



**WMTS-508:2013**  
**Plastics Piping Systems for Soil  
and Waste Discharge – with Noise  
Reduction Characteristics**

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WaterMark Technical Specification

2013







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## IMPORTANT NOTICE AND DISCLAIMER

On 25 February 2013 management and administration of the WaterMark Certification Scheme transferred to the Australian Building Codes Board (ABCBC). From this date all new technical specifications will be named WaterMark Technical Specifications (WMTS). Within two years all existing ATS will be renamed WMTS. During this initial period both terms may be used and accepted. All new and recertified Certificates of Conformity will reference WMTS. Certificates of Conformity that currently reference ATS will be re-issued referencing the equivalent WMTS during this initial period. The WaterMark Schedule of Specifications lists all current WMTS and, where appropriate, the former ATS name.

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The ABCBC welcomes suggestions for improvement in the WMTS, and encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact the ABCBC via phone on 1300 134 631, email at [watermark@abcb.gov.au](mailto:watermark@abcb.gov.au) or write to the WaterMark Administering Body, ABCBC, GPO Box 9839, Canberra ACT 2601.

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## PREFACE

This WaterMark Technical Specification was originally prepared by the Joint Standards Australia/Standards New Zealand Committee WS-031, Technical Procedures for Plumbing and Drainage Products Certification.

The objective of this WaterMark Technical Specification is to enable product certification in accordance with the requirements of the Plumbing Code of Australia (PCA).

The word 'VOID' set against a clause indicates that the clause is not used in this WaterMark Technical Specification. The inclusion of this word allows a common use clause numbering system for the WaterMark Technical Specifications.

The term 'normative' has been used in this WaterMark Technical Specification to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a WaterMark Technical Specification.

The test protocol and information in this WaterMark Technical Specification was arranged by committee members to meet the authorization requirements given in the PCA.

The WaterMark Schedule of Specifications and List of Exempt Products are dynamic lists and change on a regular basis. Based on this function, these lists have been removed from the WaterMark Certification Scheme document known as AS 5200.000 Technical Specification for Plumbing and Drainage Products and are now located on the ABCB website ([www.abcb.gov.au](http://www.abcb.gov.au)). These lists will be version controlled with appropriate historic references.



## ACKNOWLEDGEMENTS

WaterMark Technical Specification WMTS-508:2013 was prepared by Standards Australia Committee WS-031, Technical Procedures for Plumbing and Drainage Products Authorisation. It was approved by the ABCB on 5 April 2013.

The following organisations were represented on Committee WS-031 in the preparation of WMTS-508:2013:

- Australian Industry Group
- Australian Stainless Steel Development Association
- Copper Development Centre—Australia
- CSIRO Manufacturing and Infrastructure Technology
- National Plumbing Regulators Forum
- Plastics Industry Pipe Association of Australia
- Plumbing Products Industry Group
- Water Services Association of Australia



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## **1 SCOPE**

This WaterMark Technical Specification sets out the requirements for noise reduction pipes and fittings made of a compound of polypropylene and inert mineral additives.

Noise reduction pipes and fittings are designed for waste and drainage installations and may be used at intermittent operating temperatures up to 95°C.

This specification shall be read in conjunction with AS/NZS 7671 where applicable.

These products require certification to WaterMark level 2.

## **2 APPLICATION**

Noise reduction pipes and fittings are intended to be used for above ground waste installations inside buildings.

Appendix A sets out the means by which compliance with this Technical Specification shall be demonstrated by a manufacturer for the purpose of product certification (see Appendix A).

## **3 REFERENCED DOCUMENTS**

The following documents are referred to in this WaterMark Technical Specification:

AS

1646                      Elastomeric seals for waterworks purposes

AS/NZS

7671                      Plastics piping systems for soil and waste discharge (low and high temperature) inside buildings – Polypropylene (PP) (ISO7671:2003, MOD)

3500                      Plumbing and drainage

3500.0                    Part 0: Glossary of terms

3500.2                    Part 2: Sanitary plumbing and drainage

5065                      Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications

4131                      Polyethylene (PE) compounds for pressure pipes and fittings

2566.2                    Buried flexible pipelines – Installation

ISO

- 1183.1                      Plastics – Methods for determining the density of non – cellular plastics.  
Part1: Immersion method, liquid pycnometer method and titration method
- 1133.1                      Plastics -- Determination of the melt mass-flow rate (MFR) and the melt  
volume-flow rate (MVR) of thermoplastics
- 11357.1                    Plastics – Differential scanning calorimetry (DSC) – Part 1: General  
principles
- 11357.6                    Plastics – Differential scanning calorimetry (DSC) – Part 6: Determination  
of oxidation induction time (isothermal OIT) and oxidation induction  
temperature (dynamic OIT)

## **4            DEFINITIONS**

For the purpose of this WaterMark Technical Specification, the definitions given in AS/NZS 3500.0 and AS/NZS 5065 apply.

## **5            MATERIALS**

Pipes and fittings shall be made of a compound of homopolymer/copolymer polypropylene and inert filler. Polypropylene raw material shall comply to AS/NZS 7671 Cl.4 with exception of Cl. 4.3 melt mass-flow rate.

For outdoor applications the plastic material formulation shall be stabilized by suitable ultraviolet light stabilizers.

The elastomeric seals shall comply with AS 1646.

## **6            MARKING**

### **6.1        Pipes**

Marking details shall be legibly printed or formed on the pipe in such a way that:

- a) the marking does not initiate cracks or other types of failure; and
- b) with normal storage, weathering and processing, and the permissible method of installation and use, legibility is maintained for the life of the pipe.

The letters of the marking shall be a minimum height of 5 mm, which shall be repeated at intervals such that the distance between markings is not greater than 1 m.



Marking shall show the following:

- a) Manufacturer's name, brand or trademark
- b) Watermark logo and licence number
- c) Nominal diameter (DN) and wall thickness in mm
- d) Batch identification
- e) Number of this WaterMark Technical Specification, i.e. WMTS-508
- f) Date of manufacture in the form YYMMDD

NOTE: Where space is limited, the number of the WaterMark Technical Specification may be marked in abbreviated form, i.e. S508.

## 6.2 Fittings

The body of the fitting shall be legibly and permanently marked or labelled with the following information:

- a) Manufacturer's name, brand or trademark
- b) WaterMark logo and licence number
- c) Nominal diameter of the pipe for which the fitting is designed
- d) Batch identification
- e) Number of this WaterMark Technical Specification, i.e. WMTS-508
- f) Date of manufacture in the form YYMMDD

NOTE: Where space is limited, the number of the WaterMark Technical Specification may be marked in abbreviated form, i.e. S508.

## 7 PACKAGING

Whilst under the manufacturer's control, pipes and fittings manufactured in accordance with this Standard shall be packaged, stored and transported in accordance with AS/NZS 2566.2 and other utility/authority requirements, as appropriate, in a manner that will maintain their physical and dimensional integrity.



**ABCB**

## 8 DESIGN

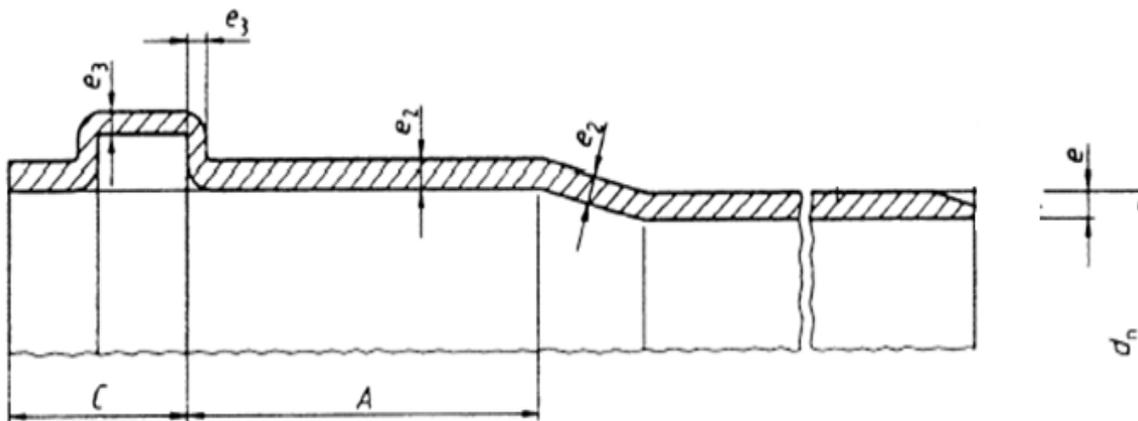
### 8.1 Pipes

#### 8.1.1 Classification

Pipes shall be classified as suitable for gravity flow applications where the operating pressure is less than 100 kPa, operating at intermittent temperatures up to 95°C. Under these conditions the product has an anticipated service life of not less than 50 years.

#### 8.1.2 Dimensions

Pipe and socket dimensions shall comply with the specifications of Table 1. Refer to Figure 1 for diagram showing dimensions of ring seal socket with chamfer.



Ring seal socket with chamfer

FIGURE 1

RING SEAL SOCKET WITH CHAMFER

**TABLE 1**  
**PIPE AND SOCKET DIMENSIONS**

DN [mm]	C [mm]	A [mm]	d <sub>n</sub> [mm]	Mean outside diameter [mm]		Wall thickness e [mm]		Socket wall thickness [mm]	
				Min	Max	Min	Max	e2 (min)	e3 (min)
50	18	32	58	58.0	58.3	4.0	4.5	3.8	3.1
70	18	35	78	78.0	78.3	4.5	5.0	4.0	3.3
90	19	36	90	90.0	90.4	4.5	5.1	4.0	3.3
100	21	38	110	110.0	110.4	5.4	6.1	4.5	3.5
125	22.5	40	135	135.0	135.4	5.6	6.3	4.8	3.8
150	22.5	43	160	160.0	160.5	5.6	6.3	4.8	3.8

NOTE: This WaterMark Technical Specification should be read in conjunction with AS/NZS 7671 Cl. 6.4  
DN: Nominal Size.

### 8.1.3 Length

The effective length, (l) of a pipe shall not be less than that declared by the manufacturer. For pipes with sockets, the effective length is considered to be the distance between the pipe ends minus the socket length. For practical reasons, this length is measured to the outside of the socket.

### 8.1.4 Freedom from defects

Defects shall not affect the end performance or function of the pipe in service. Pipes shall be free of blisters, foreign matter and heat marks. Where grooves, wrinkles, rippling, dents or projections are present, the pipe dimensions shall comply with the specifications of Table 1.

### 8.1.5 Density

Pipe density shall be greater than 1.5 g/cm<sup>3</sup> when tested in accordance with ISO 1183-1.



## **8.2 Fittings**

### **8.2.1 Dimensions**

Fitting socket dimensions shall comply with the specifications of Table 1.

### **8.2.2 Freedom from defects**

Fittings shall be clean, free of blisters, foreign matter, heat marks, burrs, fins, irregularities and sharp edges that could affect the performance or function of the fitting in service or may score the pipe or cause damage to other fittings. The fitting's bore must be free from irregularities that could restrict the free flow of the effluents.

### **8.2.3 Fittings general**

Fittings must comply with AS/NZS 7671 Cl. 6.5 except as noted below.

Unswep bends associated with gravity sanitary plumbing and drainage systems cannot be certified and WaterMarked to this specification.

Where pipe systems include PP electrofusion socket fittings, they shall comply with the dimensional and performance requirements of ISO 15494 in addition to the relevant WMTS 508 material, performance and marking requirements.

### **8.2.4 Density**

Fitting density shall be greater than 1.5 g/cm<sup>3</sup> when tested in accordance with ISO 1183-1.

NOTE: The recommended colours for pipes and fittings are grey, black or white.

## **9 PERFORMANCE REQUIREMENTS AND TEST METHODS**

Performance requirements and test methods are listed in Table 2 and 3.

**TABLE 2**  
**PERFORMANCE REQUIREMENTS AND TEST METHODS FOR PIPE**

<b>ISSUE</b>	<b>REQUIREMENT</b>
Freedom from defects	WMTS 508 Cl. 8.1.4
Impact resistance (round-the-clock method)	AS/NZS 7671 Cl. 7.1 table 9
Longitudinal reversion	AS/NZS 7671 Cl. 8.1 table 13
Water tightness	AS/NZS 7671 Cl. 9 table 16
Air tightness	AS/NZS 7671 Cl. 9 table 16
Elevated temperature cycling test	AS/NZS 7671 Cl. 9 table 16
Density of finished product	ISO 1183 – 1

**TABLE 3**  
**PERFORMANCE REQUIREMENTS AND TEST METHODS FOR FITTINGS**

<b>ISSUE</b>	<b>REQUIREMENT</b>
Freedom from defects	WMTS 508 Cl. 8.2.2
Effects of heating	AS/NZS 7671 Cl. 8.2 table 14
Water tightness	AS/NZS 7671 Cl. 9 table 16
Air tightness	AS/NZS 7671 Cl. 9 table 16
Elevated temperature cycling test	AS/NZS 7671 Cl. 9 table 16
Density of finished product	ISO 1183 – 1



**ABCBC**

**10 VOID**

**11 PRODUCT DOCUMENTATION**

**11.1 Product data**

Product data, identifying critical product characteristics such as pressure, temperature, compatibility with chemicals or other limitations shall be available.

**11.2 Installation and maintenance instructions**

**11.2.1 Installation instructions**

Installation instructions shall be provided, including the following:

- a) Technical manuals
- b) Reference to installation in compliance to AS/NZS 3500.2
- c) Handling and storage instructions and procedures
- d) Material safety data sheets
- e) Detailed step by step installation instructions
- f) Operating and maintenance instructions

## **APPENDIX A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS TECHNICAL SPECIFICATION**

(Normative)

### **A.1 SCOPE**

This Appendix sets out the means by which compliance with this WaterMark Technical Specification shall be demonstrated by a manufacturer under the WaterMark product certification scheme.

### **A.2 RELEVANCE**

The long-term performance of plumbing systems is critical to the durability of building infrastructure, protection of public health and safety, and protection of the environment.

### **A.3 PRODUCT CERTIFICATION**

The purpose of product certification is to provide independent assurance of the claim by the manufacturer that products comply with this WaterMark Technical Specification.

The certification scheme serves to indicate that the products consistently conform to the requirements of this Watermark Technical Specification.

The sampling and testing plan, as detailed in Paragraph A5 and Table A1, shall be used by the WaterMark Conformity Assessment Body. Where a batch release testing program is required, it shall be carried out by the manufacturer as detailed in Paragraph A5 and Table A2.

### **A.4 DEFINITIONS**

#### **A.4.1 Batch release test**

A test performed by the manufacturer on a batch of components, which has to be satisfactorily completed before the batch can be released.

#### **A.4.2 Production batch**

Clearly identifiable collection of units, manufactured consecutively or continuously under the same conditions, using material or compound to the same specification.

#### **A.4.3 Sample**

One or more units of product drawn from a batch, selected at random without regard to quality.

NOTE: The number of units of product in the sample is the sample size.



#### **A.4.4 Sampling plan**

A specific plan that indicates the number of units of components or assemblies to be inspected.

#### **A.4.5 Type test batch**

Schedule of units of the same type, identical dimensional characteristics, all the same nominal diameter and wall thickness, from the same compound. The batch is defined by the manufacturer.

#### **A.4.6 Type testing**

Testing performed to demonstrate that the material, component, joint or assembly is capable of conforming to the requirements given in the WaterMark Technical Specification.

### **A.5 TESTING**

#### **A.5.1 Type testing**

Table A1 sets out the requirements for type testing and frequency of re-verification.

#### **A.5.2 Batch release testing**

Table A2 sets out the minimum sampling and testing frequency plan for a manufacturer to demonstrate compliance of product(s) to this WaterMark Technical Specification on an ongoing basis. However, where the manufacturer can demonstrate adequate process control to the WaterMark Conformity Assessment Body, the frequency of the sampling and testing nominated by the manufacturer's quality plan and/or documented procedures shall take precedence for the purposes of WaterMark product certification.

#### **A.5.3 Retesting**

In the event of a batch release test failure, the products within the batch may be retested at a frequency agreed to with the WaterMark Conformity Assessment Body and only those batches found to comply may be claimed and/or marked as complying with this WaterMark Technical Specification.

**TABLE A1  
TYPE TESTS**

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Materials	AS/NZS 7671	At any change in materials specification
Marking	6	Labelling / marking	Review of documentation / Physical examination	At any change in design / specification
Packaging	7	Packaging		
Design	8.1.2	Pipes – dimension	Direct measurement	At any change in design / specification
	8.1.3	Pipes – length		
	8.1.4	Pipes – freedom from defects	Visual inspection	
	8.2.1	Fittings – dimension	Direct measurement	
	8.2.2	Fittings – freedom from defects	Visual inspection	
Performance	9	Impact resistance (round-the-clock method)	AS/NZS 7671 Cl. 7.1 table 9	At any change in design or manufacturing process
		Longitudinal reversion	AS/NZS 7671 Cl. 8.1 table 13	
		Effects of heating	AS/NZS 7671 Cl. 8.2 table 14	
		Water tightness	AS/NZS 7671 Cl. 9 table 16	
		Air tightness	AS/NZS 7671 Cl. 9 table 16	
		High temperature cycling test	AS/NZS 7671 Cl. 9 table 16	
		Density of finished product	ISO 1183 – 1	
Product documentation	11	Product data/Installation and Maintenance instructions	Manufacturer's technical literature	At any change of installation requirements

**TABLE A2  
BATCH RELEASE TESTS**

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Materials	Delivery acceptance tests or supplier's test data	Each delivery batch
Marking	6	Labelling / marking	Review of documentation / Physical examination	Continuous
Packaging	7	Packaging		
Design	8.1.2	Pipes – dimension	Direct measurement	Every two hours of production
	8.1.3	Pipes – length		
	8.1.4	Pipes – freedom from defects	Visual inspection	Every two hours of production
	8.2.1	Fittings – dimension	Direct measurement	Every two hours of production
	8.2.2	Fittings – freedom from defects	Visual inspection	Every two hours of production
Performance	9	Impact resistance (round the-clock method)	AS/NZS 7671 Cl. 7.1 table 9	Once per batch
		Longitudinal reversion	AS/NZS 7671 Cl. 8.1 table 13	Once a day
		Effects of heating	AS/NZS 7671 Cl. 8.2 table 14	Once per batch
		High temperature cycling test	AS/NZS 7671 Cl. 9 table 16	Twice a year
		Density of finished product	ISO 1183 – 1	Once per batch
		Marking	AS/NZS 7671 Cl. 11.2 and Cl. 11.3	Once a day



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