



WMTS-425:2016

Water closet suite with integral odour control device

WaterMark Technical Specification

2016



ABC



WMTS-425:2016

Water closet (WC) suite with integral odour control device (OCD) connected to sanitary plumbing and drainage system

WaterMark Technical Specification

Document formerly known as:-

ATS 5200.425 – 2009 Technical Specification for Plumbing and Drainage Products
Water closet (WC) suite with integral odour control device (OCD) connected to sanitary plumbing and drainage system.

Publication History:-

First published as ATS 5200.425—2009.
Revised and redesignated as WMTS-425:2016.

2016

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 5200.425 – 2009.

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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PREFACE

WaterMark Technical Specification WMTS-425: 2016 Technical Specification for plumbing and drainage products, Part 425 Water Closet (WC) suite with integral odour control device (OCD) connected to sanitary plumbing and drainage system 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 5200.425 – 2009, 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 26 March 2009.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.425 – 2009.

- Australian Industry Group
- Australian Stainless Steel Development Association
- Certification Interests (Australia)
- Copper Development Centre—Australia
- CSIRO Manufacturing and Materials Technology
- Gas Appliance Manufacturers Association of Australia
- National Plumbing Regulators Forum
- Plastics Industry Pipe Association of Australia
- Plumbing Industry Commission
- Plumbing Products Industry Group
- South Australian Water Corporation
- Water Services Association of Australia

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1 SCOPE

This Technical Specification sets out requirements for water closet (WC) suites that include an integral odour control device (OCD). This device extracts air that includes malodorous gases on demand from the water closet pan and then discharges this air directly into the sanitary drainage system.

NOTES:

- 1 Where the product includes components or accessories, they may be subject to other regulatory requirements (e.g. electrical safety (see AS/NZS 3820) and electromagnetic compatibility (EMC)).*
- 2 The OCD function is limited to extraction of air from the WC pan and is not intended to provide bathroom ventilation.*
- 3 The OCD would be fitted integral and designed in conjunction with a purpose-built water closet and is not intended to be retrofitted to existing products.*

These products require certification to WaterMark Level 1.

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 the Specification shall be demonstrated by a manufacturer for the purpose of product certification.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Australian Technical Specification:

AS

- | | |
|--------|---|
| 1172.1 | Water closet (WC) pans, Part 1: Pans |
| 1172.2 | Water closet (WC) pans of 6/3 L capacity or proven equivalent
Part 2: Cisterns |
| 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 |

- 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

AS/NZS

- 1567 Copper and copper alloys—Wrought rods, bars and sections
- 1568 Copper and copper alloys—Forging stock and forgings
- 3500 Plumbing and drainage
 - 3500.0 Part 0: Glossary of terms
 - 3500.2 Part 2: Sanitary plumbing and drainage
- 3820 Essential safety requirements for low voltage electrical equipment
- PCA Plumbing Code of Australia

4 DEFINITIONS

For the purpose of this Technical Specification, the definitions given in AS/NZS 3500.0 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 specification the following materials are considered to be corrosion resistant:

- (a) Copper, as specified in Clause 5.2.1.
- (b) Copper alloy, as specified in Clauses 5.2.2 and 5.2.3.
- (c) Stainless steel, as specified in Clause 5.2.4.

5.2.1 *Copper*

Copper shall comply with the following:

- (a) *Wrought products* AS 2738.
- (b) *Tubular components* Copper tube shall comply with AS 1432.

5.2.2 *Copper alloy*

Copper alloy shall comply with the following:

- (a) *Castings* AS 1565 or capable of passing the requirements of Clause 5.2.3, 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. For the purpose of this test, the entire tube component shall be tested before any coating or plating operation.

5.2.3 *Dezincification-resistant (DR) copper alloy*

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

5.2.4 *Stainless steel*

Stainless steel (SS) shall be minimum grade 316 or 316 L or other material with a Pitting Resistance Equivalent Number (PREN) of 22, or greater, complying with the relevant ASTM Standard for the product form.

5.3 Plastic materials

Plastic materials shall be fit for purpose and comply with the relevant standard for the product type or type of plastic used.

5.4 Elastomeric materials

The materials used for seals or gaskets shall comply with the physical property requirements of AS 1646.

6 MARKING

WC suites with integral OCD shall be marked with the following:

- (a) The requirements of AS 1172.1 and AS 1172.2.
- (b) WaterMark.
- (c) Certificate number.
- (d) The number of this Technical Specification, i.e. WMTS-425.

NOTE: Where space is limited, the number of the Technical Specification may be in abbreviated form, i.e. S425.

7 PACKAGING

The water closet suite with integral OCD shall be suitably packaged to prevent damage during transportation and handling.

8 DESIGN

8.1 Exhaust fan

The integral exhaust fan shall operate on demand. It shall be of suitable airflow capacity so as to exhaust odours directly from the water closet pan environment and not affect the suite's flushing performance.

8.2 Integral non-return valve

The OCD shall include an integral non-return valve that positively prevents the reverse flow of odours from the sanitary drainage system. The valve shall be biased by gravity toward the closed position, thereby blocking any reverse flow of sewer gases. The valve shall not be mechanically operated.

8.3 End connection

The connection to the drainage system or fixture shall comply with the requirements of the Australian Standard (AS) or Technical Specification (WMTS) relevant to the piping system.

NOTE: The outlet pipe of the OCD should connect to the outlet spigot of the pan and not the pan discharge pipe.

8.4 Compliance with other specifications

The water closet suite shall comply with the requirements of AS 1172.1 and AS 1172.2.

9 PERFORMANCE REQUIREMENTS AND TEST METHODS

9.1 Functional test (includes non-return valve opening and flow rate)

When tested in accordance with Appendix B—

- (a) the OCD shall operate on demand and in accordance with manufacturer's specification; and
- (b) the non-return valve shall open and allow a flow rate not less than 2 L/s.

9.2 Airtightness test

When tested in accordance with Appendix C, the non-return valve within the OCD shall withstand a backpressure of 10 kPa (10 000 Pa) without leakage.

9.3 Durability test

When tested in accordance with Appendix D, the OCD shall not malfunction and comply with the functional test requirements of Clause 9.1.

10 VOID

11 PRODUCT DOCUMENTATION

11.1 General

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 product's use and application, and any limitations. The documentation shall satisfy the requirements of a warranty as specified in the Plumbing Code of Australia (PCA) and the requirements of the AS/NZS 3500 series of Standards. The information shall be readily available and be in plain English and supplemented by figures and diagrams, as applicable.

This documentation shall include design limitations associated with the installation of the maximum number of OCDs permissible according to stack size, as follows:

Size of stack, DN	Maximum number OCDs
100	73
125	145
150	242

11.2 Product data

Product data shall be available, which shall identify the product's critical operating characteristics, as follows:

- (a) Delivery volume and flow rate.
- (b) Waste discharge flow rate, temperature and required size of piping.
- (c) Minimum and maximum allowable operating pressure and temperature.

11.3 Installation, operating and maintenance instructions

11.3.1 *Installation*

Installation instructions shall be provided, which shall give full details of installation procedures for the water closet suite as follows:

- (a) References to AS/NZS 3500, where applicable.
- (b) Detailed step-by-step instructions.
- (c) The need for special tools or training.
- (d) Commissioning procedures and adjustments required.

11.3.2 *Operating and maintenance*

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 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 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 Technical Specification.

The certification scheme serves to indicate that the 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 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 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.4.2 Sampling plan

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

A.4.3 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.4.4 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	Review of documentation/physical examination	At any change in design/specification
Packaging	7	Protection from damage during transportation and handling		
Design	8.1	Exhaust fan	Review of documentation/physical examination	At any change in design/specification
	8.2	Integral non-return valve	Review of documentation/physical examination	
	8.3	End connection	Relevant Standard	
	8.4	Compliance with other specifications	AS 1172.1 AS1172.2	
Performance	9.1	Functional test	Appendix B	At any change in design or manufacturing process
	9.2	Airtightness test	Appendix C	
	9.3	Durability test	Appendix 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 tests or supplier's test data	Each delivery batch
Marking	6	Marking	Visual examination	100%
Performance	9.1	Functional test	Appendix B	100%

Appendix B FUNCTIONAL TEST

(Normative)

B.1 SCOPE

This Appendix sets out the method for determining the functioning of the OCD and in particular the ability of—

- (a) the OCD to operate on demand and in a sequence as identified by the manufacturer;
- (b) the included non-return valve to open and provide a minimum flow; and
- (c) the included non-return valve to withstand a backpressure.

B.2 PRINCIPLE

The device is subjected to normal operation and checked for essential functionality.

B.3 APPARATUS

The following apparatus is required:

- (a) Suitable equipment to enable the measurement of pressure and flow rate.
- (b) Suitable apparatus and supply of air to enable a pressure of 10 000 Pa to be supplied downstream of OCD non-return valve.

B.4 PROCEDURE

The procedure shall be as follows:

- (a) *General set-up* Install the water closet suite with integral OCD in accordance with AS/NZS 3500.2 and the manufacturer's instructions with test points in order to measure flow and volume.
- (b) *Functionality:*
 - (i) Pre-condition the water closet suite with a minimum of 3 flushes. Instigate the function of the water closet suite and the on-demand OCD and flush-on full flush a minimum of 10 times.
 - (ii) Observe the operation of the integral OCD and general functionality.

- (iii) Record the sequence of operation of the integral OCD and compare against the manufacturer's specification. Note any deviations.
- (c) *Non-return opening and flow operation:*
 - (i) Instigate the function of the OCD.
 - (ii) Observe the opening of the non-return valve and measure the flow volume when operating.

B.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer, model and type of water closet suite and description of integral OCD.
- (b) Functionality, and any deviations from manufacturer's specification.
- (c) OCD flow rate (L/sec).
- (d) Whether all criteria have been met.
- (e) Any malfunctions during the test.
- (f) Reference to this test method, i.e. WMTS-425, Appendix B.

Appendix C AIRTIGHTNESS TEST

(Normative)

C.1 SCOPE

This Appendix sets out the method for determining the airtightness of an OCD non-return valve.

C.2 PRINCIPLE

The OCD non-return valve is subjected to various pressure tests.

C.3 APPARATUS

The following apparatus is required:

- (a) A pipe of appropriate diameter and material with a sealed base as illustrated in Figure C1.
- (b) Air-isolating valve.
- (c) Air pump.
- (d) Manometer.
- (e) Means for attaching plug and the OCD.

C.4 PROCEDURE

The procedure shall be as follows:

- (a) With a plug fitted, check that the test apparatus is airtight when subjected to a pressure of 10 000 +100, -0Pa for a period of at least 5 min.
- (b) Remove the plug and fit the OCD as per manufacturer's instructions.
- (c) Open the air inlet valve and slowly raise the air pressure to 30 +10, -0Pa. Close the air inlet valve.
- (d) After 5 min record the internal pressure.
- (e) If the internal air pressure is less than 90% of the initial value, check that the apparatus is still airtight. If a leak is detected in the apparatus, rectify and repeat Step (c).
- (f) Open the air inlet valve and slowly raise the pressure to 500 +10, -0 Pa. Close the air inlet.

- (g) After 5 min record the internal pressure.
- (h) If the pressure is less than 450 Pa, check that the apparatus is still airtight. If a leak is detected in the apparatus, rectify and repeat Step (c).
- (i) If the criteria in Steps (a) to (g) are achieved, raise the pressure by opening the air inlet valve and pumping air into the apparatus until it reaches 10 000 +100, -0 Pa. Close the air valve.
- (j) After 5 min record the internal pressure.
- (k) If the pressure is less than 9000 Pa, check the apparatus is airtight using a soap solution and inspecting for bubbles. If a leak is detected in the apparatus, rectify and repeat from Step (f).

C.5 CRITERIA

The pressures recorded in Paragraph C4 shall be not less than—

- (a) 90% of the initial value (30 +10, -0 Pa);
- (b) 450 Pa; and
- (c) 9000 Pa respectively.

C.6 TEST REPORT

The following shall be reported:

- (a) Manufacturer, model, type.
- (b) Whether all criteria have been met.
- (c) Any malfunctions during the test.
- (d) Reference to this test method, i.e. WMTS-425, Appendix C.

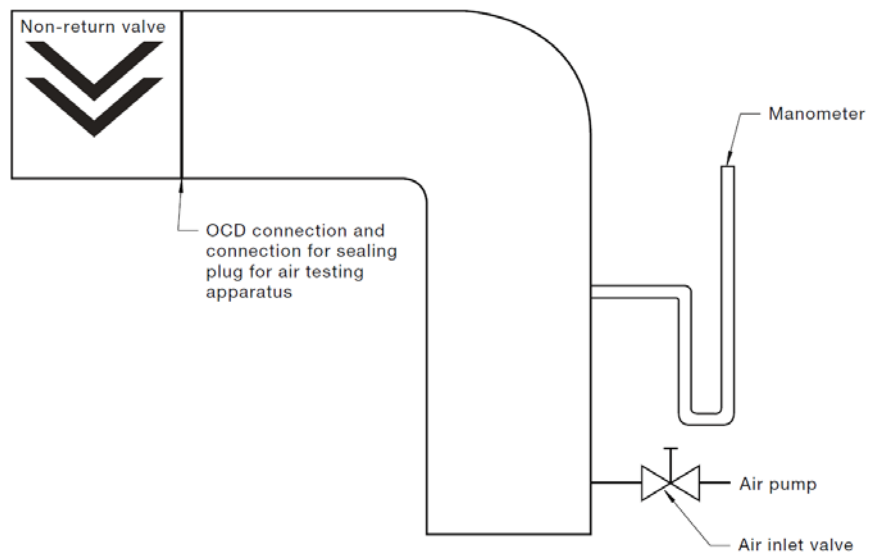


FIGURE C1 TYPICAL AIRTIGHTNESS RIG

Appendix D DURABILITY TEST

(Normative)

D.1 SCOPE

This Appendix sets out the method for determining the durability of the OCD.

D.2 PRINCIPLE

The OCD is subjected to a number of cycles of operation and checked at intervals for functionality.

D.3 APPARATUS

Suitable equipment to instigate multiple operations of the water closet suite and included OCD.

D.4 PROCEDURE

The procedure shall be as follows:

- (a) Test water closet suite with included OCD in accordance with Appendix B.
- (b) Instigate the OCD function through its normal cycle for a minimum of 10 000 cycles.
- (c) Check functionality in accordance with Appendix B after 5000 and 10 000 cycles.
- (d) Record any malfunctions during the test.

D.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer, model, type.
- (b) Number of cycles completed.
- (c) Any malfunctions during test.
- (d) Reference to this test method, i.e. WMTS-425, Appendix D.

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