISO metric hexagon precision bolts and screws—Product grades A and B
1110.1 Part 1: Bolts

1111 ISO metric hexagon bolts and screws—Product grade C
1111.1 Part 1: Bolts

1112 ISO metric hexagon nuts
1112.1 Part 1: Style 1—Product grades A and B
1112.2 Part 2: Style 2—Product grades A and B
1112.3 Part 3: Product grade C
1112.4 Part 4: Chamfered thin nuts—Product grades A and B

1210 Pressure vessels

1579 Arc-welded steel pipes and fittings for water and waste-water

1674 Safety in welding and allied processes
1674.1 Part 1: Fire precautions
1674.2 Part 2: Electrical

1817 Metallic materials
1817.1 Part 1: Vickers hardness test Test methods