

Australian Standard[®]

**Water supply—Metallic fittings and end
connectors**



This Australian Standard® was prepared by Committee WS-001, Water Fittings. It was approved on behalf of the Council of Standards Australia on 3 May 2005. This Standard was published on 4 August 2005.

The following are represented on Committee WS-001:

- Australian Chamber of Commerce and Industry
 - Australian Industry Group
 - Australian Valve Manufacturers Association
 - AUSTAP
 - Brisbane City Council
 - Building Research Association of New Zealand
 - Business New Zealand
 - Certification Bodies (Australia)
 - Department of Land and Water Conservation NSW
 - Department of Local Government and Planning (Queensland)
 - Institute of Plumbing Australia
 - Master Plumbers, Gasfitters and Drainlayers New Zealand
 - Plastics New Zealand
 - Queensland Brassware Industry Advisory Panel
 - South Australian Water Corporation
 - Water Corporation Western Australia
-

This Standard was issued in draft form for comment as DR 04545.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

Water supply—Metallic fittings and end connectors

Originated as AS 3688—1994.
Third Edition AS 3688—2005.
Reissued incorporating Amendment No. 1 (October 2006)..

COPYRIGHT

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 6810 5

PREFACE

This Standard was prepared by the Joint Standards Australia and Standards New Zealand Committee WS-001, Water Fittings, to supersede AS 3688—1994, *Water supply—Copper and copper alloy compression and capillary fittings and threaded-end connectors*.

This Standard incorporates Amendment No. 1 (October 2006). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The objective of this Standard is to provide for innovation and for a range of fittings that allows for a mixture of pipe materials to be used.

This edition includes amendments and various industrial and editorial revisions according to Standards Australia requirements.

It has been expanded to include fittings of other materials and end connectors used to connect pipes and fittings of dissimilar materials.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	5
1.2 APPLICATION	5
1.3 REFERENCED DOCUMENTS	5
1.4 DEFINITIONS	6
1.5 DESIGNATION OF SIZE	6
1.6 MARKING	6
1.7 PRODUCT DOCUMENTATION	7
SECTION 2 MATERIALS	
2.1 SCOPE OF SECTION	8
2.2 MATERIALS IN CONTACT WITH DRINKING WATER	8
2.3 METALLIC MATERIALS.....	8
2.4 PLASTIC COMPONENT MATERIALS.....	9
2.5 OTHER COMPONENT MATERIALS	9
SECTION 3 DESIGN AND DIMENSIONS	
3.1 SCOPE OF SECTION	10
3.2 TUBE STOPS.....	10
3.3 SLIP FITTINGS	10
3.4 SPIGOTS.....	11
3.5 FIXING DEVICE	11
3.6 WATERWAYS	11
3.7 THICKNESS OF METAL PARTS OF FITTINGS SPECIFIED BY DIMENSION ..	11
3.8 SCREW THREADS	13
3.9 FABRICATED FITTINGS.....	14
3.10 GEOMETRY OF FITTINGS.....	14
3.11 PLATING AND OTHER SURFACE FINISHES	14
3.12 FINISH AND WORKMANSHIP	14
SECTION 4 PERFORMANCE REQUIREMENTS	
4.1 SCOPE OF SECTION	15
4.2 WATERTIGHTNESS PRESSURE TEST	15
4.3 STRENGTH OF FABRICATED JOINT (TORQUE TEST).....	15
4.4 STRENGTH OF JOINT ASSEMBLY (PRESSURE CYCLING TEST).....	15
4.5 RESISTANCE TO PULL-OUT OF ASSEMBLED JOINTS	15
4.6 STRENGTH OF NUT AND ASSEMBLY (TORQUE TEST).....	15
4.7 THERMAL CYCLING TEST FOR JOINTS CONTAINING NON-METALLIC COMPONENTS	15
4.8 WATERTIGHTNESS UNDER INTERNAL HYDROSTATIC PRESSURE WHILST SUBJECTED TO BENDING.....	15
4.9 METHOD FOR DETERMINING COMPATIBILITY OF FITTINGS WITH PIPE ..	16
4.10 ROLL-GROOVED ASSEMBLY (JOINT PRESSURE RESISTANCE TEST)	16
SECTION 5 CAPILLARY FITTINGS—COPPER AND COPPER ALLOY	
5.1 SCOPE OF SECTION	17
5.2 DESIGN AND DIMENSIONS	17
5.3 PERFORMANCE REQUIREMENTS	19

	<i>Page</i>
SECTION 6 COMPRESSION FITTINGS	
6.1 SCOPE OF SECTION	20
6.2 DESIGN	20
6.3 PERFORMANCE REQUIREMENTS	20
SECTION 7 THREADED-END CONNECTORS	
7.1 SCOPE OF SECTION	23
7.2 DIMENSIONS.....	23
7.3 DESIGN	23
7.4 PERFORMANCE REQUIREMENTS	23
SECTION 8 UNION END CONNECTORS AND COUPLINGS	
8.1 SCOPE OF SECTION	26
8.2 DESIGN	26
SECTION 9 ROLL-GROOVED JOINTING END CONNECTORS AND COUPLING BODY	
9.1 SCOPE OF SECTION	27
9.2 MATERIALS	27
9.3 DESIGN	27
9.4 PERFORMANCE REQUIREMENTS AND TEST METHODS.....	29
9.5 INSTALLATION INSTRUCTIONS	29
SECTION 10 MECHANICAL JOINTING END CONNECTORS	
10.1 SCOPE OF SECTION	30
10.2 DESIGN	30
10.3 PERFORMANCE.....	30
10.4 INSTALLATION INSTRUCTIONS	30
SECTION 11 OTHER COPPER ALLOY FITTINGS	
11.1 SCOPE OF SECTION	31
11.2 THREADED SOCKETS	31
11.3 REDUCING BUSHES WITH OVERLAPPING INTERNAL AND EXTERNAL THREADS.....	31
11.4 CONTINUOUSLY THREADED FITTINGS	32
11.5 PERFORMANCE REQUIREMENTS.....	32
APPENDICES	
A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS STANDARD	33
B LIST OF REFERENCED DOCUMENTS	37
C SIZES AND TYPES OF FITTINGS.....	39
D WATERTIGHTNESS PRESSURE TEST	42
E STRENGTH OF FABRICATED JOINT—TORQUE TEST	44
F STRENGTH OF JOINT ASSEMBLY—PRESSURE CYCLING TEST	46
G RESISTANCE TO PULL-OUT OF ASSEMBLED JOINTS	48
H STRENGTH OF NUT AND ASSEMBLY—TORQUE TEST.....	51
I THERMAL CYCLING TEST	53
J METHOD FOR DETERMINING WATERTIGHTNESS UNDER INTERNAL HYDROSTATIC PRESSURE WHILST SUBJECTED TO BENDING	55
K METHOD FOR DETERMINING COMPATIBILITY OF FITTINGS WITH PIPE ..	57
L ROLL-GROOVED ASSEMBLY JOINT PRESSURE RESISTANCE TEST.....	60
M SIMULATED SAMPLES.....	62

STANDARDS AUSTRALIA

Australian Standard

Water supply—Metallic fittings and end connectors

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for metallic body pipe fittings and connectors for use with copper tube and stainless steel pipes, and tubes and adaptor fittings for connection to other pipe materials in water supply and gas systems where the normal working temperature does not exceed—

- (a) 95°C, and where the maximum operating pressure does not exceed 1.4 MPa; or
- (b) the ambient supply temperature, where the maximum operating pressure does not exceed 2.1 MPa. Products designed for a temperature in excess of 95°C are included where tested to the appropriate temperature criteria.

NOTE: Illustrations used in this Standard are diagrammatic only and have been chosen without prejudice.

1.2 APPLICATION

Fittings, end connectors, and couplings shall comply with Sections 1 to 4 and with Sections 5 to 11 as follows:

- (a) Capillary fittings—copper and copper alloy.....Section 5.
- (b) Compression fittings.....Section 6.
- (c) Threaded-end connectorsSection 7.
- (d) Union end connectors and couplingsSection 8.
- (e) Roll-grooved jointing end connectors.....Section 9.
- (f) Mechanical.....Section 10.
- (g) Other copper alloy fittingsSection 11.

Fittings such as end connectors intended to join alternative pipe systems made from other materials (e.g., plastics) shall also comply with the relevant dimensional and performance requirements of the appropriate Australian, New Zealand or Joint Australian/New Zealand Standard for the alternative pipe system.

For limitations on use of fittings in gas applications, see AS 5601.

Metallic systems, fittings, end connectors and couplings joined to alternative systems may be certified to this Standard (AS 3688).

Means for demonstrating compliance with this Standard are given in Appendix A.

1.3 REFERENCED DOCUMENTS

The documents referred to in this Standard are listed in Appendix B.



SAI GLOBAL

This is a free 7 page sample. Access the full version online.

The remainder of this document
is available for purchase online at

www.saiglobal.com/shop

SAI Global also carries a wide range of publications from a wide variety of Standards Publishers:



Click on the logos to search the database online.