



WMTS-479:2020
Flood stop safety valve

WaterMark Technical Specification

2020



ABCB



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Flood stop safety valve

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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). The WaterMark Schedule of Products lists all current WMTS.

This Technical Specification supersedes WaterMark Technical Specification WMTS-479:2018.

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PREFACE

WaterMark Technical Specification WMTS-479: 2016 Technical Specification for plumbing and drainage products, Flood stop safety valve was originally prepared by the Joint Standards Australia/Standards New Zealand Committee WS-031, Technical Procedures for Plumbing and Drainage Products Certification.

WaterMark Technical Specification WMTS-479:2020 Technical Specification for plumbing and drainage products, Flood stop safety valves, incorporates amendments consistent with Clause 9.1, AS/NZS 4020 scaling factor.

The objective of this revision is to provide a constant scaling factor for in-line devices in accordance with other specifications incorporating in-line valves.

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 Products and Schedule of Excluded 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 5200.479 – 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 2 June 2006.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.479 – 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 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 Watermark Technical Specification sets out requirements for flood stop safety valves for use in heated and cold-water applications where:

- (a) for metallic bodied safety shut valves, the maximum operating pressure does not exceed 1400kPa and maximum temperature does not exceed 85°C; or
- (b) for plastic bodied safety shut valves, the maximum operating pressure does not exceed 1000kPa and maximum temperature does not exceed 60°C.

2 APPLICATION

Flood stop safety valves are normally used as a safety shut-off to prevent the flooding of dwellings in the event of the failure of an end-of-line fitting.

NOTE: Safety shut-off valves may not be suitable for installation in circulating systems.

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

AS

- 1432 Copper tubes for plumbing, gas fitting and drainage applications
- 1565 Copper and copper alloys – Ingots and castings
- 1572 Copper and copper alloys – Seamless tubes for engineering purposes
- 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
- 3500.0 Plumbing and Drainage - Part 0: Glossary of terms
- 3500.1 Plumbing and Drainage - Part 1: Water services

3500.4	Plumbing and Drainage - Part 4: Heated water services
3558.5	Methods of testing plastics and composite materials sanitary plumbing fixtures - Part 5: Methods of testing plastics and composite materials sanitary plumbing fixtures - Determination of degradation by ultraviolet light
3718	Water supply – Tapware
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 AS/NZS 3500.0 and those below apply.

5 MATERIALS

5.1 General

This clause specifies requirements for materials used 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 to be 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 an alloy that contains not less than 58% copper and not more than 1% aluminium.
- (b) *Hot pressings* - AS/NZS 1568.
- (c) *Rod for machine parts* - AS/NZS 1567 or an alloy complying with AS 2345.
- (d) *Tubular components* - Copper alloys 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-resistance (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 Plastic materials

Plastic materials shall comply with Clause 2.4 of AS/NZS 3718.

5.4 Material for springs

Materials for springs shall comply with Clause 2.6(c) of AS/NZS 3718.

6 MARKING

Markings to be placed on products or packaging shall be in accordance with the [Manual for the WaterMark Certification Scheme](#).

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

- (a) Direction of flow.
- (b) Maximum temperature and pressure rating.

7 PACKAGING

The valve shall be packaged in such a manner so as to avoid damage in transit. The packaging shall contain any devices necessary for the continued operation of the valve such as reset mechanisms.

8 DESIGN

8.1 End connectors

End connectors for connection to either copper or copper alloy metallic pipes or fittings shall comply with AS 3688. Other end connections shall comply with the requirements of the Australian Standard (AS) or WaterMark Technical Specification (WMTS) relevant to the piping system.

8.2 Wrenching flats

Where end connectors are externally threaded, the valve shall be provided with 2, 4, 6 or 8 wrenching flats.

8.3 Resetting mechanism

The valve shall include a mechanism to reset the device after activation.

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. A scaling factor, determined in accordance with AS/NZS 4020, shall be applied as either 'end of line' or 'in-line' product depending on the specified application.

9.2 Leak tightness under internal pressure test

When tested in accordance with the leak tightness under internal pressure test of AS 3688, there shall be no signs of weeping, cracking, leakage or other failure. The valve operating mechanism shall be fouled during the test.

9.3 Closing tests

The product shall comply with one of the following two closing tests.

9.3.1 Valves designed to shut based on flow rate

When tested in accordance with Appendix B, the valve shall close leak tight without causing water hammer and be able to be reset. The difference between the manufacturer's nominal shut off flow rate and the tested flow rate shall be no greater than 10%.

9.3.2 Valves designed to shut based on volume

When tested in accordance with Appendix C, the valve shall close leak tight without causing water hammer and be able to be reset. The difference between the manufacturer's nominal shut off volume and the tested volume shall be no greater than 20%.

9.4 Additional requirements for plastic bodied valves

Plastic bodied valves shall comply with Clause 2.5 of AS/NZS 3718.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

Void

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data that identifies, as a minimum, the following critical product characteristics shall be supplied with the valve:

- (a) Operational data including operating pressure and flow rate.
- (b) Maximum allowable operating pressure and temperature.

11.2 Installation and maintenance instructions

11.2.1 Installation instructions

Instructions that give full details of installation procedures for the devices shall be provided, and shall include the following:

- (a) References to installation in accordance with the PCA, including any limitations on the product.

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) The need for special tools or training.
- (d) Commissioning procedures and adjustments required.
- (e) Troubleshooting guide.
- (f) Contact details for after-sales services.

11.2.2 Operating and maintenance instructions

Operating and maintenance instructions shall be provided, which shall include the following:

- (a) Any regular maintenance requirements.
- (b) Spare parts information.
- (c) Troubleshooting guide.
- (d) Contact details for after-sales services.

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 can 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 Technical Specification.

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

The frequency of the sampling and testing plan, as detailed in Paragraph A5 and Table A1, 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

A4.1 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.

A4.2 Production batch

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

A4.3 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.

A4.4 Sampling plan

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

A4.5 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.

A4.6 Type testing (TT)

Testing performed to demonstrate that the valve is capable of conforming to the requirements given in this Technical Specification.

A.5 TESTING**A5.1 Type testing**

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

A5.2 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 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.

A5.3 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 certifying 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	Materials	Review materials parts lists, data and test reports	At any change in materials specification
Marking	6	Marking	Visual Inspection	At any change in design/specification
Packaging	7	Protection from transit damage	Review of documentation/physical examination	
Design	8.1	End connectors	AS 3688, AS or WMTS relevant to the piping system	At any change in the design/specification
	8.3	Resetting mechanism	Physical examination/ Appendix B	
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	Leaktightness under internal pressure test	AS 3688 (hydrostatic)	At any change in design or manufacturing process
	9.3.1	Closing test (Flow Rate)	Appendix B	
	9.3.2	Closing test (Volume)	Appendix C	
	9.4	Plastic bodied valves: Performance to AS/NZS 3718 Clause 2.5	AS 3558.5 and AS/NZS 3718 Appendix C & D	
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 series of Standards

TABLE A2
BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Relevant Standard	Delivery acceptance test or supplier's test certificates/reports	Each delivery batch
Marking	6	Marking	Visual examination	100%
Performance	9.2	Leaktightness under internal pressure test	AS 3688 (hydrostatic)	100% cast bodies/ Once per batch others
	9.3	Closing test	Appendix B or C	Once per batch

APPENDIX B CLOSING TEST (FLOW RATE)

(Normative)

B.1 SCOPE

This appendix sets out the method for conducting a closing test of a flood stop safety valve to establish functionality.

B.2 PRINCIPLE

The valve is subjected to a condition where it is activated by simulating a typical break in the water supply line downstream of the flood stop safety valve.

B.3 APPARATUS

The following apparatus shall be required:

- (a) Water supply system.
- (b) Means for connecting the water supply to the valve to be tested.
- (c) Various valves to control the supply of water to the valve and be able to shut off and control flow rate. A typical layout is shown in Figure B1.
- (d) Suitable measuring equipment to measure pressure and flow rate.



Figure B1

B.4 PROCEDURE

The procedure shall be as follows:

- (a) Fit the valve as required by the manufacturer's instructions.
- (b) Open the water supply valve (valve 1) whilst maintaining the outlet valve (valve 2) closed and via the pressure regulator, adjust the pressure to the minimum pressure as identified by the manufacturer.

- (c) Open the outlet valve (valve 2) until the manufacturer's stated operating flow rate is achieved.
- (d) Slowly open the outlet valve (valve 2) until the valve under test trips to close off the water supply.
- (e) Record the flow rate at which the valve closes and whether the valve seals leak tight and without causing water hammer.
- (f) Reset the valve and repeat Steps (d) to (e) for a total of three readings.
- (g) Repeat Steps (b) to (f) for the manufacturer's maximum recommended pressure.

B.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer and model identification.
- (b) Test parameters, i.e. pressure, flow rate.
- (c) The flow rate at which the device activated when subjected to minimum and maximum pressure and whether there was water hammer.
- (d) If the valve closed leak tight.
- (e) Reference to this test method, i.e. WMTS-479, Appendix B.

APPENDIX C CLOSING TEST (VOLUME)

(Normative)

C.1 SCOPE

This appendix sets out the method for conducting a closing test of a flood stop safety valve to establish functionality.

C.2 PRINCIPLE

The valve is subjected to a condition where it is activated by simulating a typical break in the water supply line downstream of the flood stop safety valve.

C.3 APPARATUS

The following apparatus shall be required:

- (a) Water supply system.
- (b) Means for connecting the water supply to the valve to be tested.
- (c) Various valves to control the supply of water to the valve and be able to shut off and control flow. A typical layout is shown in Figure C1.
- (d) Suitable measuring equipment to measure pressure and volume.



Figure C1

C.4 PROCEDURE

The procedure shall be as follows:

- (a) Fit the valve as required by the manufacturer's instructions.
- (b) Adjust the volume selector (if present) to the minimum setting.
- (c) Open the water supply valve (valve 1) whilst maintaining the outlet valve (valve 2) closed and via the pressure regulator adjust the pressure to the minimum pressure as identified by the manufacturer.

- (d) Open the outlet valve (valve 2) and allow the valve under test to shut.
- (e) Record the volume of water that passed through the valve under test.
- (f) Reset the valve and repeat Steps (c) to (e) for a total of three readings.
- (g) Repeat Steps (b) to (f) at the maximum volume setting.
- (h) Repeat Steps (b) to (g) at the manufacturer's maximum operating pressure.

C.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer and model identification.
- (b) Test parameters, i.e. pressure.
- (c) The volume in litres permitted to flow through the valve prior to activation expressed as an average of the three readings, when subjected to minimum and maximum pressure and whether there was water hammer.
- (d) If the valve closed leak tight.
- (e) Reference to this test method, i.e. WMTS 479, Appendix C.

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