



WMTS-483:2017

Odour control filter

WaterMark Technical Specification

2017





WMTS-483:2017

Odour control filter

WaterMark Technical Specification

Document formerly known as:-

ATS 5200.483 – 2012 Technical Specification for Plumbing and Drainage Products
Odour control filter

Publication History:-

First published as ATS 5200.483—2012.
Revised and redesignated as WMTS-483:2016.
Second Edition: 2017

2017

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 5200.483 – 2012.

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).

While the ABCB, the participating Governments and other groups or individuals who have endorsed or been involved in the development of the WMTS, have made every effort to ensure the information contained in this document is accurate and up to date, such information does in no way constitute the provision of professional advice.

The ABCB gives no warranty or guarantee and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

Users should seek appropriate independent professional advice prior to relying on, or entering into any commitment based on material in this document in relation to plumbing or related activities. Its interpretation in no way overrides the approvals processes in any jurisdiction.

The ABCB welcomes suggestions for improvement in the WMTS, and encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact the ABCB via phone on 1300 134 631, email at watermark@abcb.gov.au or write to the WaterMark Administering Body, ABCB, GPO Box 2013, Canberra ACT 2601.

Copyright within the following document is owned by the Australian Government and States and Territories of Australia and its Licensors.

Apart from any use permitted under the Copyright Act 1968, no part may be reproduced without prior permission. Requests and enquires concerning reproduction and rights should be directed to:

General Manager
Australian Building Codes Board
GPO Box 2013
Canberra ACT 2601
Phone 1300 134 631 – Fax 02 6213 7287

PREFACE

Watermark Technical Specification WMTS-483: 2016 Technical Specification for plumbing and drainage products, Odour control filter was originally prepared by the Joint Standards Australia/Standards New Zealand Committee WS-031, Technical Procedures for Plumbing and Drainage Products Certification as ATS 5200.483 – 2012.

The objective of this Technical Specification is to enable product certification in accordance with the requirements of the Plumbing Code of Australia (PCA).

Appendix C of this Technical Specification includes two methods for conducting odour reduction tests. Either method may be used for satisfying the odour reduction performance requirement.

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 5200.483 – 2012, 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 30 January 2012.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.483 – 2012.

- Australian Industry Group
- Australian Stainless Steel Development Association
- Copper Development Centre – Australia
- CSIRO Manufacturing and Infrastructure Technology
- Department of the Environment, Water, Heritage and the Arts (Federal)
- National Plumbing Regulators Forum
- Plastics Industry Pipe Association of Australia
- Plumbing Products Industry Group
- South Australian Water Corporation
- Water Services Association of Australia

TABLE OF CONTENTS

1	Scope	6
2	Application.....	6
3	Referenced documents.....	6
4	Definitions.....	6
5	Materials	7
6	Marking	7
7	Packaging	8
8	Design	8
9	Performance requirements and test methods.....	8
10	Test sequence and test sample plan	9
11	Product documentation	9
	Appendix A - Means for demonstrating compliance with this technical specification.....	11
	Appendix B - Airflow capacity determination test.....	14
	Appendix C - Odour reduction test (Method 1)	15
	Appendix C - Odour reduction test (Method 2)	17

1 SCOPE

This Technical Specification sets out requirements for filter assemblies of nominal sizes DN 40 to DN 100, designed to be installed in sanitary drainage system, in order to minimize odours in installations.

The filter assemblies are not intended to be an alternative to the established venting practices specified in the AS/NZS 3500 series, but only as an accessory to aid in the reduction of odours.

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

3 REFERENCED DOCUMENTS

AS

1646 Elastomeric seals for waterworks purposes

AS/NZS

3500 Plumbing and drainage

3500.0 Part 0: Glossary of terms

3500.2 Part 2: Sanitary plumbing and drainage

3500.5 Part 5: Domestic installations

4 DEFINITIONS

For the purpose of this Technical Specification, the definitions given in AS/NZS 3500.0 and the one below apply.

4.1 Filter vent

A ventilation product that permits airflow from positive or negative pressures and contains a serviceable odour control element.

5 MATERIALS

5.1 General

This Clause specifies requirements for materials utilized in the construction of the product.

5.2 Metallic materials

Metallic material shall comply with the material section of AS/NZS 3500.2.

5.3 Plastics materials

5.3.1 General

Plastics materials shall comply with the relevant Standard for the product type or type of plastics used.

5.3.2 UV resistance

Plastics materials for outdoor applications shall be stabilized by suitable ultraviolet light stabilizers or protected from direct sunlight.

5.4 Elastomeric materials

The materials used for seals or gaskets shall comply with the hardness, tensile strength and elongation at break and compression set requirements of AS 1646.

6 MARKING

Each drainage vent filter shall be legibly and durably marked with the following:

- (a) Manufacturer's name, brand or trademark.
- (b) A 'warning' on the drainage vent filter advising that the cartridge requires regular replacement and a nominated replacement period. The 'warning' shall be clearly visible in the typical as-installed position.
- (c) WaterMark.
- (d) Licence number.
- (e) The number of this Technical Specification, i.e. WMTS-483.

NOTE: Where space is limited, the number of the Technical Specification may be in abbreviated form (i.e. S483).

7 PACKAGING

The drainage vent filter shall be packaged in a manner so as to avoid damage during transportation and handling, and to ensure the physical and dimensional integrity of the product are maintained.

8 DESIGN

8.1 Airflow capacity

The manufacturer shall make available data that identifies the airflow capacity of the filter assembly over a range of positive and negative pressures.

8.2 Odour minimization

The manufacturer shall make available data that supports the claimed minimization of odours. The data shall cover the nominated life of the filter.

8.3 Filter life

The manufacturer shall make available data that validates the nominated replacement period of the active component within the filter assembly.

8.4 End connectors

End connectors for connection to metallic or plastics piping systems shall comply with the requirements of the Australian Standard (AS) or WaterMark Technical Specification (WMTS) relevant to the piping system.

9 PERFORMANCE REQUIREMENTS AND TEST METHODS

9.1 Airflow capacity

When tested in accordance with Appendix B, the airflow capacity of the vent filter shall not deviate from the manufacturer's data by more than $\pm 10\%$.

9.2 Odour reduction

When tested in accordance with either method at Appendix C, the filter assembly shall demonstrate a reduction of at least 75% in hydrogen sulphide gas. The assembly shall also demonstrate a reduction of ammonia.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

10.1 Test samples

Independent samples covering the range of nominal sizes and types of filter assemblies shall be used for testing the performance requirements of Clause 9.

10.2 Test sequence

The airflow capacity test shall cover all nominated configurations. The odour minimization test shall be conducted to evaluate the active component of the filter assembly.

11 PRODUCT DOCUMENTATION

11.1 General

Information shall be available to aid the installer and user in the correct installation and ongoing maintenance of the filter assembly and shall include critical data on the filter's use and application and any limitations. The documentation shall satisfy the requirements of a warranty as referenced in the Plumbing Code of Australia (PCA) and those 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.

11.2 Product data

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

- (a) Airflow capacity of the vent filter, measured in litres per second (L/s), over a range of pressure drops recorded in kilopascals (kPa).
- (b) Compatible connection types.
- (c) Claims regarding odour minimization.
- (d) Visible placement of cartridge replacement notice.
- (e) Nominated replacement period.
- (f) Jointing methods and adaptation to other piping systems.
- (g) Product range and model identification.

11.3 Instructions

11.3.1 *Installation instructions*

Full details of installation procedures for the vent filter shall be provided and shall include the following:

- (a) References to AS/NZS 3500.2 and AS/NZS 3500.5 where applicable.
- (b) Warning advice that the vent filter cannot replace the upstream vent of the property drainage system.
- (c) Step-by-step instructions.
- (d) Troubleshooting guide.
- (e) Visible placement of cartridge replacement notice.
- (f) Contact details for after-sales service.

11.3.2 *Maintenance instructions*

Maintenance instructions shall be provided and shall include the following:

- (a) Filter replacement period for typical locations throughout Australia with respect to temperature and relative humidity.
- (b) Instructions on safe disposal in compliance with the requirements of environmental regulation.
- (c) Any regular maintenance requirements.
- (d) Spare parts information.
- (e) Troubleshooting guide.
- (f) 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 has to 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 of this Appendix.

A.4 DEFINITIONS

A.4.1 Type test

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

A.4.2 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.4.3 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.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	Composition, etc.	Review materials parts lists and compliance certificates	At any change in materials specification
Marking	6	Labelling/markings	Review of documentation, physical examination	At any change in design/specification
Packaging	7	Protection from transit damage		
Design	8.1	Airflow capacity	Review of manufacture's data	At any change in design
	8.2	Odour minimization		
	8.3	Filter life		
	8.4	End connectors	Relevant WMTS or AS	
Performance	9.1	Airflow capacity	Appendix B	At any change in design
	9.2	Odour reduction	Appendix C – either method	
Product documentation	11	Product data/installation/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	Composition, etc	Delivery acceptance tests or supplier's quality certificate	Each delivery batch
Marking	6	Marking	Visual examination	100%
Performance	9.1	Airflow capacity	Appendix B	Once per batch

APPENDIX B - AIRFLOW CAPACITY DETERMINATION TEST

(Normative)

B.1 SCOPE

This Appendix sets out the method for determining the airflow capacity of the vent filter.

B.2 PRINCIPLE

The airflow is measured when the vent filter is subjected to a range of positive and negative pressures.

B.3 APPARATUS

A suitable rig is required, which shall comprise the following:

- (a) An appropriate plastic pipe with a static pressure tapping for a suitable manometer.
- (b) Manometer.
- (c) A means to induce and maintain a steady airflow through the pipe (e.g. variable rated electric fan or equivalent).
- (d) An instrument to measure the volumetric airflow in the tube in litres per second (L/s).

B.4 PROCEDURE

The procedure shall be as follows:

- (a) Connect the device to the top of the pipe in accordance with the manufacturer's instructions.
- (b) Induce airflow down the pipe while recording the developed static air pressure and flow rate.
- (c) Measure and record the airflow rate and the corresponding pressure over a range of values.
- (d) Reverse direction of airflow through the device.
- (e) Measure and record the airflow rate and the corresponding pressure over the same range of values.

B.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer, model, type and size of vent filter.
- (b) The measured airflow rates and the pressures at which they occurred.
- (c) Reference to this test method i.e. Appendix B, WMTS-483.

APPENDIX C - ODOUR REDUCTION TEST (METHOD 1)

(Normative)

C.1 SCOPE

This Appendix sets out the method to demonstrate the capability of the filter assembly to reduce malodorous gases.

C.2 PRINCIPLE

Mixtures of malodorous gases are used to determine the reduction efficiency of a filter assembly. Typically these gases are—

- (a) Hydrogen sulphide; and
- (b) Ammonia.

Mixtures are made consisting of 25% malodorous gas and 75% nitrogen as the balance mixer.

C.3 APPARATUS

A suitable rig and components are required, comprising the following:

- (a) The malodorous gas to be analysed.
- (b) Nitrogen gas to be used as a balance mixer.
- (c) Mixing equipment with suitable corrosion-resistant fittings.
- (d) Suitable detection equipment.
- (e) Plastic container with included tap to house test filter assembly.
- (f) Fume cupboard and protective equipment.

C.4 PROCEDURE

The procedure shall be as follows:

- (a) Mix the malodorous gas under consideration with nitrogen in a concentration of 25% malodorous gas and 75% nitrogen.
- (b) Install the filter assembly in a suitable plastic container so that the gas is encased to keep it separate from the external atmosphere and be made sterile. Include a tap on the top of the container so that gas can be extracted for measurement purposes.
- (c) Conduct separate tests for each malodorous gas mixture.

Each test shall consist of a control run (no filter material present) and one run with the filter material in place. For the first test (short exposure test), the gas mixture is passed through the filter and sampled 5, 10, 15 minutes after the test starts. For the second test (long exposure test), the gas mixture is passed through the filter and sampled 1, 2 and 3 hours after the test starts. The flow rate through the apparatus shall be 1 ± 0.1 L/min and shall remain constant for all the tests.

- (d) At each time interval, measure the gas composition, in parts per million (ppm).
- (e) Compare the composition of the test sample to the control at each time period and express as a percentage reduction.

C.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer, model, type and size of filter assembly and full details of the active agent.
- (b) The measured gas composition for the control and test sample at the various time periods.
- (c) Flow rate used in each test.
- (d) Percentage reduction of various gas mixtures.
- (e) Reference to this test method, i.e. Appendix C (Method 1), WMTS-483.

APPENDIX C - ODOUR REDUCTION TEST (METHOD 2)

(Normative)

C.1 SCOPE

This Appendix sets out the method to demonstrate the capability of the filter assembly to reduce malodorous gases.

C.2 PRINCIPLE

Mixtures of malodorous gases are used to determine the reduction efficiency of a filter assembly. Typically these gases are—

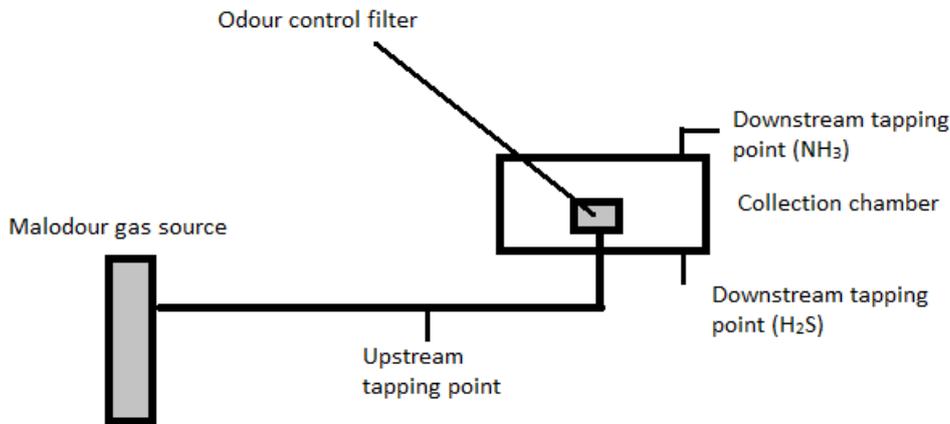
- (a) Hydrogen sulphide; and
- (b) Ammonia.

Mixtures are made consisting of malodorous gas with nitrogen as the balance mixer.

C.3 APPARATUS

A suitable rig and components are required, comprising the following:

- (a) The malodorous gas to be analysed:
 - I. Hydrogen sulphide (H_2S) at 10ppm, ± 0.5 ppm.
 - II. Ammonia (NH_3) at 25ppm, ± 1.5 ppm.
- (b) Nitrogen gas to be used as a balance mixer.
- (c) Mixing equipment with suitable corrosion-resistant fittings.
- (d) Suitable detection equipment.
- (e) Plastic container with included tap to house test filter assembly.
- (f) Fume cupboard and protective equipment. Refer to MSDS for both H_2S and NH_3 . Suitable precautions shall be taken to ensure adequate mitigation of dangerous concentration levels.



C.4 PROCEDURE

The procedure shall be as follows:

- (a) Prepare malodorous gas for testing at concentrations specified.
- (b) Install the filter assembly in a suitable plastic container so that the gas is encased to keep it separate from the external atmosphere and be made sterile. Include a tap on the top of the container so that gas can be extracted for measurement purposes.

Note: H₂S and NH₃ have different densities to air. The tapping points for extracting gas must be situated in a position where any malodorous gas passing through the odour control filter is likely to be located. (i.e. tapping point in bottom of the container for H₂S measurements, and top of the container for NH₃ measurements).

- (c) Conduct separate tests for each malodorous gas mixture. For the first test (short exposure test), the gas mixture is passed through the filter and sampled 5, 10, 15 minutes after the test starts. For the second test (long exposure test), the gas mixture is passed through the filter and sampled 1, 2 and 3 hours after the test starts. The flow rate through the apparatus shall be 1 ±0.1 L/min and shall remain constant for all the tests.
- (d) At each time interval, measure the gas composition both upstream and downstream of the odour control filter at no longer than 1 minute between the two readings. If at any time the malodorous gas test mixture is not within specified concentrations the test shall be abandoned and started again using a new sample.
- (e) Compare the concentrations of the malodorous gas at each time period from upstream and downstream measurements, and express as a percentage reduction.

C.5 TEST REPORT

The following shall be reported:

- (a) Manufacturer, model, type and size of filter assembly and full details of the active agent.
- (b) The measured gas composition upstream and downstream of the odour control filter at each time interval in ppm.
- (c) Flow rate used in each test.
- (d) Percentage reduction of various gas mixtures.
- (e) Reference to this test method, i.e. Appendix C (Method 2), WMTS-483.

Australian Building Codes Board

Building Australia's Future

Australian Building Codes Board
GPO Box 2013
Canberra ACT 2601
www.abcb.gov.au