WaterMark Complement to AS 4775

Emergency shower, eyewash and eye/face wash equipment

WaterMark Technical Requirements for Certification

Publication History:-

First published 2020

2020

IMPORTANT NOTICE AND DISCLAIMER

While the ABCB, the participating Governments and other groups or individuals who have endorsed or been involved in the development of the WaterMark Complement have made every effort to ensure the information contained in this WaterMark Complement is accurate and up to date, such information does not in any 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 WaterMark Complement.

Users should seek appropriate independent professional advice prior to relying on, or entering into any commitment based on material in this WaterMark Complement 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 WaterMark Complement and encourages readers to notify it 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.

Chief Executive Officer – Australian Building Codes Board
GPO Box 2013
Canberra ACT 2601

Phone 1300 134 631 – Fax 02 6213 7287

PREFACE

This WaterMark Complement was prepared in accordance with the Manual for the WaterMark Certification Scheme, Appendix 4, Protocol for Developing Product Specifications.

The objective of this WaterMark Complement 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 Complement. The inclusion of this word allows a common use clause numbering system for the WaterMark Complement.

The term 'normative' has been used in this WaterMark Complement to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a WaterMark Complement.

The test protocol and information in this WaterMark Complement 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

This WaterMark Complement was prepared by industry and was approved by the Administering Body on XX XX 2020.

TABLE OF CONTENTS

1 SCOPE

This WaterMark Complement is for use under the WaterMark Certification Scheme and is to be used in addition to the requirements of AS 4775 Emergency eyewash and shower equipment. This WaterMark Complement specifies the additional minimum requirements for eyewash and shower equipment permanently connected to the drinking water supply and for the emergency treatment of the eyes or body of a person who has been exposed to materials which may cause injuries.

This WaterMark Complement covers the following types of equipment:

a) Emergency shower equipment.

b) Eyewash equipment.

c) Eye/face wash equipment.

d) Combination shower and eyewash or eye/face wash equipment.

e) Facilities for people with disability.

It also includes performance and use requirements for the following supplemental equipment:

a) Drench hoses.

b) Self-contained (portable) equipment.

This WaterMark Complement applies to products within the following limitations:

a) Size range, DN10 – DN50.

b) Operating conditions:

i. Flushing fluid delivery temperature between 16 - 38ºC.

ii. Pressure to emergency shower shall deliver 75.1 l/m at 210 kPa.

iii. Pressure to emergency eyewash shall deliver 1.5 l/m at 210 kPa.

iv. Pressure to eye/facewash shall deliver 11.4 l/m at 210 kPa.

2 APPLICATION

Emergency eyewash and shower equipment provide on-the-spot decontamination and allow personnel to flush away hazardous substances that can cause injury. Emergency shower and

eyewash equipment are installed for the delivery of water by rapid flow to treat as a first response to human exposure to material that may cause injury, e.g. chemically injured tissue.

The affected body part/s are flushed, typically for a minimum of 15 minutes using a large and clean supply of flushing fluid (drinking water) under low pressure.

Appendix A sets out the means by which compliance with this WaterMark Complement and AS 4775 shall be demonstrated by a manufacturer for the purpose of product certification.

3 REFERENCED DOCUMENTS

NCC

PCA	Plumbing Code of Australia

AS

681.1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Vulcanized rubber
1199	Sampling procedures and tables for inspection by attributes
4775	Emergency eyewash and shower equipment
2738	Copper and copper alloys - Compositions and designations of refinery products, wrought products, ingots and castings
1432	Copper tubes for plumbing, gas fitting and drainage applications
1646	Elastomeric seals for waterworks purposes
3688	Water supply and gas systems - Metallic fittings and end connectors
1349	Bourdon tube pressure and vacuum gauges
1565	Copper and copper alloys - Ingots and castings
2345	Dezincification resistance of copper alloys
3558.5	Methods of testing plastics and composite materials sanitary plumbing fixtures, Method 5: Determination of degradation by ultraviolet light
1167.1	Welding and brazing — Filler metals, Part 1: Filler metal for brazing and braze welding

2738.2	Copper and copper alloys — Compositions and designations of refinery products, wrought products, ingots and castings
1881	Zinc alloys — Casting ingots and castings — Quality requirements
1428	Design for access and mobility – Series

AS/NZS

3500.0	Plumbing and drainage, Part 0: Glossary of terms
1568	Copper and copper alloys — Forging stock and forgings
1567	Copper and copper alloys — Wrought rods, bars and sections
1572	Copper and copper alloys — Seamless tubes for engineering purposes
4020	Testing of products for use in contact with drinking water

NZS

3501	Specification for copper tubes for water, gas, and sanitation

NZ/BS

1400	Specification for copper alloy ingots and copper alloy and high conductivity copper castings

ANSI

Z 358.1	Emergency eyewash and shower equipment

ISO

274	Copper tubes of circular section — Dimensions

6957	Copper alloys— Ammonia test for stress corrosion resistance

EN

13388	Copper and copper alloys. Compendium of compositions and products
681	Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber

ASTM

B584	Standard Specification for Copper Alloy Sand Castings for General Applications
A276	Specification for Stainless Steel Bars and Shapes
A269	Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
A313	Standard Specification for Stainless Steel Spring Wire
B127	Standard Specification for Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip
B163	Standard Specification for Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes
B164	Standard Specification for Nickel-Copper Alloy Rod, Bar, and Wire
B165	Standard Specification for Nickel-Copper Alloy (UNS N04400) Seamless Pipe and Tube

4 DEFINITIONS

For the purpose of this WaterMark Complement, the definitions given in AS 4775, ANSI Z 358.1 and AS/NZS 3500.0 apply.

5 MATERIALS

5.1 Metallic materials

5.1.1 Use of metallic materials

Metallic materials used for the following shall be corrosion-resistant as specified in Clause 5.1.2:

a) Ball valves, pipe work and breeching pieces.

b) Other components that are made from metals and that are in contact with water.

5.1.2 Corrosion-resistant metallic materials

For the purpose of this WaterMark Complement, the following materials are deemed to be corrosion-resistant:

a) Copper specified in Clause 5.1.3.

b) Copper alloy specified in Clause 5.1.4 and 5.1.5.

c) Stainless steel specified in Clause 5.2.

d) Material for springs specified in Clause 5.4 (c).

e) Other materials as specified in Clause 5.4.

5.1.3 Copper

Copper shall comply with the following:

a) Wrought products — AS 2738.

b) Tubular components — Copper pipe complying with AS 1432, NZS 3501 or ISO 274.

5.1.4 Copper alloy

Copper alloy shall comply with EN 13388 or the following:

a) Castings — AS 1565, NZS/BS 1400 or ASTM B584 and a lead content of less than 4.5 %.

b) Hot pressings — AS/NZS 1568.

c) Rod for machined parts — AS/NZS 1567.

d) Tubular components — Copper alloy pipe complying with AS 1572 alloy designation C 26130. Where bent or stamped in the fabrication process, the pipe shall be sufficiently stress-relieved, so that it is capable of passing the stress corrosion test specified in ISO

6957 Clause 8, using a test solution of pH 9.5 without prior pickling, after all fabrication processes are completed.

Pressed end fittings manufactured from copper-zinc alloys containing more that 10% zinc shall be capable of passing the stress corrosion test specified in ISO 6957 Clause 8, using a test solution of pH 9.5 without prior pickling, after all pressing processes are completed.

NOTE: ISO 6957 requires that the entire component is tested before any coating or plating operation.

5.1.5 Dezincification-resistant (DR) copper alloy

Copper alloys in contact with water, of unit construction and subject to hydrostatic pressure, shall comply with AS 2345.

5.1.6 Stainless steel

Stainless steel in contact with water shall comply with ASTM A276 for wrought components or ASTM A269 for tubular components, Grades 316, 316L, 316Ti, UNS S31803 (2205) or equivalent.

Stainless steel not in contact with water shall comply with ASTM A276 for wrought components or ASTM A269 for tubular components, Grades 304, 304L, 304LN, 316, 316L, 316Ti, UNS S31803 (2205) or equivalent.

5.2 Plastic materials

5.2.1 General

Plastic materials used in eyewash, eye/face wash and shower components shall be of a type recommended by the polymer manufacturer as suitable and appropriate for use in the manufacture of the tap component or otherwise demonstrate suitability. Characteristics to be taken into account shall include compatibility and resistance to variations in water quality and elevated temperatures.

5.2.2 Acetal

Acetal plastics used for structural components that are in contact with the water supply shall be copolymer.

NOTE: copolymers are inherently more stable and resistant to thermal degradation during service life than homopolymer.

5.3 Plastic and elastomeric materials

5.3.1 UV resistance

The materials of plastics components that are designed to be exposed to direct sunlight, when installed, shall not crack, craze or exhibit signs of any defect when tested in accordance with AS 3558.5.

5.3.2 Resistance to chemical degradation

When tested in accordance with the requirement of Clause 5.3.1, eyewash, eye/face wash and shower components shall comply with following:

a) Upon completion of the exposure period, samples shall show no cracking, crazing or surface degradation visible to the naked eye.

b) Upon completion of the exposure period and subsequent short-term endurance test, samples shall comply with the requirements of Clauses 4.3 (hydraulic strength of plastic-bodied tap assembly) and Clause 4.5 (watertightness under pressure).

5.4 Other materials

The following applies:

a) Ceramic materials may be used.

b) Filler metals shall be one of the following:

   i. Silver brazing alloy containing not more than 0.05 % cadmium, complying with AS 1167.1.

   ii. Copper-phosphorous brazing alloys complying with AS 1167.1 with a minimum of 1.8% silver.

c) Materials for springs shall comply with one of the following:

   i. Stainless steel to ASTM A313.

   ii. Phosphor bronze to AS 2738.2, Alloy 518.

   NOTE: Other grades may be used providing they meet the performance criteria of this Complement

d) Nickel-copper-iron shall comply with one of the following:

   i. AS 2738.2, Alloy 713; or

   ii. ASTM B127, ASTM B163, ASTM B164 or ASTM B165.

e) Zinc alloy die-castings shall only be used for non-pressure applications and shall comply with AS 1881.

f) Washers and sealing rings shall comply with Clause 4.7 and the following:

i. Gland packing material shall be asbestos free and suitable for hot or cold water.

ii. O-ring material shall comply with AS 1646 and AS 681.1.

g) Lubricants shall comply with Section 9.

NOTE: Handles and covers, other than T-head handles, may be manufactured from other materials not specified in this Section, provided they meet the performance criteria of this Complement

6 MARKING

Markings placed on products or packaging shall, as a minimum, be in accordance with clause 9.6 of the Manual for the WaterMark Certification Scheme.

7 PACKAGING

Packaging shall be in accordance with Appendix D Installation Requirements of AS 4775.

8 DESIGN

Design shall be in accordance with Appendix C Design and Manufacture of AS 4775.

9 PERFORMANCE REQUIREMENTS AND TEST METHODS

Performance requirements and test methods shall be in accordance with Section 6, 7, 8 and 9 of AS 4775.

Products used in contact with drinking water shall comply with AS/NZS 4020.

NOTE: A scaling factor shall be applied as per inline fittings.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

VOID

11 PRODUCT DOCUMENTATION

Product documentation shall include installation, maintenance and training requirements in accordance with AS 4775.

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, application and any limitations.

The product documentation shall satisfy the requirements of a warranty as referenced in the 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.

11.1 11.1 Product data

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

a) Maximum allowable operating pressure and temperature.

b) Jointing methods and adaptation to other piping systems.

c) Product range and model identification.

d) Performance data.

11.2 Instructions

11.2.1 Installation instructions

Instructions shall be provided that give full details of installation procedures, including:

a) reference to installation in accordance with the following:

i. AS 4775.

ii. 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 need for additional control equipment.

c) Detailed step-by-step instructions.

d) The need for any special tools or training.

e) Commissioning procedures and adjustments required.

f) Troubleshooting guide.

g) Contact details for after-sales service.

11.2.2 Operating and maintenance instructions

Operating and maintenance instructions shall be provided that 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 WATERMARK COMPLEMENT

(Normative)

A.1 SCOPE

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

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

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.

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

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, including 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 Complement.

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 Complement 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 WaterMark Complement.

TABLE A1
TYPE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Materials	Review materials parts lists and compliance certificates	At any change in materials specification
Design	8	Design	Appendix C AS 4775	At any change in the design
Performance	9	Products in contact with drinking water	AS/NZS 4020	At any change in materials, formulation or design or every five years whichever occurs first
		Performance	Section 6 of AS 4775	At any change in design or manufacturing process
	Appendix D	Determination of watertightness	Appendix D	At any change in the design
Product documentation	11	Product documentation	Review product documentation	At any change to installation requirements
Marking	6	Product marking	Review as per Section 6	At any change in design or manufacturing process

TABLE A2
BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Materials	Review materials parts lists and compliance certificates	Each batch or lot
Design	8	Design	Appendix C, AS 4775	AS 1199 Insp. Level II
Performance	9	Performance	Section 6 of AS 4775	100%
	Appendix D	Determination of watertightness	Appendix D	100%
Product documentation	11	Product documentation	Review product documentation	Each batch or lot
Marking	6	Product marking	Review as per section 6	Each batch or lot

TABLE A3
MINIMUM ANNUAL INSPECTION REQUIREMENTS

Characteristic	Clause	Requirement	Verification method	Frequency
Design, assembly and component	8	Inlet and outlet connections & general operation	Visual and component examination	Sample from product family, covering all families within 5 year certification cycle
Dimensional inspection	9	Dimensional, material, thickness requirement	Visual and dimensional and component examination	
Product marking	6	Product marking, use of the WaterMark logo and licence number	Visual inspection of marked product, relevant packaging and documentation	
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation	

TABLE A4
RE-EVALUATION TESTING

Characteristic	Clause	Requirement	Test method
Materials	5	Materials	Review materials parts lists and compliance certificates
Design	8	Design	Appendix C AS 4775
Performance	9	Products in contact with drinking water	AS/NZS 4020
		Performance	Section 6 of AS 4775
	Appendix D	Performance	Appendix D Determination of watertightness
Product documentation	11	Product documentation	Review product documentation

APPENDIX B PLUMBED EMERGENCY SHOWER TEST

(Normative)

B.1 SCOPE

This Appendix sets out the methods required for determining the spray pattern, flushing fluid flow and valve operation of an emergency shower permanently connected to the drinking water supply.

B.2 PERFORMANCE

The performance of an emergency shower shall comply with the following:

a) Spray pattern of shower head shall comply with Clause 6.2 of AS 4775.

b) Flushing fluid flow of shower shall comply with Clause 6.2 of AS 4775.

c) Operation of stay open valve shall comply with Clause 6.3 of AS 4775.

NOTE: Products that are supplied with optional temperature control equipment to meet outlet temperatures required shall demonstrate meeting the required flow rates at nominated outlet temperatures.

B.3 PROCEDURE

The test method procedure to ensure performance of the spray pattern, flushing fluid flow and valve operation of an emergency shower shall comply with Clause 6.5.1 of AS 4775.

APPENDIX C PLUMBED EMERGENCY EYE WASH TEST

(Normative)

C.1 SCOPE

This Appendix sets out the methods required for determining the spray pattern, flushing fluid flow and valve operation of an emergency eye wash permanently connected to the drinking water supply.

C.2 PERFORMANCE

The performance of an emergency eye wash shall comply with the following:

a) Spray pattern of eye wash shall comply with Clause 7.1 of AS 4775.

b) Flushing fluid flow of eye wash shall comply with Clause 7.1 of AS 4775.

c) Operation of stay open valve shall comply with Clause 7.2 of AS 4775.

NOTE: Products that are supplied with optional temperature control equipment to meet outlet temperatures required shall demonstrate meeting the required flow rates at nominated outlet temperatures.

C.3 PROCEDURE

The test method procedure to ensure performance of the spray pattern, flushing fluid flow and valve operation of an eye wash shall comply with Clause 7.3.1 of AS 4775.

APPENDIX D DETERMINATION OF WATERTIGHTNESS

(Normative)

1. Scope

This Appendix sets out two methods for testing assembled emergency shower, eyewash and eye/face wash equipment for leakage through the equipment assembly. The methods are as follows:

(a) Hydrostatic pressure test at not less than 1000kPa to areas subjected to permanent hydrostatic pressure in normal use, except where the manufacturer specifies a maximum operating pressure, the test pressure shall be not less than 1.5 times the maximum operating pressure.

(b) Pneumatic pressure test at not less than 350kPa to areas subjected to permanent hydrostatic pressure in normal use, except where the manufacturer specifies a maximum operating pressure, the test pressure shall be not less than 1.5 times the maximum operating pressure.

2. Principle

The shower, eyewash and/or eye/facewash is held in a test rig and hydraulic pressure is applied over a predetermined time period, with entrapped air being bled off prior to testing.

NOTE: Alternative procedures using pneumatic pressure to shower, eyewash and/or eye/facewash and jig assembly submerged in water may be used. The shower, eyewash and/or eye/facewash is then inspected for cracks, leakage or other failure.

3. Apparatus

3.1 Pressurizing system

Pressurizing system capable of producing the specified test pressure without shock or pulsations. A hydraulic accumulator or pump may be used for this purpose.

The hydrostatic pressure test shall be conducted with water and the system shall be capable of providing the required pressure under no-flow conditions.

The pneumatic pressure test shall be conducted with compressed air and the system shall be capable of providing the required pressure under no flow conditions.

3.2 End connections

Shower, eyewash and/or eye/facewash connected to the pressurizing system, supported and held in a suitable jig.

Connection to the shower, eyewash and/or eye/facewash inlet and plugging of the shower, eyewash and/or eye/facewash outlet shall be made by threaded or compression ends, or by means of a suitable elastomeric sealing medium set in a supporting mechanism, plate or plugs located against or around the connection end or into a socket.

For a capillary connection end complying with AS 3688, the sealing medium on a plug inserted within the capillary socket shall be at a depth not greater than 25% of the total socket length. The pressurizing unit shall be connected to the inlet of the shower, eyewash and/or eye/facewash, and each shower, eyewash and/or eye/facewash of a combined shower, eyewash and/or eye/facewash shall be tested in a way that establishes the integrity of each shower, eyewash and/or eye/facewash.

External clamping forces may be applied to the fitting to hold the shower, eyewash and/or eye/facewash against the connection sealing mechanism. Adequate guarding shall be provided to protect the tester.

For the pneumatic test, provision shall be made to submerge the fitting into a water bath.

For the hydrostatic tests of areas subjected to permanent hydrostatic pressure, the free discharge shall be to atmosphere and readily seen. For the pneumatic test, the free discharge shall be required to bubble through the water bath.

3.3 Pressure gauge

A pressure gauge complying with the requirements of AS 1349 for industrial gauges and capable of indicating the required test pressure to within ±2% of the true value.

NOTE: Digital or analogue pressure gauges with equivalent or better accuracies may be used.

4. Procedure

4.1 Hydrostatic test

The procedure shall be as follows:

(a) Mount the shower, eyewash and/or eye/facewash in a suitable test jig and connect inlets or outlets to the pressurizing system.

(b) Open the shower, eyewash and/or eye/facewash flow-control valve, if applicable, allow water to run and discharge freely to atmosphere and remove air. Ensure that the outside of the shower, eyewash and/or eye/facewash is free of drops or globules of water.

(c) Proceed as follows:

(i) *For draw-off and in-line shower, eyewash and/or eye/facewash*, close the flow-control valve (outlet free to discharge) and pressurize the shower, eyewash and/or

eye/facewash at its inlet to the test pressure as nominate in Scope (a). Observe for sealing of the inlet connection and maintain the pressure for 10 s to 25 s.

(ii) *For plastic-bodied shower, eyewash and/or eye/facewash*, use Step (i) configuration, and maintain the pressure for 15 +5, −0 min at 60 +5, −0°C.

NOTE 1: A suitable test environment may be established by placing the assembly in hot air at the specified temperature or running hot water through the shower, eyewash and/or eye/facewash at the specified temperature.

NOTE 2: The sequence of application of the pressure may be changed provided that an equivalent test occurs.

(d) While the pressures are being maintained, observe for leakage through the body of the shower, eyewash and/or eye/facewash.

4.2 Pneumatic test

The procedure shall be as follows:

(a) Mount the shower, eyewash and/or eye/facewash in a suitable test jig and submerge the fitting and jig into a water bath. The shower, eyewash and/or eye/facewash shall not contain any water.

(b) Proceed as follows:

(i) *For draw-off and in-line shower, eyewash and/or eye/facewash*, close the shower, eyewash and/or eye/facewash (outlet free to discharge) and pressurize the shower, eyewash and/or eye/facewash at its inlet to the test pressure in as nominate in Scope (b). Observe for sealing of the inlet connection and maintain the pressure for 5 s to 15 s.

(c) While the pressures are being maintained, observe for leakage through the body of the shower, eyewash and/or eye/facewash.

5. Test report

The following shall be reported:

(a) Manufacturer, model, type and size of the shower, eyewash and/or eye/facewash.

(b) Test pressures applied to shower, eyewash and/or eye/facewash and the test method used.

(c) Any visible splits, cracks, permanent deformation, leakage or other failure of the shower, eyewash and/or eye/facewash.

(d) Compliance or non-compliance with the criteria specified.

(e) Reference to this test method, i.e. Appendix D.