



# **WMTS-046:2016**

## **Diversion systems**

### **- Wash down and first flush**

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**WaterMark Technical Specification**

**2016**



**ABCBC**





**WMTS-046:2016**

**Diversion systems – Wash down and first flush**

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**WaterMark Technical Specification**

Document formerly known as:-

ATS 5200.046 – 2005 Technical Specification for Plumbing and Drainage Products  
Diversion systems – Wash down and first flush.

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First published as ATS 5200.046—2005.  
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**2016**

## **IMPORTANT NOTICE AND DISCLAIMER**

On 25 February 2013 management and administration of the WaterMark Certification Scheme transferred to the Australian Building Codes Board (ABCB). 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.

This Technical Specification supersedes Standards Australia ATS 5200.046 – 2005.

The rebranding of this Technical Specification has included additional information about the transition as well as changes to specific details including replacing references to Standards Australia and the National Plumbing Regulators Forum (NPRF) with the ABCB, changing the term Australian Technical Specification (ATS) to WaterMark Technical Specification (WMTS), replacing references to technical committees WS-014 and WS-031 with the WaterMark Technical Advisory Committee (WMTAC).

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

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## PREFACE

WaterMark Technical Specification WMTS-046: 2016 Technical Specification for plumbing and drainage products, Diversion systems - Wash down and first flush 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 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 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 Technical Specification to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a Technical Specification.

The test protocol and information in this 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 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**

Australian Technical Specification ATS 5200.046 – 2005, on which this technical specification is based, was prepared by Standards Australia Committee WS-031, Technical Procedures for Plumbing and Drainage Products Certification. It was approved on behalf of the Council of Standards Australia on 28 January 2005.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.046 – 2005.

- AUSTAP
- Australian Electrical and Electronic Manufacturers Association
- Australian Industry Group
- Certification Interests (Australia)
- Consumer Electronics Suppliers Association
- Copper Development Centre—Australia
- CSIRO Manufacturing and Infrastructure Technology
- Gas Appliances and Services Association
- Master Plumbers and Mechanical Services Association of Australia
- Master Plumbers Australia
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- National Fire Industry Association
- New Zealand Water & Waste Association
- Plastics Industry Pipe Association of Australia
- Plumbing Industry Commission
- South Australian Water Corporation
- Water Services Association of Australia

## TABLE OF CONTENTS

1	Scope .....	6
2	Application.....	6
3	Referenced documents.....	6
4	Definitions.....	7
5	Materials .....	7
6	Marking .....	7
7	Void .....	8
8	Design .....	8
9	Performance requirements and test methods.....	9
10	Maintenance .....	9
11	Product documentation .....	10
Appendix A	Means for demonstrating compliance with this technical specification....	11

## **1 SCOPE**

This Technical Specification sets out minimum product requirements for wash down diversion systems for connection to suitable drainage.

## **2 APPLICATION**

Appliances covered by this specification are those intended to be connected directly to supply drinking water or derivatives.

This Technical Specification will be referenced on the WaterMark Certification Scheme Schedule of Specifications.

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.

## **3 REFERENCED DOCUMENTS**

The following documents are referred to in this Technical Specification:

### AS

- 1565 Copper and copper alloys—Ingots and castings
- 2345 Dezincification resistance of copper alloys
- 3688 Water supply—Copper and copper alloy body compression and capillary fittings and threaded-end connectors.
- 4087 Metallic flanges for waterworks purposes

### AS/NZS

- 1567 Copper and copper alloys—Wrought rods, bars and sections
- 1568 Copper and copper alloys—Forging stock and forgings
- 3500 Plumbing and drainage
- 3500.0 Part 0: Glossary of terms
- 3718 Water Supply—Tap ware
- 4020 Testing of products for use in contact with drinking water

### ASTM

- A276 Standard Specification for Stainless Steel Bars and Shapes
- A313 Standard Specification for Stainless Steel Spring Wire

## 4 DEFINITIONS

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

## 5 MATERIALS

### 5.1 Corrosion-resistant materials

For the purposes of this Technical Specification, the following materials are deemed to be corrosion-resistant:

- (a) Copper alloys complying with AS 1565, AS/NZS 1567, AS/NZS 1568 and complying with AS 2345.
- (b) Austenitic stainless steel complying with ASTM A276, series 300 containing not less than 8% nickel, except that Grade 303 is not permitted, and duplex (ferritic-austenitic) stainless steels UNS S32750, S32304, SS31803 and S31500.
- (c) Stainless steel complying with ASTM A313.

Other materials may be considered, based on demonstrated corrosion resistance data.

### 5.2 Plastics materials

Plastics materials used in device components shall be of a type recommended by the polymer manufacturer as suitable and appropriate for use in the manufacture of the device component. Characteristics to be taken into account shall include compatibility and resistance to variations in water quality and elevated temperatures.

*NOTE: Requirements for plastics materials are given in AS/NZS 3718.*

## 6 MARKING

Each device shall be marked with the following:

- (a) Manufacturer's name, brand or trademark.
- (b) WaterMark.
- (c) Licence number.
- (d) The number of this Technical Specification, i.e., WMTS-046.

## 7 VOID

## 8 DESIGN

### 8.1 System sensitivity

Design shall incorporate a flow rate of 1 to 2 L/min through the demand valve so that it begins to open the diversion valve.

### 8.2 System operation for wash down

The diversion system shall be fully automatic for wash down operations; only demand by wash down equipment shall operate the demand valve that opens the diversion valve.

### 8.3 Valve status and alarm (first flush system)

The system shall be fitted with valve status and an alarm.

### 8.4 Volume control (first flush system)

The system shall have the capacity to change first flush volumes on site.

### 8.5 Delay drop (first flush system)

First flush systems shall have the capability for a delay drop of between 6 to 10 min following wash down.

### 8.6 System reset (first flush system)

The system shall reset only after—

- (a) predetermined wash down time has contaminated the site; or
- (b) if no wash down is present, a predetermined time period.

### 8.7 Malfunction device

If the water supply driving the system ceases, and if any equipment fails, an automatic device may be adapted to the system, provided it shuts all water outlets to the wash down area and the diversion valve returns to its closed position.

*NOTE: Local authorities may consider other options to suit application.*

### 8.8 Rain periods

Provision shall be in place to ensure that no activity can take place on the wash down area when it is raining.

*NOTE: Local authorities may consider other options.*

## 8.9 Joints

Dimensions for joints, threaded end connections and flanges shall comply with AS 3688 and AS 4087.

# 9 PERFORMANCE REQUIREMENTS AND TEST METHODS

## 9.1 Materials in contact with drinking water

Materials in contact with drinking water shall comply with AS/NZS 4020. This applies only when systems are not installed downstream of a testable backflow device.

## 9.2 Watertightness, system and diversion valve

A hydrostatic pressure test of 2, +0.1, -0 MPa shall be applied for a period of 60, +10, -0 s. The system shall show no signs of leakage.

## 9.3 Operation test

The device shall be tested to ensure it meets the design requirements as follows:

- (a) Flow rate of between 1 and 2 L/min in accordance with Clause 8.1.
- (b) Wash down operations are always diverted away from stormwater systems.
- (c) Reset function and alarms are fitted and operate at the specified criteria.
- (d) Diversion valve is closed on failure.

## 9.4 Endurance

An endurance test of 500 cycles shall be applied. After the test, the device shall be checked for any distortion, malfunction, or breakage of equipment.

# 10 MAINTENANCE

## 10.1 Serviceability

The demand valve shall be easily accessible, in-line and serviceable.

## 10.2 Installation and maintenance

Systems shall be supplied with installation literature and maintenance procedures programs.

## **11 PRODUCT DOCUMENTATION**

### **11.1 Product data**

The manufacturer's product data, in English, shall be included with the packaging of each flow controller, and shall include the following:

- (a) Operator pressure range in kilopascals.
- (b) Maximum operating temperature.
- (c) Flow rate data for operating pressure range, in litres per minute.

### **11.2 Installation instructions**

Installation instructions, clear, legible and in English, shall be provided by the manufacturer.

## **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 Technical Specification is to be demonstrated by a manufacturer under the WaterMark 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 Technical Specification.

The certification scheme serves to indicate that the products consistently conform to the requirements of this 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 (TT)**

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

**Table A1—TYPE TESTS**

<b>Characteristic</b>	<b>Clause</b>	<b>Requirements</b>	<b>Test method</b>	<b>Frequency</b>
<b>Routine Tests</b>				
Material properties	5	Materials	Review materials parts list and compliance certificates	At any change in materials
	5.1	Dezincification resistance of copper alloys	Clause 5.1	
Marking	6	Legibility and tagging	Visual examination	At any change in materials
Design	8.1	System sensitivity	Inspection of design drawings	At any change in design
	8.2	System operation for wash down	Inspection of design drawings	
	8.3	Valve status and alarm	Inspection of design drawings	
	8.4	Volume control (first flush system)	Inspection of design drawings	
	8.5	Delay drop (first flush system)	Inspection of design drawings	
	8.6	System reset (first flush system)	Inspection of design drawings	
	8.7	Malfunction device	Inspection of design drawings	
	8.8	Rain periods	Inspection of design drawings	
	8.9	Joints	AS 3688 and AS 4087	
Performance	9.1	Contamination of water	AS/NZS 4020	At any change in materials or every 5 years, whichever occurs first
	9.2	Watertightness	Clause 9.2	At any change in design
	9.3	Operational tests	Clause 9.3	
	9.4	Endurance	Clause 9.4	

**Table A2—BATCH RELEASE TESTS**

<b>Characteristic</b>	<b>Clause</b>	<b>Requirements</b>	<b>Test method</b>	<b>Frequency</b>
<b>Routine tests</b>				
Material properties	5	Materials	Review materials parts lists and compliance certificates	At any change in design
Marking	6	Legibility and tagging	Visual examination	One fitting per production batch
Design	8.9	Joints	AS 3688 and AS 4087	One fitting per production batch
Performance	9.1	Contamination of water	AS/NZS 4020	At any change in materials
	9.2	Watertightness	Clause 9.2	One fitting per production batch
	9.3 (b) and 9.3 (d)	Operational tests	Clause 9.3	



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