WMTS-529:2019

Integral re-circulation loop kits for use in heated water systems.

WaterMark Technical Specification

Publication History:-

First published as WMTS-529:2019

2019

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PREFACE

This WaterMark Technical Specification was prepared in accordance with the Manual for the WaterMark Certification Scheme, Appendix 4, Protocol for Developing Product Specifications.

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 to meet the authorisation requirements given in the PCA.

The WaterMark Schedule of Products and the WaterMark Schedule of Excluded Products are dynamic lists and change on a regular basis. Based on this function, these schedules are now located on the ABCB website (www.abcb.gov.au). These lists will be version controlled with appropriate historic references.

ACKNOWLEDGEMENTS

WaterMark Technical Specification WMTS-529:2019 was prepared by industry and was approved by the Administering Body on XX XX 2019.

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1 SCOPE

This technical specification specifies the requirments for copper piping systems with an integral re-circulating loop, for use in heated water systems. The systems have a size range from DN 25 to DN40 and a maximum operating temperature of 70ºC and a maximum operating pressure of 1000 kPa.

This specification shall be read in conjunction with the following:- AS/NZS 2642.2, AS/NZS 2642.3, AS 1432 & AS 3688.

2 APPLICATION

The copper pipe recirculatory system provides heated water to outlets within buildings, through an integrated re-circulation system, which compromises of a return line installed internally within the delivery piping.

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

3 REFERENCED DOCUMENTS

The Referenced Documents clause shall include a list of all documents referenced in this WaterMark Technical Specification.

AS

1432 Copper tubes for plumbing, gasfitting and drainage applications

2345 Dezincification resistance of copper alloys

3688 Water supply and gas systems – Metallic fittings and end Connectors

AS/NZS

2642.1 Polybutylene (PB) plumbing pipe systems – Part 1: Polybutylene (PB) pipe extrusion compounds

2642.2 Polybutylene (PB) plumbing pipe systems – Part 2: Polybutylene (PB) pipe for hot and cold water applications

2642.3 Polybutylene (PB) plumbing pipe systems – Part 3: Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications

3500.0 Plumbing and Drainage - Part 0: Glossary of terms

3500.1 Plumbing and Drainage - Part 1: Water services

4020 Testing of products for use in contact with drinking water

NCC

PCA Plumbing Code of Australia

4 DEFINITIONS

For the purpose of this WaterMark Technical Specification, the definitions given in the WaterMark Scheme Rules, Plumbing Code of Australia and AS/NZS 3500.0.

5 MATERIALS

5.1 Copper Tube

Copper Tube used in the construction of the piping system shall comply with AS 1432.

5.2 Copper Alloy

Copper alloys used in the construction of the piping system fittings shall comply with AS 3688.

5.3 Polybutylene

Polybutylene used in the construction of the piping system shall comply with AS 2642.1.

5.4 Stainless Steel

Stainless Steel components used in the construction of the piping system shall comply with AS 3688.

6 MARKING

Markings to be placed on products or packaging shall be in accordance with clause 9.6 of the Manual for the WaterMark Certification Scheme.

Individual fittings used in the construction of the pipe system shall, as a minimum, be marked with:

a) The WaterMark

b) The WaterMark licence number

c) The number of this specification in the form of WMTS 529.

7 PACKAGING

Pipe system components shall be packaged to prevent damage during transporatation.

8 DESIGN

8.1 Dezincification resistance of Copper Alloys

Copper Alloys used in the construction of fittings shall comply with AS 2345.

9 PERFORMANCE CRITERIA AND TEST METHODS

9.1 Materials in Contact with Drinking Water

Products and Materials used in contact with drinking water shall comply with AS/NZS 4020.

9.2 Fittings

Copper alloys fittings for connection to copper tube shall comply with AS 3688.

9.3 Polybutylene Pipe

Polybutylene piping components of the system shall comply with AS/NZS 2642.2.

9.4 Fittings for the connection of Polybutylene Pipe

Fititngs used to connect polybutylene pipe shall comply with AS/NZS 2642.3.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

Void

11 PRODUCT DOCUMENTATION

The Product Documentation clause shall specify any product documentation needed to address any occupational, health and safety issues and to enable correct installation, operation and maintenance of the product. Documents to be included are typically the following:

a) Installation procedures, reflecting the requirements of Plumbing Code of Australia, including any limitations on the product's use.

Note: A material or product that is listed on the WaterMark Product Database and is marked in accordance with the WaterMark Certification Scheme is recognised by authorities having jurisdiction as being authorised for use in a plumbing or drainage installation. This is because the material or product complies with the applicable product specification. The installation of an authorised material or product must meet the requirements of the Plumbing Code of Australia (PCA). Where the installation does not comply with the PCA installation requirements, or where the PCA does not contain installation requirements applicable to the authorised material or product, acceptance of the installation is at the discretion of the authority having jurisdiction.

b) Design manuals.

c) Handling and storage—material safety data sheets (Safe Work Australia).

d) Operating instructions.

e) Maintenance instructions.

f) Product data.

All documentation shall be written in clear, concise, plain English supported by relevant figures and diagrams. Documentation may be provided in either hard copy or electronic form, e.g., installation DVDs.

APPENDIX A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS PRODUCT 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 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 WaterMark 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

A 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 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 certifying 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.

A.5.4 Minimum annual inspection requirements

Table A3 sets out the minimum annual inspection requirements to be undertaken.

A.5.5 Re-evaluation testing

Table A4 sets out the requirements for re-evaluation testing

TABLE A1
TYPE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5.2	Copper Alloy	AS 3688	At any change in materials specification
	5.3	Polybutylene	AS/NZS 2642.1	At any change in materials specification
	5.4	Stainless Steel	AS 3688	At any change in materials specification
Design	8.1	Dezincification Resistance	AS 2345	At any change in materials specification
Performance	9.1	Materials in contact with water	AS/NZS 4020	At any change in materials, formulation or design
	9.2	Fittings	AS 3688	At any change in design or manufacturing process
	9.3	Polybutylene Pipe	AS/NZS 2642.2	
	9.4	Polybutylene Fittings	AS/NZS 2642.3	
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation	At any change to installation requirements

TABLE A2
BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Composition, temper, etc.	Review materials parts lists and compliance certificates	Once per batch
Marking	6	Marking	Visual examination	Once per batch
Design	8.1	Dezincification resistance	AS 2345	Once per batch
Performance	9.2	Fittings – Relevant Batch Release test for the fitting type	AS 3688	100% for cast bodies/ once per batch for others
	9.3	Polybutylene Pipe – Batch Release tests	AS/NZS 2642.2	Once per batch
	9.4	Polybutylene Fittings – Batch Release tests	AS/NZS 2642.3	Once per batch

TABLE A3
MINIMUM ANNUAL INSPECTION REQUIREMENTS

Characteristic	Clause	Requirement	Verification method	Frequency
Design, assembly and component	5	Materials	Certificates of Conformance	Sample from product family, covering all families within 5 year certification cycle
	8.1	Dezincification resistance	Test results	
Dimensional inspection	9.2	Dimensional, material, thickness requirements	Review of Batch Release Records	
	9.3	Dimensional, material, thickness requirements	Review of Batch Release Records	
	9.4	Dimensional, material, thickness requirements	Review of Batch Release Records	
Product marking	6	Product marking, use of the WaterMark logo and license number	Visual inspection of marked product, relevant packaging and documentation	
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation	

TABLE A4
RE-EVALUATION TESTING

Characteristic	Clause	Requirement	Test method
Materials	5	Materials	Review materials parts lists and compliance certificates
Design	8.1	Dezincification resistance	AS 2345
Performance	9.1	Products in contact with water	AS/NZS 4020
	9.2	Fittings – Relevant Batch Release test for the fitting type	AS 3688
	9.3	Polybutylene Pipe – Batch Release tests	AS/NZS 2642.2
	9.4	Polybutylene Fittings – Batch Release tests	AS/NZS 2642.3
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation

APPENDIX B PRODUCT PERFORMANCE TEST METHODS

(Normative)

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