



**WMTS-033:2021**

**Spraying apparatus/dispensing units with the option of chemical additions – Hose-connected, wall-mounted and/or hose-connected spraying apparatus and/or dilution dispensing systems**

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**WaterMark Technical Specification**

Document formerly known as:-

ATS 5200.033 – 2004 Spraying apparatus/dispensing units with the option of chemical additions  
– Hose-connected

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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).

### Revisions:-

- o 2021:- The objective of this revision is to incorporate requirements for the certification of all wall-mounted and/or hose-connected spraying apparatus and/or dilution dispensing systems. This amendment does not include requirements for dispensing systems using peristaltic pumps.

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](http://www.abcb.gov.au)). These lists will be version controlled with appropriate historic references.



## ACKNOWLEDGEMENTS

WaterMark Technical Specification WMTS-033:2021 was prepared by industry and was approved by the Administering Body on XX XX 2021.

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## 1 SCOPE

This Technical Specification sets out requirements for wall-mounted and/or hose-connected spraying apparatus and/or dilution dispensing systems.

This specification does not include requirements for dispensing systems using peristaltic pumps. The dispensing systems must have an open-ended outlet.

## 2 APPLICATION

Dispensing systems (referred to as the “device”) provide a means for drinking water to be mixed with other chemicals to provide users with a pre-mixed solution, ready for use. This specification applies to devices classified as chemical dispensing systems, having a self-contained means of backflow prevention.

The devices covered by this specification rely on incoming water pressure and velocity. No additional pressurised pumping apparatus is to be connected to these dispensing systems.

Typical devices utilise elastomeric membranes to facilitate backflow prevention. These membranes are pipe interrupter devices with an elastomeric membrane, fitted with air inlet port(s). These ports are closed when water flows through, at above atmospheric pressure, but open to admit air if there is a sub atmospheric pressure at the water inlet, or when the flow stops. The ports close to be watertight when the flow of water is resumed at normal pressure. It ensures protection against back siphonage only by draining to the atmosphere, but not against back pressure. Direction of water flow is vertically downwards.

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

1565	Copper alloys — Ingots and castings
1567	Copper and copper alloys — Wrought rods, bars and sections
2345	Dezincification resistance of copper alloys
2845.1	Water Supply — Backflow Prevention devices
3688	Water supply and Gas systems — Metallic fittings and end connectors

AS/NZS

- 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

ASSE

- 1055 Chemical Dispensing Systems with Integral Backflow Protection

Other Publishers

- CEN/TS 13388 Copper and copper alloys — Compendium of compositions and products
- ASTM A276 Standard Specification for Stainless Steel Bars and Shapes
- ASTM A269 Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

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 (PCA) and AS/NZS 3500.0 and those below apply.

### **4.1 Hose Connected Spraying Apparatus**

Hose connected spraying apparatus are devices intended for connection to flexible hoses ( eg. garden hoses) which are in turn connected to an isolating tap such as a hose tap. A hose-connected device is hand-held and not permanently mounted.



## 4.2 Wall Mounted Devices

Wall-Mounted devices are permanently connected to mains supply and fixed to a wall or fixture.

## 4.3 Nominal Size

The size determined by the inlet connection.

# 5 MATERIALS

## 5.1 General

This section specifies requirements for materials utilised in the construction of the product. Materials in contact with water shall be corrosion resistant or protected against corrosion.

## 5.2 Hose Connected Devices

Material requirements not specified.

## 5.3 Wall-Mounted devices

### 5.3.1 Products in contact with Drinking Water

Materials in contact with drinking water, upstream of the backflow prevention device, shall comply with AS/NZS 4020.

### 5.3.2 Copper Alloy

Copper alloy shall comply with CEN/TS 13388, or AS 1567, or AS 1565, as applicable.

Copper alloy components upstream and including any integral shut off device, shall comply with AS 2345.

### 5.3.3 Plastics

Plastic material shall be of a grade suitable for use in plumbing applications at the manufacturer's maximum operating pressure and temperature and shall comply with the requirements of the specification. Polyoxymethylene (POM) plastics shall be copolymer.

Polymers for use in the construction of elastomeric membrane components of the backflow prevention device, shall be suitable for use with chemicals.

### 5.3.4 Stainless Steel

Stainless steel components shall comply with:

- a) Wrought – ASTM A276.

- b) Tubular in contact with water – ASTM A269 and be of Grades 304, 316, 316L, 316Ti, UNS S31803 (2205) or equivalent.
- c) Tubular not in contact with water – ASTM A269 and be of Grades 304, 304L, 304LN, 316, 316L, 316Ti, UNS S31803 (2205) or equivalent.

#### **5.3.5 Stainless Steel springs**

Where used for springs, bright stainless steel hard drawn wire of Grade 301, or higher shall be used.

## **6 MARKING**

Markings shall, as a minimum, be in accordance with clause 9.6 of the [Manual for the WaterMark Certification Scheme](#).

In addition, each device shall be marked with the following:

- a) Manufacturer's name, brand or trademark.
- b) Batch identification.

## **7 PACKAGING**

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

## **8 DESIGN**

### **8.1 Hose Connected Spraying Apparatus**

#### **8.1.1 Air gap**

Each hose connected spraying apparatus shall incorporate an air gap that is, open to the atmosphere, and be located upstream of the point where the water can potentially mix with any dispensing substance.

### **8.2 Wall-Mounted Dispenser Devices**

Wall mounted dispenser devices shall include backflow prevention that complies with the requirements of this specification, and is located downstream of any integral shut-off valves.

Wall mounted dispenser devices incorporating a pipe interrupter device with an elastomeric membrane to facilitate backflow prevention, are only suitable for applications where chemicals have a low toxicity rating.

Wall mounted dispenser devices designed for applications where chemicals have a high toxicity rating, must include an internal high hazard backflow prevention device compliant to AS/NZS 3500.1, or be installed with an external high hazard backflow device compliant to AS/NZS 3500.1.

### **8.3 End Connectors**

#### **8.3.1 Copper and copper alloy end connectors**

Copper and copper alloy end connectors shall comply with AS 3688.

#### **8.3.2 Other end connectors**

Other end connectors shall be capable of making a watertight joint when tested in accordance with clause 9.4.3.

### **8.4 Components**

Integral plumbing components supplied with devices, that would normally require WaterMark certification, shall comply with the relevant standard for that component.

## **9 PERFORMANCE CRITERIA AND TEST METHODS**

### **9.1 Hose-Connected devices**

When tested in accordance with Appendix B, the dispensing unit shall not permit back-siphonage through the sight glass.

### **9.2 Wall-Mounted devices**

Wall-Mounted devices shall comply with the performance requirements of ASSE 1055.

#### **9.2.1 Water-tightness**

When subjected to an inlet pressure of 1.5 times the manufacturers maximum working pressure, for a minimum of 10 seconds, the device shall not show signs of leakage, cracks or other failure. This requirement is for batch testing purposes only.

## **10 TEST SEQUENCE AND TEST SAMPLE PLAN**

VOID

## **11 PRODUCT DOCUMENTATION**

Information shall be available to aid the installer and user in the correct installation, operation and ongoing maintenance of the product and include critical data on the products, use and application and any limitations.

The information shall be readily available and be in plain English and supplemented by figures and diagrams as applicable.

### **11.1 Product data**

Product data shall be available that identifies the following critical product characteristics as a minimum:

- a) Maximum Operating Temperature and Maximum Operating Pressure Jointing methods and adaptation to other piping systems.
- b) Product range and model identification.
- c) Performance data.

### **11.2 Product limitations**

#### **11.2.1 Hose Connected Devices**

The installation instructions, and/or packaging supplied with hose connected devices shall state the at the device is only suitable for installation downstream of an isolation valve and AS/NZS 2845.1 compliant backflow prevention device.

#### **11.2.2 Wall Mounted Devices**

The installation instructions, and/or packaging supplied with wall mounted dispenser devices shall state the at the device is only suitable for installation downstream of an isolation valve. The installation instructions shall state any limitations of the device's connecting pipework.

### 11.3 Installation Instructions

Instructions shall be provided that give full details of installation procedures for the device including:

- a) Reference to installation in accordance with the PCA, including the installation of any non-integral backflow prevention device and any limitations on the product.

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 PCA. 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) The hazard rating of the integral backflow prevention device.
- c) Detailed step by step instructions.
- d) The need for special tools or training.
- e) Commissioning procedures and adjustments required.
- f) Troubleshooting guide.
- g) Contact details for after sales service.

### 11.4 Operating and maintenance instructions

Operating and maintenance instructions shall be provided that include:

- a) Any regular maintenance requirements.
- b) Troubleshooting guide.
- c) Contact details for after-sales service.

## **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 A.5 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 A.5 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**

<b>Characteristic</b>	<b>Clause</b>	<b>Requirement</b>	<b>Test method</b>	<b>Frequency</b>
Materials	5	Materials	Review materials parts lists and compliance certificates	At any change in materials specification
	5.3	Products in contact with Drinking Water	AS/NZS 4020	At any change in material
Design	8.1.1	Air Gap	Design Review	At any change in design
	8.2	Backflow Prevention Device	Design review	
	8.3	End Connectors	AS 3688	
Performance	9.1	Hose-Connected devices	Appendix B	At any change in design
	9.2	Wall-Mounted devices	ASSE 1055	At any change in design
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	8.3	End connectors	AS 3688	Once per batch
Performance	9.2.1	Water-tightness	Clause 9.2.1	Once per batch

**TABLE A3**  
**MINIMUM ANNUAL INSPECTION REQUIREMENTS BY WMCAB**

Characteristic	Clause	Requirement	Verification method	Frequency
Materials	5	Composition, temper, etc.	Review materials parts lists and compliance certificates	Annually
Marking	6	Marking	Visual examination	Annually
Components	8.4	Integral components	Review certificates	Annually
Design	8.3	End connectors	Batch Release test records	Annually
Performance	9.2.1	Water-tightness	Batch Release test records	Annually

**TABLE A4**  
**RE-EVALUATION TESTING**

Characteristic	Clause	Requirement	Test method
Materials	5	Composition, temper, etc.	Review materials parts lists and compliance certificates
Marking	6	Marking	Visual examination
Design	8.3	End connectors	AS 3688
Performance	9.2.1	Water-tightness	Clause 9.2.1

## APPENDIX B PRODUCT PERFORMANCE TEST METHODS

(Normative)

### B.1 TEST EQUIPMENT

A dispensing unit shall be tested with equipment such as:

- a) a vacuum tank
- b) a sight glass
- c) a combined pressure/vacuum gauge capable of registering pressures between 100 kPa and +300 kPa
- d) associated valves and piping; and
- e) colour indicator consisting of:
  - (i) a liquid dye, where the dispensing unit is designed to dispense a liquid chemical; or
  - (ii) a water-soluble solid dye, where the dispensing unit is designed to dispense a solid chemical, whether by dissolving the chemical in water or otherwise.

### B.2 TEST PROCEDURE

#### B.2.1 General

The procedure shall be as follows:

- a) All non-return devices (other than air gaps) shall be rendered inoperative before testing commences.
- b) Where a tap dispensing unit is fitted with a device that automatically disconnects the unit from its water supply, the tap dispensing unit shall be tested with the unit fastened in such a manner that automatic disconnection from the water supply is prevented.

#### B.2.2 Tap-dispensing unit

A tap-dispensing unit shall be tested with:

- a) the tap facing vertically downwards; and
- b) the tap facing downwards at an angle of 45° to the horizontal plane.

**B.2.3 Brush-dispensing units**

A brush-dispensing unit shall be tested in the following orientations:

- a) The brush facing downwards at an angle of 90° to the vertical plane transected by the hose and with the hose projecting:
  - (i) upwards at an angle of 80° to the horizontal plane;
  - (ii) upwards at an angle of 45° to the horizontal plane;
  - (iii) horizontally;
  - (iv) downwards at an angle of 45° to the horizontal plane; and
  - (v) downwards at an angle of 80° to the horizontal plane.
- b) The brush facing upwards at an angle of 90° to the vertical plane transected by the hose and with the hose projecting:
  - (i) upwards at an angle of 80° to the horizontal plane;
  - (i) upwards at an angle of 45° to the horizontal plane;
  - (ii) horizontally;
  - (iii) downwards at an angle of 45° to the horizontal plane; and
  - (iv) downwards at an angle of 80° to the horizontal plane.
- c) The brush facing downwards:
  - (ii) at an angle of 80° to the vertical plane transected by the hose; and
  - (iii) at an angle of 45° to the vertical plane transected by the hose, with the hose projecting horizontally; or

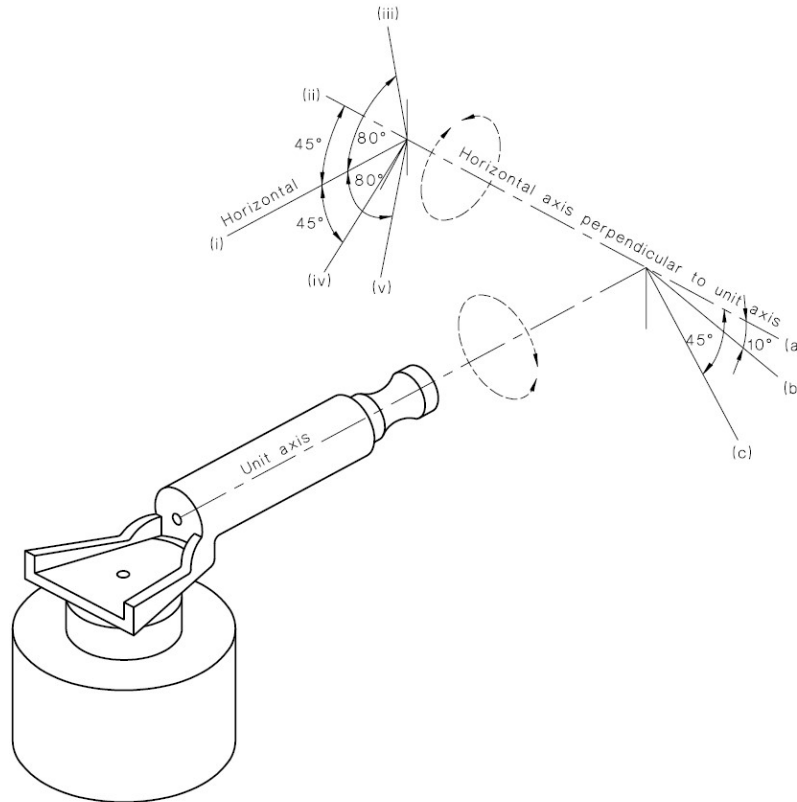
it may be tested in other orientations, which, in the opinion of the certified tester, are appropriate in relation to that type or design of dispensing unit.

**B.2.4 Hose-dispensing units**

A hose-dispensing unit shall be tested in the following orientations and as shown in Figure B2.3:

- a) The unit axis horizontal:
  - (i) rotated upwards at 45° from the horizontal;
  - (ii) rotated;
  - (iii) rotated downwards at 45° from the horizontal; and

- (iv) rotated downwards at  $80^\circ$  from the horizontal.
- b) The unit rotated  $10^\circ$  about the unit axis and positions (i) to (iv), Step (a), repeated as above.
- c) The unit rotated  $45^\circ$  about the unit axis and positions (i) to (iv), Step (a), repeated as above.



**FIGURE B2.3 SHOWING ORIENTATIONS OF UNIT UNDER TEST**

### **B.2.5 Test method**

The procedure for testing dispensing units shall be as follows:

- a) Firmly attach the sight glass to the inlet side of the dispensing unit and connected to the water supply and the vacuum tank.
- b) Fill the dispensing unit with colour indicator to the maximum capacity of its container (as specified by the manufacturer) or, where no maximum capacity is so specified, until its container is completely filled.
- c) Hold the dispensing unit in a static position and in a manner that ensures its container will not be deformed while the dispensing unit is being tested.



- d) Open the outlet of the dispensing unit and release water at a maximum pressure of 150 kPa until colour indicator is visible in the discharge.
- e) Shut off the water supply and immediately apply a negative pressure of 50 +0, -5 kPa to the dispensing unit for 2 mins. No coloured water shall flow through the sight glass.