

Australian/New Zealand Standard™

**PVC-U pipes and fittings for drain, waste
and vent applications**



AS/NZS 1260:2017

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee PL-021, PVC, ABS and Polyamide Pipe Systems. It was approved on behalf of the Council of Standards Australia on 22 March 2017 and by the New Zealand Standards Approval Board on 5 April 2017.
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Australian/New Zealand Standard™

PVC-U pipes and fittings for drain, waste and vent applications

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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/NZS 1260:2009.

The objective of this Standard is to outline minimum requirements for the manufacture and performance of PVC-U pipes and fittings for non-pressure drain, waste and vent (DWV) applications for use by manufacturers, specifiers and purchasers of such products.

The test criteria specified apply to pipes and fittings at the time of manufacture and are not intended to be used to assess the results from tests on pipes or fittings that have been in service.

For pipes of nominal diameter up to and including 80 mm, the pipes are specified solely in terms of the materials used and dimensions. There is no pipe stiffness requirement regardless of pipe type, as the stiffness of pipes in this size range is considerably higher than the minimum values used for larger pipes. By continuing to specify in terms of dimensions, the Standard ensures that existing installation practices, for example, the spacing between supports on near horizontal runs, can continue to be used. Most pipes installed above ground are in this size range.

Pipes of nominal size of 100 mm and above are specified in terms of minimum stiffness. Sufficient dimensional information is provided to ensure compatible joints and resistance to abrasion.

Pipes are specified in terms of stiffness classes measured in a standard test. The classes are not exactly the same as the earlier classification scheme (Class SH and Class SEH) but are similar. Classes SN4 and SN6 are suggested for plumbing and domestic use and for general municipal drainage.

Classes SN8 and SN10 are suggested for general municipal drainage and installations where higher pipe stiffness is required to minimize deflection of the installed pipes due to the load imposed by the backfill or surcharge or to poor installation practice.

Stiffness Class SN16 has been included in response to a request from New Zealand users who previously specified Class SEH-C for applications where heavy loads, for example, traffic loads, acted on buried pipes. Australian Standards for sewer and drainage pipes have not included a pipe of similar stiffness in the past and Australian manufacturers may not have DWV pipes of this class generally available.

It should be noted that, by convention, plastics pipe systems are often designed on the basis of 50 years extrapolated test data. This is established international practice but is not intended to imply the service life of drainage pipes is limited to 50 years. For correctly manufactured and installed systems, the actual life cannot be predicted, but can logically be expected to be well in excess of 100 years before major rehabilitation is required.

Appendix C sets out the provisions for best environmental practice PVC for drain, waste and vent applications. These provisions are in accordance with the credit criteria established by the Green Building Council of Australia in their Green Star rating program.

For best environmental practice PVC satisfying the provisions of Appendix C, an attestation of conformity for upstream materials such as chlorine and vinyl chloride, is necessary. Such attestations can take the form of a declaration of conformity prepared and maintained in accordance with AS ISO/IEC 17050, *Conformity assessment—Supplier's declaration of conformity*, Part 1: *General requirements*, and Part 2: *Supporting documentation*. Part 1 addresses the contents of the declaration of conformity and the procedures necessary to ensure ongoing conformity. Part 2 addresses the documentation required to support a declaration of conformity including the contents, traceability, availability and retention period.

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.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

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Australian/New Zealand Standard**PVC-U pipes and fittings for drain, waste and vent applications**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for PVC-U pipes and fittings for sewer, drain, waste and vent applications above ground or below ground and is intended to be used where the pipeline is operating under gravity flow and the operating pressure is low. The Standard includes requirements for both plain and structured wall pipes and fittings.

NOTE: Requirements for the installation and use of pipes manufactured to this Standard are set out in AS/NZS 2032, AS/NZS 2566.1, AS/NZS 2566.2, AS/NZS 3500.2, AS/NZS 3500.5, WSA 02 and WSA 06.

Appendix C sets out additional requirements for pipes and fittings classed as best environmental practice PVC for drain, waste and vent applications.

1.2 APPLICATION

Fittings in accordance with this Standard shall satisfy the date marking requirements within three months of publication of this revision.

Appendix A specifies a means of demonstrating conformance with this Standard. Appendix A also sets out the minimum requirements for a sampling and testing plan. Where variations to this plan are made, demonstration of conformance with the minimum requirements may be necessary.

1.3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

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

AS

681	Elastomeric seals—Material requirements for pipe joint seals used in water and drainage applications
681.1	Part 1: Vulcanized rubber
681.2	Part 2: Thermoplastic elastomers
1172	Water closets (WCs)
1172.1	Part 1: Pans
1199	Sampling procedures for inspection by attributes
1199.1	Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
1646	Elastomeric seals for waterworks purposes
2700	Colour standards for general purposes
2887	Plastic waste fittings

AS ISO/IEC

- 17050 Conformity assessment—Supplier's declaration of conformity
- 17050.1 Part 1: General requirements
- 17050.2 Part 2: Supporting documentation

AS/NZS

- 1462 Methods of test for plastics pipes and fittings
- 1462.1 Method 1: Method for determining the dimensions of pipes and fittings
- 1462.2 Method 2: Method for determining the flattening properties of plastics pipes and fittings
- 1462.3 Method 3: Method for determining the impact characteristics of pipes
- 1462.4 Method 4: Method of determining reversion of UPVC pipes
- 1462.5 Method 5: Vicat softening temperature
- 1462.8 Method 8: Method of testing the leaktightness of assemblies
- 1426.11 Method 11: Method for high temperature stress-relief testing of fittings
- 1462.13 Method 13: Method for the determination of elastomeric seal joint contact width and pressure
- 1462.15 Method 15: Method for the determination of vinyl chloride monomer content
- 1462.16 Method 16: Method for high temperature testing of pipe
- 1462.21 Method 21: Method for determination of bond strength
- 1462.22 Method 22: Method for the determination of pipe stiffness
- 1462.23 Method 23: Method for determination of ring flexibility
- 1477 PVC pipes and fittings for pressure applications
- 2032 Installation of PVC pipe systems
- 3500 Plumbing and drainage
- 3500.0 Part 0: Glossary of terms
- 3879 Solvent cements and priming fluids for PVC (PVC-U and PVC-M) and ABS and ASA pipes and fittings
- 4765 Modified PVC (PVC-M) pipes for pressure applications

ISO

- 3951 Sampling procedures for inspection by variables
- 3951-1 Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL
- 3951-2 Part 2: General specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection of independent quality characteristics
- 3951-3 Part 3: Double sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
- 3951-5 Part 5: Sequential sampling plans indexed by acceptance quality limit (AQL) for inspection by variables (known standard deviation)
- 13967 Thermoplastics fittings—Determination of ring stiffness

EN

- 1055 Plastics piping systems. Thermoplastics piping systems for soil and waste discharge inside buildings. Test method for resistance to elevated temperature cycling

1.4 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 3500.0 and those below apply.

1.4.1 Best environmental practice PVC pipes and fittings

Pipes or fittings produced by a manufacturer meeting both of the requirements of the credit criteria prescribed in Appendix C and the normative parts of this Standard.

1.4.2 Effective seal

That part of the interface between the elastomeric seal and the spigot and socket where the contact pressure is greater than 0.4 MPa for vulcanized seals and 0.47 MPa for thermoplastic seals.

1.4.3 Effective sealing length

1.4.3.1 Socket-mounted seals

The distance between the cross-sectional centre of the elastomeric sealing ring installed in the socket and the root of the socket.

1.4.3.2 Spigot-mounted seals

The distance from the position of effective seal of the elastomeric sealing ring to the mouth of a socket or the point at which the mouth of a socket flares.

1.4.4 Fabricated fitting/assembly

A fitting or assembly built up by joining together, by solvent cement, elastomeric seal or heat fusion, a number of components which may be—

- (a) moulded, extruded or manufactured by other means;
- (b) formed by reshaping of pipe or fittings, or both; or
- (c) a combination of the above.

NOTE: Moulded fittings joined by means of moulded sockets conforming with this Standard are not considered to be fabricated fittings.

1.4.5 Inside wall thickness

The thickness of the wall section in direct contact with the medium being transported (see Figure 4.1).

1.4.6 Maximum differential displacement

A relative transverse displacement between the spigot and socket surfaces at one point.

1.4.7 Minimum jointing compression conditions

The jointing condition brought about by a combination of spigot, socket and ring dimensional tolerances and ring hardness, such that with the spigot concentric with the socket, a minimum compressive force is generated between the elastomeric seal and the pipe surface.

1.4.8 Moulded fitting

A fitting manufactured entirely by injection moulding.

NOTE: Typical geometries of moulded fittings are given in Appendix B.

1.4.9 Out-of-roundness (sometimes referred to as ovality)

The difference between the measured maximum outside diameter and the measured minimum outside diameter in the same cross-section of the pipe.

1.4.10 Plain wall construction

A pipe or fitting of a homogeneous material with plain inside and outside surfaces.

1.4.11 Recycled PVC-U (recyclate)

PVC-U that can be reclaimed from salvaged materials, cleaned and graded into specific types, dependent on designation, and made or reprocessed into new products.

NOTE: Rework generated from the manufacturer's own production is not deemed to be recycled PVC-U.

1.4.12 Ribbed or hollow profile construction

A pipe or fitting with a plain inside surface and with an outside helical or annular ribbed or corrugated surface.

1.4.13 Sandwich construction

A pipe or fitting with smooth inside and outside surfaces in which the inner and outer wall layers are of solid PVC-U and are connected by a foamed or solid intermediate layer of PVC-U.

1.4.14 Sharp edge

A clearly defined edge, corner or point that has the potential to cause personal injury to the handler (e.g. on a pipe end, fitting or component).

1.4.15 Structured wall

A term used to collectively describe sandwich, ribbed and hollow profile pipes and fittings covered by this Standard.

1.5 RING BENDING STIFFNESS

Ring bending stiffness for flexible pipes is calculated from the following equation:

$$S_{DI} = \frac{E_b I}{D^3} 10^6 \quad \dots 1.5(1)$$

where

S_{DI} = initial (3 min) ring-bending stiffness of the pipe, in Newtons/metre/metre

E_b = initial (3 min) ring-bending modulus, in megapascals

I = second moment of area of the pipe wall for ring bending

D = diameter at neutral axis of the pipe wall, in metres

For plain walls I , is calculated from the following equation:

$$I = \frac{t^3}{12} \quad \dots 1.5(2)$$

where

t = minimum wall thickness of plain wall pipe, in metres

1.6 NOTATION

The following symbols are used in this Standard:

D = diameter at neutral axis of the pipe wall, in metres

DN = nominal size, in millimetres

D_{major} = mean major diameter, in millimetres

D_{minor} = mean minor diameter, in millimetres

D_m = mean outside diameter, in millimetres

D_i	=	socket mouth mean diameter, in millimetres
D_r	=	socket root mean diameter, in millimetres
D_{sm}	=	mean socket inside diameter, in millimetres
E_b	=	initial (3 min) ring-bending modulus, in megapascals
EL	=	effective length (of pipe), in millimetres
I	=	second moment of area of the pipe wall for ring bending, in mm ⁴
l	=	taper length, in millimetres
L	=	socket length, in millimetres
S	=	effective sealing length (see Section 7), in millimetres
S_{DI}	=	initial (3 min) ring-bending stiffness of the pipe, in newtons/metre/metre
t	=	minimum wall thickness of plain wall pipe, in metres
T	=	wall thickness, in millimetres
T_{min}	=	minimum wall thickness of plain wall fittings, in millimetres
T_s	=	socket wall thickness, in millimetres
α	=	acute angle subtended by the junction or bend, in degrees
c	=	throat height of sweep junctions and bends, in millimetres
b	=	throat depth for sweep junction and bends, in millimetres
β	=	pan connector angle, in degrees
R	=	boundary trap radius, in millimetres

1.7 CLASSIFICATION

Pipes with nominal diameters up to and including 80 mm are classified simply in terms of their dimensions. This Standard only allows one class of pipe in this size range; however, pipes may be plain wall construction or sandwich construction.

Pipes with nominal diameters of 100 mm and above are classified in terms of stiffness, based on minimum ring-bending stiffness values measured in short-term tests. There are five stiffness classes (i.e. SN4, SN6, SN8, SN10 and SN16) but not all types of pipe construction are permitted in each class. Table 1.1 shows which forms of pipe construction are permitted in each class.

Injection-moulded plain wall fittings to this Standard are suitable for use in systems using SN classes up to and including SN16 plain wall or sandwich construction pipe.

Injection-moulded structured wall fittings are classified as Class SN8.

TABLE 1.1
FORMS OF PIPE CONSTRUCTION PERMITTED
IN THE VARIOUS CLASSES

DN	Dimensions	Class				
		SN4	SN6	SN8	SN10	SN16
≤80	Plain wall and sandwich	—	—	—	—	—
100	—	—	Plain wall and sandwich	Profile	Plain wall and sandwich	All
≥150	—	All	—	All	—	All

SECTION 2 GENERAL REQUIREMENTS

2.1 GENERAL

This Section specifies the minimum general requirements applicable to PVC-U pipes and fittings for drain waste and vent applications.

2.2 COMPOSITION

The material from which the pipe or fitting is produced shall consist of poly (vinyl chloride) (PVC) and suitable additives such as lubricants, pigments and stabilizers. The PVC content of the pipe or fitting shall be not less than 80% by mass.

Additives shall include a minimum of 1.5 parts of rutile titanium dioxide (TiO₂) pigment per 100 parts by mass of PVC content. The titanium dioxide pigment shall contain at least 90% by mass of TiO₂. Establishment of the TiO₂ content shall be by process control methods. This requirement does not apply to fittings with parallel sockets.

Additives containing compounds based on lead (Pb), cadmium (Cd) or mercury (Hg) shall not be used except that recycled PVC-U material containing these elements may be used in the core of sandwich construction pipe.

When determined in accordance with AS/NZS 1462.15, the vinyl chloride monomer level shall not exceed 1 mg/kg. If the pipe is manufactured from resin with a residual vinyl chloride monomer content of less than 1 mg/kg, this requirement shall be deemed to have been met. This requirement is not applicable to recycle.

2.3 COLOUR

Except where otherwise specified in this Clause the colour of pipes and fittings shall be grey, no lighter than the colour Pearl Grey N11 and no darker than the colour Cloud Grey N22 of AS 2700. For sandwich construction pipes, this requirement shall only apply to the outer wall. Fittings greater than DN 150 with parallel sockets have no colour requirement.

Where specified by the purchaser for particular applications, the pipe and fittings may be white.

NOTE: White pipe has been and is used for internal exposed situations.

For export purposes, outside of Australia and New Zealand, the colour may be specified as required.

NOTE: Conformity with the colour requirements may be evaluated by visual examination against the relevant colour reference of AS 2700. In the case of a dispute, measure the colour ordinates of the pipe or fitting.

2.4 FREEDOM FROM DEFECTS

NOTE: The defects described in Clauses 2.4.1 and 2.4.2 cannot be completely quantified. Where the presence, size or frequency of any such defects are considered to be of concern, arrangements should be made by agreement between relevant parties to confirm acceptance of the product. This may be achieved by the provision of acceptable type samples.

2.4.1 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 be in accordance with the dimensional requirements of this Standard.

2.4.2 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.

2.5 REQUIREMENTS FOR ELASTOMERIC SEALS

Except for special plumbing joints (see Clause 3.4.1) elastomeric seals shall be in accordance with AS 1646, AS 681.1 and AS 681.2.

2.6 SOLVENT CEMENTS

Pipes and fittings with tapered sockets manufactured to this Standard, which are suitable for solvent cement jointing, are intended for use with solvent cements and priming fluids in accordance with AS/NZS 3879.

Fittings with parallel sockets manufactured to this Standard, which are suitable for solvent cement jointing, are intended for use with priming fluids and gap-filling solvent cement in accordance with AS/NZS 3879.

2.7 PACKAGING, STORAGE AND TRANSPORTATION

Pipes and fittings manufactured to this Standard shall be packaged, stored and transported in accordance with AS/NZS 2032 in a manner that will maintain the physical and dimensional integrity of pipes and fittings.

For fittings greater than DN 150 with parallel sockets, manufacturers' storage instructions shall stipulate the limitations for storage in direct sunlight.

2.8 ADDITIONAL REQUIREMENTS FOR BEST ENVIRONMENTAL PRACTICE PVC PIPES AND FITTINGS

For pipes and fittings that are to be classified as 'best environmental practice PVC', the additional requirements set out in Appendix C shall apply.

SECTION 3 PERFORMANCE REQUIREMENTS

3.1 GENERAL

This Section specifies the minimum performance requirements applicable to PVC-U pipe and fittings for drain, waste and vent applications.

3.2 TESTS ON PIPES

3.2.1 Pipe impact characteristics at 20°C

When determined in accordance with the 20°C impact test of AS/NZS 1462.3 using the appropriate mass, the number of impacts specified in Table 3.1, and a drop height of $2 + 0.1, -0$ m, the impact characteristics shall be such that the pipe shall have a true impact rate (TIR) below 10% at a confidence level of 90%. Structured wall pipes shall be tested with a striker diameter of 100 ± 0.5 mm except for DN 100 pipes of sandwich construction, which shall be tested with a striker diameter of 25 ± 0.5 mm.

TABLE 3.1
20°C IMPACT TEST PARAMETERS

Nominal size DN	Total mass kg	Number of impacts per specimen
32	1.38	1
40	1.5	1
50	1.75	3
65	2.00	3
80	2.25	4
100	2.75	6
150	3.50	8
175	3.75	10
225	5.75	14
≥300	7.50	20

NOTE: The tolerance on mass is 0.05, -0 kg.

3.2.2 Reversion (for plain wall pipes only)

When determined in accordance with AS/NZS 1462.4, the reversion of the pipe shall not exceed 5%, nor shall the pipe show any signs of cracks, cavities or blisters resulting from the heating.

3.2.3 Bond strength (for hollow profile wall pipes only)

When tested in accordance with AS/NZS 1462.21 for a pipe hollow profile wall that includes a bond between an inner and outer wall, the separation of the two walls, without tearing, shall not exceed 75% of the maximum contact width on any section.

3.2.4 Pipe stiffness

When tested in accordance with AS/NZS 1462.22 the pipe stiffness of structured wall pipes and all pipes greater than DN 80 shall be not less than that given in Table 3.2 for the relevant pipe class.

TABLE 3.2
MINIMUM PIPE STIFFNESS VALUES

Class	Stiffness N/m/m
SN4	4 000
SN6	6 000
SN8	8 000
SN10	10 000
SN16	16 000

3.2.5 Ring flexibility test (for structured wall pipes only)

When tested in accordance with AS/NZS 1462.23, using a force raised continuously to achieve a 30% deflection, a test specimen of pipe shall not exhibit any cracking in any part of the wall structure, wall delamination, rupture or permanent buckling.

3.2.6 Softening temperature (Vicat test)

When tested in accordance with AS/NZS 1462.5, the softening temperature of the pipes shall be not less than 76°C.

This test does not apply to the intermediate layer of a sandwich wall pipe.

3.2.7 Elevated temperature cycling test on structured wall pipes (applicable up to and including size DN 80)

When tested in accordance with EN 1055, using the test assembly specified in EN 1055, there shall be no leakage, and sagging shall be less than or equal to $0.1 \times \text{DN}$.

3.3 TESTS ON MOULDED AND FABRICATED FITTINGS

3.3.1 Hydrostatic pressure test (applicable only to fittings with inspection or access openings and to fabricated fittings)

When tested in accordance with the hydrostatic pressure test of AS/NZS 1462.8, at an internal pressure of 85 ± 5 , -0 kPa for 60 ± 5 , -0 min, the assembled fitting shall not leak.

3.3.2 Hydrostatic pressure test (applicable to pan connectors)

When connected to a minimum pan spigot in accordance with AS 1172.1, pan connectors shall be capable of withstanding a hydrostatic pressure of 2 ± 0.1 , -0 m head of water for 5 ± 1 , -0 min without any leakage.

3.3.3 Liquid infiltration test (applicable only to fittings with inspection or test openings)

When an assembled fitting, tightened to a torque of 15 ± 1 , -0 N.m, where applicable, is subjected to an internal vacuum or external hydrostatic pressure resulting in a pressure differential of 80 ± 5 , -0 kPa for 60 ± 5 , -0 min, in accordance with AS/NZS 1462.8, it shall not leak.

3.3.4 High temperature stress relief test (applicable only to injection-moulded fittings)

When determined in accordance with AS/NZS 1462.11, at a temperature of $150 \pm 4^\circ\text{C}$ for 30 ± 3 , -0 min, the high temperature stress relief properties of the fitting shall be in accordance with the following requirements:

- (a) There shall be no evidence of inclusions or voids of size greater than 20% of the wall thickness up to a maximum of 1 mm.
- (b) Delamination or damage at the injection point shall not have reduced the wall thickness to less than 50% of the minimum wall thickness specified in Table 5.2.
- (c) The weld line shall not open to a depth of more than 50% of the wall thickness.
NOTE: The weld line is likely to become prominent, and the fitting distorted, but this does not constitute a failure.
- (d) Not more than 5% of the total internal and external surface area of the fitting shall exhibit blisters and/or surface delamination.

3.3.5 Softening temperature (Vicat test)

When tested in accordance with AS/NZS 1462.5, the softening temperature of injection-moulded fittings shall be not less than 74°C.

This test does not apply to the intermediate layer of a sandwich wall fitting.

3.3.6 Stiffness (for structured and hollow profile wall fittings only)

When tested in accordance with ISO 13967, the stiffness value shall be not less than 8000 N/m/m.

3.3.7 Elevated temperature cycling test on structured wall fittings (applicable up to and including size DN 80)

When tested in accordance with EN 1055 using the test assembly specified in EN 1055, there shall be no leakage.

3.4 TESTS ON ELASTOMERIC SEAL JOINTS

3.4.1 General

Special plumbing joints, for example, those designed to connect to sanitary fixtures and to other pipe materials, incorporating elastomeric sealing elements are not considered as elastomeric seal joints for the purpose of this Clause.

3.4.2 Hydrostatic pressure test

When tested in accordance with AS/NZS 1462.8, with a diametral distortion of 7.5%, the assembled joint shall withstand an internal pressure of 80 +5, -0 kPa for 60 +5, -0 min without leakage.

3.4.3 Liquid infiltration test

When tested in accordance with AS/NZS 1462.8, with a diametral distortion of 7.5%, the assembled joint shall not leak, when subjected to an internal vacuum corresponding to a gauge pressure of -80 kPa to -85 kPa for 60 +5, -0 min.

3.4.4 Contact width and pressure

When determined in accordance with AS/NZS 1462.13, elastomeric seals manufactured to—

- (a) AS 1646 and AS 681.1 shall have a contact pressure exceeding 0.40 MPa over a continuous width of 4 mm.
- (b) AS 1646 and AS 681.2 shall have a contact pressure exceeding 0.47 MPa over a continuous width of 4 mm.

3.5 ADDITIONAL TESTS ON PIPE AND FITTINGS CONTAINING RECYCLED UNPLASTICIZED PVC

3.5.1 Flattening test

When tested in accordance with AS/NZS 1462.2, there shall be no evidence of splitting, cracking or breaking. When testing fittings, where it is not possible to cut the test specimen into a 50 mm long strip, the test specimen shall be cut from the socket or spigot of the fitting and shall have a minimum length of half the socket or spigot length.

3.5.2 Pipe high temperature test (not applicable to intermediate layers of pipes of sandwich construction)

When tested at 180°C in accordance with AS/NZS 1462.16 the pipe shall not show any splits, delamination, porosity or inclusions.

SECTION 4 PIPES

4.1 GENERAL

This Section specifies the dimensional requirements for PVC-U pipes for drain, waste and vent applications, including both plain wall and structured wall pipes, and for pipe sockets. Marking requirements are also specified.

4.2 DIAMETER AND WALL THICKNESS

Pipe dimensions shall be measured in accordance with AS/NZS 1462.1. The dimensions shall be in accordance with Table 4.1 for plain wall pipes, Table 4.2 for ribbed and profile wall pipes and Table 4.3 for sandwich construction pipes.

NOTE: Wall thicknesses are only specified for pipes with $DN \leq 80$ mm.

In the case of structured wall pipes of sandwich construction, the inside wall thickness shall be measured with suitable apparatus, which shall demonstrate that the wall thickness meets the requirements of the Standard. In the case of dispute, the inside wall thickness shall be measured using a microscope fitted with a staged micrometer and calibrated measuring scale capable of measuring to ± 0.01 mm. Figure 4.1 shows the inside wall thickness (T) of typical structured wall pipes and fittings.

4.3 LENGTH

The effective length of the pipe (unless otherwise specified), measured in accordance with AS/NZS 1462.1, shall be not less than 6.00 m.

The effective length of socketed pipes shall be the overall length of pipe less insertion depth(s). The effective length of plain-ended pipes shall be the overall length (see Figure 4.2).

4.4 PIPE SPIGOT ENDS

Pipe spigot ends, measured in accordance with AS/NZS 1462.1, shall be normal to the main axis of the pipe spigot within the tolerances for end squareness given in Table 4.1, Table 4.2 or Table 4.3, as applicable.

4.5 SOCKETS FORMED ON PIPE ENDS

Sockets formed on the ends of pipe shall be parallel within 2° of the pipe axis. Sockets formed on the ends of pipe for solvent cement jointing shall conform to the dimensions given in Table 4.4. Sockets shall be concentric with the pipe to within 2.5% of pipe mean outside diameter for pipes up to and including DN 150 and 1.0% for larger pipes. The jointing surface of pipe sockets for solvent cement jointing shall taper uniformly from the mouth to the root of the socket.

Sockets formed on the ends of pipe for elastomeric seal jointing shall be in accordance with the requirements of Section 7.

TABLE 4.1
DIMENSIONS OF PLAIN WALL PIPES

millimetres						
Nominal size DN	Mean outside diameter D_m		Out-of-roundness	Wall thickness	Mean internal diameter	Tolerance on end squareness
	min.	max.	max.	min.	min.	
32	36.2	36.5	1.0	1.9	30	1
40	42.8	43.1	1.0	2.0	36	1
50	55.7	56.0	1.2	2.2	48	2
65	68.7	69.1	1.6	2.7	60	2
80	82.3	82.7	1.7	2.9	73	3
100	110.0	110.4	2.7	—	98	4
150	160.0	160.5	3.9	—	143	6
175	200.0	200.6	4.8	—	178	7
225	250.0	250.7	6.0	—	224	9
300	315.0	315.9	7.6	—	274	11
375	400.0	401.0	9.6	—	352	14
475	500.0	501.0	12.0	—	440	17
600	630.0	631.0	15.2	—	554	22

TABLE 4.2
DIMENSIONS OF RIBBED AND PROFILE WALL PIPES

millimetres				
Nominal size DN	Minimum mean internal diameter	Maximum out-of-roundness	Minimum inside wall thickness T	Tolerance on end squareness
100	95	2.7	1.0	4
150	143	3.9	1.3	6
175	175	4.8	1.5	7
225	214	6.0	1.7	9
300	285	7.6	2.0	11
375	356	9.6	2.4	14