AS 2944.1—2007
(Incorporating Amendment No. 1)

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Australian STANDARD

Plastics pipes and fittings for gas reticulation

Part 1: Polyamide pipes

STANDARDS Australia

This Australian Standard® was prepared by Committee PL-021, PVC, ABS and Polyamide Pipe Systems. It was approved on behalf of the Council of Standards Australia on 12 October 2007.
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- Australian Chamber of Commerce and Industry
- Australian Nuclear Science and Technology Organisation
- Certification Interests (Australia)
- CSIRO Manufacturing and Infrastructure Technology
- Energy Networks Association
- Engineers Australia
- New Zealand Local Government
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- New Zealand Water and Waste Association
- Plastics Industry Pipe Association of Australia
- Plastics New Zealand
- Water Services Association of Australia

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Plastics pipes and fittings for gas reticulation

Part 1: Polyamide pipes

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PREFACE

This Australian Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee PL-021, PVC, ABS and Polyamide Pipe Systems to supersede AS 2944.1—1987. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

This Standard incorporates Amendment No. 1 (November 2018). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

This Standard complements AS 2944.2, *Plastics pipes and fittings for gas reticulation,* Part 2: *Polyamide Fittings* and AS 2943, *Plastics pipes and fittings for gas reticulation—Polyamide compounds*.

The objective of this Standard is to provide minimum requirements for the manufacture and performance of polyamide pipes for pressure applications for use by manufacturers, specifiers and purchasers of these products.

In the preparation of this Standard, consideration has been given to international best practice.

The test criteria specified apply to pipes at the time of manufacture. Pipes which have been in service, might not meet the same performance requirements.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard. Notes to text are for information and guidance only.

CONTENTS

FOREWORD

In this Standard, to determine the nominal pressure class for both PA11 and PA12 pipes, the service (design) co-efficient of (C) with a minimum value of 3.0 is used (refer to 97.5% LPL).

Wall thicknesses for the pipes specified have been calculated from formulas that take into account the hydrostatic design stress of the material and working pressure and diameter of the pipes, however, the wall thickness of some pipes in this Standard has been increased in order to sustain envisaged soil loadings. In the interests of serviceability of the pipes and irrespective of the calculated minimum wall thickness, this Standard does not provide for a wall thickness of less than 1.0 mm.

For special applications, the design wall thickness of pipes can be calculated from the following formula for use at service pressures up to and including 575 kPa at temperatures in the range –20°C to +35°C:

$$T_{\min} = \frac{PD_{\mathrm{m}}}{2S + P} \qquad T_{\min} = \frac{PD_{\mathrm{m\,max}}}{2S + P}$$

where

P = design pressure of pipe, in kilopascals

$D_{\mathrm{m\ max}}$ = maximum mean outside diameter of pipe, in millimetres

$T_{\min}$ = minimum wall thickness of pipe, in millimetres

S = hydrostatic design stress at 23°C of 5000 kPa

STANDARDS AUSTRALIA

Australian Standard
Plastics pipes and fittings for gas reticulation

Part 1: Polyamide pipes

1 SCOPE

This Standard specifies requirements for polyamide pipes for use in gas mains and services for direct burial and reliner applications. Such pipes are intended for use in the distribution of natural gas, manufactured gas, liquefied petroleum gas (LPG) and LPG/air mixtures at pressures up to 400 kPa.

2 APPLICATION

Determination of compliance with this Standard shall be in accordance with Appendix A.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1199	Sampling procedures for inspection by attributes
1199.1	Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
2943	Plastics pipes and fittings for gas reticulation—Polyamide compounds
AS/NZS	
1462	Methods of test for plastics pipes and fittings
1462.1	Part 1: Method for determining the dimensioning of pipes and fittings
1462.3	Part 3: Method for determining the impact characteristics of pipes
1462.6	Part 6: Method for hydrostatic pressure testing of pipes
AS ISO/IEC	
17025	General requirements for the competence of testing and calibration laboratories
HB	
18	Conformity assessment
18.28	Guide 28: Guidance on a third-party certification system for products

A1

4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

4.1 Hoop stress

Stress in a pipe under pressure acting tangentially to the perimeter of a transverse section.

4.2 Hydrostatic design strength

Estimated hoop stress, due to internal hydrostatic pressure, that can be applied continuously at a specified temperature with a high degree of certainty that failure will not occur. It is obtained by the application of a safety factor to the extrapolated 50-year long-term hydrostatic strength value.