



Perforated plastics drainage and effluent pipe and fittings

Part 1: Perforated drainage pipe and associated fittings



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 9 March 2007.

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The following are represented on Committee PL-021:

- Australian Chamber of Commerce and Industry
 - Australian Nuclear Science & Technology Organisation
 - Certification Interests (Australia)
 - CSIRO Manufacturing & Infrastructure Technology
 - Energy Networks Association
 - Engineers Australia
 - Local Government New Zealand
 - Master Plumbers, Gasfitters and Drainlayers New Zealand
 - New Zealand Water & Waste Association
 - Plastics Industry Pipe Association of Australia
 - Plastics New Zealand
 - Water Services Association of Australia
-

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard[®]

Perforated plastics drainage and effluent pipe and fittings

Part 1: Perforated drainage pipe and associated fittings

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PREFACE

This Standard was prepared by the joint Standards Australia/Standards New Zealand Committee PL-021, PVC, ABS and Polyamide Pipe Systems to supersede AS 2439.1—1981.

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.

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 is part of a series on perforated plastics drainage and effluent pipe and fittings, as follows:

AS

- 2439 Perforated plastics drainage and effluent pipe and fittings
- 2439.1 Part 1: Perforated drainage pipe and associated fittings (this Standard)
- 2439.2 Part 2: Perforated effluent pipe and associated fittings for sewerage applications

The objective of this revision is to change the classification system for perforated drainage pipes. The performance of the pipes has not been altered but the manner in which the stiffness is designated has changed. The former stiffness classes 100, 200, 400 and 1000 have been replaced by stiffness classes SN2, SN4, SN8 and SN20 respectively. The SN classification is used in a range of Australian and International Standards for flexible pipes and the committee considered it appropriate to bring this Standard into line with the others.

This is a performance Standard and, therefore, all requirements and tests are related to end use. It is not the intention of the Standard to establish how strong the product is, but rather to determine if the product is strong enough to fulfil the desired function.

The requirements and tests contained in this Standard relate to field conditions as follows:

Bending—pipe is often bent at temperatures close to 0°C.

Straightening—coils are often unwound in cold conditions.

High-temperature impact resistance—pipe laid out in the hot sun must not be soft to the extent that it is damaged during backfilling.

Low-temperature impact resistance—pipe will not fail due to handling, fill material or degradation in service.

Pipe stiffness—pipe must be stiff enough to withstand the design loads after back-filling and settlement.

Elongation—pipe must not excessively elongate during installation.

Joint separation—joints must not separate when subjected to tensile forces induced when laying.

In the preparation of this Standard the committee gave consideration to the following documents:

- | | |
|------------|---|
| ISO | TC 138/WG1-330—Draft Standard for Corrugated Polyethylene Drainage Tubing |
| ASTM F 405 | Specification for Corrugated Polyethylene (PE) Tubing and Fittings |
| BS 4962 | Specification for plastics pipes and fittings for use as subsoil field drains |

DIN 1187 Unplasticized Polyvinyl Chloride (U-PVC); Dimensions, Requirements,
Testing

Specifications used by the Roads and Traffic Authority, NSW

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 are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA

Australian Standard

Perforated plastics drainage and effluent pipe and fittings

Part 1: Perforated drainage pipe and associated fittings

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for perforated plastics pipe and associated fittings designed for use in the drainage of surface and subsurface land, highway and building construction sites.

1.2 APPLICATION

Means for demonstrating compliance with this Standard shall be in accordance with Appendix A.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1199 Sampling procedures for inspection by attributes

1199.1 Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

1327 Plastics—Standard atmospheres for conditioning and testing

AS ISO/IEC

17025 General requirements for the competence of testing and calibration laboratories

AS/NZS

1254 PVC pipes and fittings for storm and surface water applications

1462 Methods of test for plastics pipes and fittings

1462.22 Method 22: Method for the determination of pipe stiffness

HB

18 Conformity assessment

18.28 Guide 28: Guidance on third-party certification system for products

1.4 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 1254 apply.

1.5 TYPES

Perforated plastics drainage pipe shall be either one of the following:

- (a) Type 1—Corrugated pipe.
- (b) Type 2—Plain wall pipe.

1.6 CLASSIFICATION

Type 1 and Type 2 pipe shall be classified as SN2, SN4, SN8 or SN20.

SECTION 2 GENERAL REQUIREMENTS

2.1 GENERAL

This Section specifies the minimum requirements applicable to perforated drainage pipes.

2.2 MATERIAL

Any suitable plastics material may be used to manufacture the pipe or fitting, provided the pipe or fitting so formed is capable of complying with the performance requirements of this Standard at the time of manufacture and for a period of up to 24 months of outdoor exposure.

Additives containing compounds based on lead (Pb), cadmium (Cd) or mercury (Hg) shall not be used. Irrespective of their original composition, recycled PVC is permitted, but only in the centre of sandwich construction pipe.

Any plastics material that would be unable to comply with the requirements of this Standard after 24 months outdoor exposure shall be protected at the time of manufacture by suitable means in order to provide a satisfactory storage life of at least 24 months.

2.3 FREEDOM FROM DEFECTS

NOTE: The defects described in Clauses 2.3.1 and 2.3.2 cannot be completely quantified. Where the presence, size or frequency of any such defects are considered to be of concern, arrangements should be made between the purchaser/approving authority/certifying body (as appropriate), and the manufacturer. This may be achieved by the provision of acceptable type samples.

2.3.1 General

Defects shall not affect the performance or function of the pipe or fittings in service.

Pipes and fittings shall be free from blisters and heat marks. When grooves, wrinkles, rippling, dents or projections are present, the pipe shall comply with the dimensional requirements of this Standard.

2.3.2 Spigot ends

Spigot ends of pipes and fittings shall be free from chips and rough edges and shall have sharp edges removed. Jointing surfaces shall be smooth.

2.4 DIMENSIONS

2.4.1 Diameter

When measured in accordance with Appendix B, the outside diameter of Type 1 pipe shall conform to the dimensions specified in Table 2.1 and the outside diameter of Type 2 pipe shall conform to the dimensions specified in Table 2.2.

TABLE 2.1
DIMENSIONS OF TYPE 1 PIPE

Nominal outside diameter	Outside diameter	
	Minimum	Maximum
40	41.0	43.0
50	49.0	52.0
65	64.0	67.0
80	79.0	82.0
100	99.0	102.0
125	124.0	128.0
160	158.0	163.0
200	198.0	203.0

TABLE 2.2
DIMENSIONS OF TYPE 2 PIPE

Nominal size	Outside diameter	
	Minimum	Maximum
40	48.1	48.4
50	60.2	60.5
90	90.0	90.3
100	110.0	110.4
150	160.0	160.5
225	250.0	250.7
300	315.0	315.9

NOTE: The nominal sizes given in Table 2 are not necessarily the same as the actual outside diameters, as Type 2 pipes before slotting may conform to other standards.

2.4.2 Length

Unless otherwise specified, pipe shall be supplied in standard lengths as follows:

- (a) Type 1—6, 20, 50, 100, 150 or 200 m.
- (b) Type 2—6 m (excluding socket).

SECTION 3 PERFORATIONS

3.1 TYPE 1 PIPE

When Type 1 pipe is measured in accordance with Appendix B, it shall have a clear water opening of not less than 1500 mm² per metre of pipe.

The perforations shall comply with the following requirements:

- (a) They shall be in the form of slots and shall be made in the bottom of the corrugation valleys with the major dimension of the slot circumferential (see Appendix B, Figure B1).
- (b) The width of each slot shall be in the range of 0.5 mm to 1.0 mm or 1.0 mm to 1.5 mm and the ratio of length to width shall be between 3 and 10.
- (c) Not more than 10% of the perforation widths shall lie outside the specified slot width range.
- (d) No perforation shall have a width greater than 0.5 mm above the specified slot width range.
- (e) There shall not be less than three rows of perforations along the entire length of the pipe.
- (f) The longitudinal distribution of the perforations shall be uniform and the rows shall be equi-spaced around the pipe circumference.

3.2 TYPE 2 PIPE

When Type 2 pipe is measured in accordance with Appendix B, it shall have a clear water opening of not less than 1500 mm² per metre of pipe.

The perforations shall comply with the following requirements:

- (a) The perforations shall be in the form of slots and shall be made with the major dimension of the slot longitudinal.
- (b) The width of the slot shall be in the ranges 0.5 mm to 1.0 mm, 1.0 mm to 1.5 mm or 1.5 mm to 2.0 mm and the ratio of length to width shall be between 3 and 40.
- (c) Not more than 10% of the perforation widths shall lie outside the specified slot width range.
- (d) No perforation shall have a width greater than 0.5 mm above the specified slot width range.
- (e) There shall be not less than three rows of perforations along the entire length of the pipe.
- (f) The longitudinal distribution of the perforations shall be uniform and the rows shall be equi-spaced around the pipe circumference.

3.3 FITTINGS

Couplings, tees, adaptors and other fittings used with drainage pipe complying with this Standard need not be perforated.

S E C T I O N 4 S T O R A G E A N D T R A N S P O R T

Pipes and fittings supplied shall be packaged, stored and transported appropriately to prevent damage.

If pipe is supplied in coils or bundles of straight lengths, any ties used shall not cause permanent denting or deformation of the pipe.