WMTS-531:2021

Commercial catering appliances

WaterMark Technical Specification

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PREFACE

This WaterMark Technical Specification (WMTS) 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-531:2021 was prepared by industry and was approved by the Administering Body on XX XX 2021

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1 SCOPE

This WaterMark Technical Specification sets out minimum product requirements for the connection of commercial catering appliances employed for the preparation, cooking and holding of food, to the water service and/or sanitary plumbing piping.

This Technical Specification does not cover anitation aspects beyond the water system within the appliances i.e. from the mains water supply connection(s) to all water use type outlets within the appliance.

Note: Products within this scope may also be a subject to other applicable regulations, e.g. electrical safety, gas safety, pressurised vessels, etc.

2 APPLICATION

Appliances covered by this Technical Specification are those primarily intended for commercial cooking, food preparation and food holding processes.

Note: These appliances are not intended for the direct supply of drinking water.

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

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.

Appendix B sets out the different water use categories in commercial catering equipment and the appropriate backflow prevention types for such categories, based on AS/NZS 2845.1, AS 2845.2 and EN 1717, to meet the requirements of AS/NZS 3500.1 Water Services. This methodology is specifically applicable to this WMTS.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Technical Specification:

AS

1589	Copper and copper alloy waste fittings
2845.2	Water supply - Backflow prevention devices, Part 2: Registered air gaps and registered break tanks
2887	Plastic waste fittings
3688	Water supply and gas systems – Metallic fittings and end connectors

AS/NZS	
1260	PVC-U pipes and fittings for drain, waste and vent applications
2845.1	Water supply - Backflow prevention devices, Part 1: Materials, design and performance requirements
3499	Water supply - Flexible hose assemblies
3500.0	Plumbing and drainage, Part 0: Glossary of terms
3500.1	Plumbing and drainage, Part 1: Water services
3500.2	Plumbing and drainage, Part 2: Sanitary plumbing and drainage
4020	Testing of products for use in contact with drinking water
EN	
1717	Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow
61770/ A11	Electric appliances connected to the water mains - Avoidance of back siphonage and failure of hose-sets
IEC	
61770	Electric appliances connected to the water mains - Avoidance of back siphonage and failure of hose-sets
BS	
6920–1	Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of water Part 1: Specification
NSF	
51	Food Equipment Materials
61	Drinking Water System Components – Health Effects
NCC	
PCA	Plumbing Code of Australia

4 DEFINITIONS

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

5 MATERIALS

VOID

6 MARKING

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

Additionally, each appliance shall be permanently and legibly marked with the following:

a) Where appliances incorporate an integral backflow prevention device complying with this WMTS, as follows:

   This appliance incorporates backflow prevention complying with WMTS-531 as required for this type of appliance.

7 PACKAGING

VOID

8 DESIGN

8.1 End connectors

Water service connections shall be capable of making a watertight seal to a fitting end connection complying with AS 3688.

Sanitary plumbing connections shall be capable of making a watertight connection to a waste fitting complying with the relevant applicable specification listed on the WaterMark Schedule of Products and AS/NZS 3500.2.

8.2 Backflow prevention

Appliances shall comply with:

a) the minimum backflow prevention type(s) selected appropriately for the water use categorisation prescribed method in Appendix B, or

b) the following:

(i) the backflow prevention requirements of IEC 61770 (as applicable to backsiphonage only); or

(ii) shall be supplied with a backflow prevention device complying with AS/NZS 2845.1 or AS 2845.2, and of a type required in AS/NZS 3500.1.

Where backflow prevention devices are required to be installed external to the appliance or apparatus, the devices shall be supplied with the appliance and include appropriate installation instructions.

Where the appliance has more than one water use type, each water use type shall comply:

a) individually with the above, or

b) as a whole appliance with the highest risk water use requirements, where there is no risk of cross-connection between the different water use types.

9 PERFORMANCE CRITERIA AND TEST METHODS

9.1 Products in contact with drinking water

Products in contact with drinking water shall comply with AS/NZS 4020. Hoses shall be tested as end-of-line product.

Products shall be deemed to comply with this requirement where the volume contained in the water supply pipework up to the backflow prevention device is less than 1 L and provided that the components have been tested to a recognised Specification that assesses the products for their effect on the quality of water, e.g. BS 6920-1 or NSF 61.

NOTE: The only products considered to be in contact with drinking water are those upstream of the backflow prevention device.

9.2 Product in contact with water used directly in food preparation, e.g. cooking

Products in contact with water beyond the drinking water zone (clause 9.1), and up to the end of the water line outlet, from which the water is used directly for food preparation, shall be made of materials recognised by an applicable Specification or tested to a recognised Specification that

assesses the products for their effect on the quality of water, as safe to be in direct contact with drinking water e.g. NSF 51.

9.3 Appliance hose connections

Hoses connected to appliances shall comply with the hose-sets requirements of AS/NZS 3499 or IEC 61770.

This includes hoses connecting the appliance to the mains water supply and any hose outlets from the appliance, where the hose can come under pressure by a valve operation, e.g. a hand shower for cleaning.

9.4 Strength of assembly

When tested at twice the maximum working pressure, and at the maximum working temperature, for 5 minutes, the water inlet assembly shall not leak.

This excludes water mains supply connections directly to electromechanically controlled and normally closed valves.

9.4 Watertightness

When connected to mains water supply under normal use, the water system shall not leak under any product operating conditions.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

VOID

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data, which identifies critical product characteristics as follows, shall be available:

a) Drainage requirements including size and position of piping.

b) Water supply temperature and pressure limitations.

11.2 Installation instructions

Full installation instructions shall be provided with the device including the following:

a) References to installation in accordance with the PCA, including:

(i) the installation of any non-integral backflow prevention device, and

(ii) list any integral backflow prevention devices, if fitted, and the water use categories the devices are providing protection against.

NOTE: A 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 product complies with the applicable product specification. The installation of an authorised product must meet the requirements of the PCA. Where the PCA does not contain installation requirements applicable to the authorised product, acceptance of the installation is at the discretion of the authority having jurisdiction.

b) Step-by-step instructions.

c) Commissioning procedures and adjustments required.

d) Troubleshooting guide.

e) Contact details for after-sales service.

APPENDIX A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS SPECIFICATION

(Normative)

A.1 SCOPE

This appendix sets out the means by which compliance with this 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 specification.

The WaterMark Certification Scheme serves to indicate that the products consistently conform to the requirements of this 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.

Minimum annual inspection requirements, as detailed in Paragraph A5 and Table A3, shall be used by the WaterMark Conformity Assessment Body for annual product conformity surveillance.

Re-evaluation testing, as detailed in Paragraph A5 and Table A4, shall be used by the WaterMark Assessment Body in conjunction with renewal of the certification.

A.4 DEFINITIONS

A.4.1 Batch release test

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

A.4.2 Product inspection

Examination of certified product, conducted during annual product conformity surveillance, to determine its conformity with the specific requirements of its current certification and WaterMark Licence.

A.4.3 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.4.4 Re-evaluation testing

Testing carried out in conjunction with renewal of the certification.

A.4.5 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.4.6 Sampling plan

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

A.4.7 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.4.8 Type testing (TT)

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

A.5 TESTING AND INSPECTION

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 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 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
Marking	6	Marking	Visual inspection	At any change of the marking process or requirements
Design	8.1	End connectors	Design review	At any change of design
	8.2	Backflow protection		
	8.3	Water seal		
Performance	9.1	Products in contact with drinking water	AS/NZS 4020 or Clause 9.1	At any change of design or materials specification or on renewal of certification whichever occurs first
	9.2	Products in contact with water used directly in food preparation	Recognised specification or Clause 9.2	
	9.3	Hose sets	AS/NZS 3499 or IEC 61770	
	9.4	Strength of assembly	Clause 9.4	
Product documentation	11	Installation instructions	Visual inspection	At any change of installation or operation specification

TABLE A2
BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Marking	6	Marking	Visual inspection	Each unit
Design	8.1	End connectors	Visual inspection	Once per batch
	8.2	Backflow protection		
	8.3	Water seal		
Performance	9.5	Watertightness	Visual inspection	Once per batch
Product documentation	11	Installation instructions supplied with appliance	Visual inspection	Each unit

TABLE A3
MINIMUM ANNUAL INSPECTION REQUIREMENTS

Characteristic	Clause	Requirement	Verification method	Frequency
Marking	6	Marking	Visual inspection	Sample from product family, covering all families within 5 year certification cycle
Design	8.1	End connectors	Visual inspection	
	8.2	Backflow protection		
	8.3	Water seal		
Performance	9.5	Watertightness	Visual inspection	
Product documentation	11	Installation instructions supplied with appliance	Visual inspection	

TABLE A4
RE-EVALUATION TESTING

Characteristic	Clause	Requirement	Test method
Marking	6	Marking	Visual inspection
Design	8.1	End connectors	Design review
	8.2	Backflow protection	Design review
	8.3	Water seal	Design review
Performance	9.1	Products in contact with drinking water	AS/NZS 4020 or Clause 9.1
	9.2	Products in contact with water used directly in food preparation	Recognised specification or Clause 9.2
	9.3	Hose sets	AS/NZS 3499 or IEC 61770
	9.4	Strength of assembly	Clause 9.4
Product documentation	11	Installation instructions	Visual inspection

APPENDIX B WATER USE CATEGORIES AND APPROPRIATE BACKFLOW PREVENTION TYPE

(Normative)

B.1 SCOPE

This Appendix sets out the different water use categories in commercial catering equipment and the appropriate backflow prevention types for such categories, based on AS/NZS 2845.1, AS 2845.2 and EN 1717, to meet the requirements of AS/NZS 3500.1 Water Services. This methodology is specifically applicable to this WMTS.

B.2 RELEVANCE

Water use creates different pollution hazard risk levels for the drinking water system. These different risk levels have been categorised as Category 1 to 5 in Part B.3 (below), so the appropriate minimum backflow prevention type can be selected from Part B4 (below).

B.3 WATER USE CATEGORIES

Category 1 (AS/NZS 3500.1 clause 4.3 Hazard Rating equivalent: **n/a**)

Water used for human consumption, directly, as it is coming from the drinking water supply system.

Note: For information only, as it is not applicable to the scope of this WMTS.

Category 2 (AS/NZS 3500.1 clause 4.3 Hazard Rating equivalent: **Low**)

Water used for human consumption, which may have undergone a change in taste, odour or colour, or has been mixed with food, but still remains fit for human consumption, e.g.:

- stagnant water

- chilled water

- heated water

- steam in contact with food, free of any additive

- conditioned/treated, sterilised or demineralised water

- food cooking water

- water mixed with food (solid or liquid) fit for human consumption

Category 3 (AS/NZS 3500.1 clause 4.3 Hazard Rating equivalent: **Medium**)

Water having low pollution levels, due to the presence of one or more low level harmful substances, and representing a low human health hazard e.g.:

- standard dishwashing detergent recognised for standard kitchen use

- rinsing or sanitising detergent recognised for standard kitchen use.

Category 4 (AS/NZS 3500.1 clause 4.3 Hazard Rating equivalent: **High**)

Water having high pollution levels, due to the presence of one or more toxic or unrecognised, thus potentially toxic substances, and representing serious human health hazard e.g.:

- detergent not recognised for standard kitchen dishwashing, rinsing or sanitising use.

Category 5 (AS/NZS 3500.1 clause 4.3 Hazard Rating equivalent: **High**)

Water representing a life threatening human health hazard, due to the presence of microbiological, viral or similar high health hazard elements, e.g.:

- sewer/waste water

- grease separator

- prewashing and washing water.

B.4 BACKFLOW PREVENTION TYPE SELECTIONS APPROPRIATE TO WATER USE CATEGORIES

An explanation of the symbols used in this table is provided in the Notes at the end of the table.

Backflow prevention			**Water use category**				
Description	**Type**						
	AS 2845.1 AS 2845.2	EN 1717 EN 61770/A11	1	2	3	4	5
Unobstructed air gap	Break tank A	AA	X	●	●	●	●
Air gap with non-circular overflow (unobstructed)	Break tank A	AB	X	●	●	●	●
Air gap with submerged feed incorporating air inlet and overflow	Break tank C	AC	X	●	●	—	—
Air gap with injector	—	AD	X	●	●	●	●
Air gap with circular overflow (restricted)	Break tank B	AF	X	●	●	●	—
Air gap hygienic	Break tank E	—	X	●	●	—	—
Air gap float control type	—	AG	X	●	●	—	—
Controllable reduced pressure zone	—	BA	●	●	●	●	—
Reduced Pressure Zone Device	RPZD	—	●	●	●	●	●
Atmospheric vacuum breaker	AVB	DA	○	○	○	—	—
Spill-resistant pressure vacuum breaker	SPVB	—	○	○	○	○	○
Pipe interrupter with atmospheric valve and moving element	—	DB	○	○	○	○	—

Pipe interrupter with permanent atmospheric valve	PID	DC	○	○	○	○	○
Hose connection vacuum breaker	HCVB	—	●	●	○	—	—
Pressure vacuum breaker	PVB	—	●	●	○	—	—
Anti-pollution check valve	—	EA	●	●	—	—	—
Anti-pollution dual check valve	—	EC	●	●	—	—	—
Dual check valve	Dual CV	ED	●	●	—	—	—
Dual check valve with intermediate vent	Du CV	—	●	●	○	—	—
Dual check valve with atmospheric port	DCAP	CA	●	●	●	—	—
Beverage dispenser dual check valve with atmospheric port	BDDC	—	●	●	○	—	—
Double check valve	DCV	—	●	●	●	●	—
Controllable mechanical disconnection, direct actuated	—	GA	●	●	●	—	—
Controllable mechanical disconnection, hydraulic actuated	—	GB	●	●	●	●	—
Hose union backflow preventer	—	HA	●	●	○	—	—
Hose union anti-vacuum valve	—	HB	○	○	—	—	—
Hose union anti-vacuum valve with check-valve	—	HD	●	●	○	—	—
Pressurised air inlet valve	—	LA	○	○	—	—	—

Pressurised air inlet valve with downstream check-valve	—	LB	●	●	○	—	—

Notes:

Units with an atmospheric vent may not be used in locations susceptible to flooding

● - Covers the risk (backpressure and backsiphonage),

○ - Covers the risk for atmospheric pressure (backsiphonage) only,

– - Does not cover the risk,

x - Is not applicable.