WMTS-472:2016

Heated water system recirculation device

WaterMark Technical Specification

2016

ABCB

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ATS 5200.472 – 2006 Technical Specification for Plumbing and Drainage Products
Heated water system recirculation device

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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 (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 5200.472 – 2006.

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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Users should seek appropriate independent professional advice prior to relying on, or entering into any commitment based on material in this document in relation to plumbing or related activities. Its interpretation in no way overrides the approvals processes in any jurisdiction.

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 or write to the WaterMark Administering Body, ABCB, GPO Box 9839, Canberra ACT 2601.

PREFACE

WaterMark Technical Specification WMTS-472: 2016 Technical Specification for plumbing and drainage products, Heated water system recirculation device 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). These lists will be version controlled with appropriate historic references.

ACKNOWLEDGEMENTS

Australian Technical Specification ATS 5200.472 – 2006, 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 29 May 2006.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.472 – 2006.

- AUSTAP
- Australian Electrical and Electronic Manufacturers Association
- Australian Industry Group
- Australian Stainless Steel Development Association
- Building Officials Institute of New Zealand
- Building Research Association of New Zealand
- Certification Interests (Australia)
- Copper Development Centre – Australia
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- National Fire Industry Association
- Plastics Industry Pipe Association of Australia
- Plumbing Industry Commission
- South Australian Water Corporation
- Water Services Association of Australia

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1 SCOPE

This Technical Specification sets out requirements for a plastics-bodied hot water circulating device for use in a dedicated heated water supply recirculation line.

2 APPLICATION

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 demonstrated by a manufacturer for the purpose of product certification.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Technical Specification:

AS

1432	Copper tubes for plumbing, gasfitting and drainage applications
1565	Copper and copper alloys—Ingots and castings
1572	Copper and copper alloys—Seamless tubes for engineering purposes
1646	Elastomeric seals for waterworks purposes
1646.1	Part 1: General requirements
1646.2	Part 2: Material requirements for pipe used in water and waste water applications-specified by prescriptive formulation
1646.3	Part 3: Material requirements for pipe used in water and waste water applications with the exception of natural rubber and polyisoprene compounds
1646.4	Part 4: Material requirements for pipe used in water and waste water applications—Thermoplastic elastomers and vulcanizates
2136	Method for detecting the susceptibility of copper and its alloys to stress corrosion cracking using the mercurous nitrate test
2345	Dezincification resistance of copper alloys
2738	Copper and copper alloys—Compositions and designations of refinery products, wrought products, ingots and castings
3688	Water supply—Metallic fittings and end connectors

AS/NZS

1567	Copper and copper alloys—Wrought rods, bars and sections

1568 Copper and copper alloys—Forging stock and forgings

AS/NZS

3500 Plumbing and drainage

3500.0 Part 0: Glossary of terms

3500.1 Part 1 Water supply

3500.4 Part 4 Heated water services

4020 Testing of products for use in contact with drinking water

IAPMO

PS 116–99 Hot water circulating devices, which do not use a pump

NOTE: PS 116–99 is available from the International Association of Plumbing and Mechanical Officers (IAPMO) website www.iapmo.org.

4 DEFINITIONS

For the purpose of this Technical Specification, the definitions given in AS/NZS 3500.0 and PS 116-99 apply.

5 MATERIALS

5.1 General

This Clause specifies requirements for materials utilized in the construction of the product.

5.2 Metallic materials

Metallic materials in contact with water shall be corrosion resistant. For the purposes of this Technical Specification the following materials are considered suitable:

(a) Copper, as specified in Clause 5.2.2.

(b) Copper alloy, as specified in Clause 5.2.3 and 5.2.4.

(c) Stainless steel, as specified in Clause 5.2.5.

5.2.2 *Copper*

Copper shall comply with the following:

(a) *Wrought products* AS 2738.

(b) *Tubular components* Copper tube shall comply with AS 1432.

5.2.3 *Copper alloy*

Copper alloy shall comply with the following:

(a) *Castings* AS 1565 or capable of passing the requirements of Clause 5.3 provided the alloy contains not less than 58% copper and not more than 1% aluminium.

(b) *Hot pressings* AS/NZS 1568.

(c) *Rod for machined parts* AS/NZS 1567 or an alloy complying with AS 2345.

(d) *Tubular components* Copper alloy tube shall comply with AS 1572 alloy designation C26130. Where bent or stamped in the fabrication process, the tube shall be sufficiently stress-relieved so that it is capable of passing the mercurous nitrate test specified in AS 2136 after all fabrication processes are complete.

5.2.4 *Dezincification-resistant (DR) copper alloy*

Copper alloys in contact with water shall comply with AS 2345.

5.2.5 *Stainless steel*

Stainless steel shall be grade 304 or 316 complying with the relevant ASTM Standard for the product form.

5.3 Plastics materials

5.3.1 *General*

Plastics materials shall comply with the relevant Standard for the product type or type of plastics used.

5.3.1.1 *UV resistance.*

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

5.4 Elastomeric materials

The materials used for seals or gaskets shall comply with AS 1646.1 and AS 1646.2 or AS 1646.3 or AS 1646.4.

6 MARKING

Each device shall be durably and legibly marked with the following:

(a) Manufacturer's name, brand or trademark.

(b) Nominal size.

(c) Material designation.

(d) Model identification.

(e) WaterMark.

(f) Licence number.

(g) The number of this Technical Specification, i.e., WMTS-472.

NOTE: Where space is limited, the number of the Technical Specification may be in an abbreviated form, i.e., S472.

7 PACKAGING

The device shall be packaged in such a manner so as to avoid damage during transportation and handling.

8 DESIGN

8.1 Integral plumbing components, accessories or fittings

Where the product includes integral plumbing components, accessories or fittings that require certification as identified in the Plumbing Code of Australia, they shall comply with the applicable requirements of the specification for that product, as identified in the WaterMark Schedule of Specification.

8.2 End connectors

End connectors for connection to metallic or plastics piping systems shall comply with the requirements of the Standard relevant to the piping system.

9 PERFORMANCE REQUIREMENTS AND TEST METHODS

9.1 Products in contact with drinking water

Products in contact with drinking water shall comply with AS/NZS 4020. Products shall be tested as in line product at a maximum holding temperature of 50°C and with a scaling factor of 0.1.

9.2 Hydrostatic strength test

When tested in accordance with IAPMO Material and Performance Standard PS 116–99 Resistance to Hydrostatic Pressure the device shall not leak.

9.3 Joint tightness test

When tested in accordance with IAPMO Material and Performance Standard PS 116–99 Joint Tightness Test the joint shall not leak.

9.4 Pressure drop across devices

When tested in accordance with IAPMO Material and Performance Standard PS 116–99, the internal cross section of the pipe shall be no less than the smallest cross-section in the flow path through the device.

9.5 Leakage in reverse direction for valve mechanisms

When tested in accordance with IAPMO Material and Performance Standard PS 116–99, the leakage rate shall not exceed 0.1% of the flow rate if the valve were not installed.

9.6 Operational test

When tested in accordance with IAPMO Material and Performance Standard PS 116–99, the total flow through the return line shall not exceed 15% of the total flow.

10 VOID

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data that identifies critical product characteristics, such as the following, shall be available:

(a) Delivery volume and flow rate.

(b) Pressure/temperature or other limitations.

11.2 Installation instructions

Installation instructions shall be provided that:

(a) References to installation in accordance with AS/NZS 3500.1 and AS/NZS 3500.4 where applicable.

(b) Detailed step-by-step instruction.

(c) The need for special tools or training if applicable.

(d) Commissioning procedures and adjustments required.

(e) Troubleshooting guide.

(f) Contact details for after-sales service.

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 shall 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 products consistently conform to the requirements of this Technical Specification.

The frequency of the sampling and testing plan as detailed in Paragraph A5, shall be used by the certifying 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 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.4.2 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.4.3 Sampling plan

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

A.4.4 Type testing

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

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Relevant Standard	Review materials parts lists and data/test reports	At any change in materials specification
Marking	6	Marking	Visual inspection	At any change in design/specification
Packaging	7	Protection from damage during transportation and handling	Review of documentation/physical examination	
Design	8.1	Integral plumbing components, accessories or fittings	Applicable specification	At any change in design/specification
	8.2	End connectors	AS 3688, AS or WMTS relevant to the piping system	
Performance	9.1	Products in contact with drinking water	AS/NZS 4020	At any change in materials, formulation or design or every five years whichever occurs first
	9.2	Hydrostatic strength test	IAPMO Material and Performance Standard PS 116-99	At any change in design or manufacturing process
	9.3	Joint tightness		
	9.4	Pressure drop across devices		
	9.5	Leakage in reverse direction for valve mechanisms		
	9.6	Operational test		
Product documentation	11	Product data/installation, operation and maintenance instructions	Documentation review	At any change factors that require a change in documentation e.g., amendments to AS/NZS 3500.1 and AS/NZS 3500.4

Table A2— BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Relevant Standard	Delivery acceptance tests or supplier's test data	Each delivery batch
Marking	6	Marking	Visual examination	100%
Performance	9.2	Hydraulic strength test	IAPMO Material and Performance Standard PS 116-99 (short-term test)	Once per batch

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