Australian Standard™

Metallic flanges for waterworks purposes

This Australian Standard was prepared by Committee WS-022, Valves For Water Supply Purposes. It was approved on behalf of the Council of Standards Australia on 30 September 2004. This Standard was published on 26 October 2004.

The following are represented on Committee WS-022:

Australian Chamber of Commerce and Industry
Australian Industry Group
Certification Interests (Australia)
Engineers Australia
Master Plumbers Australia
Plastics Industry Pipe Association of Australia
Victorian Employers' Chamber of Commerce
Water Industry Alliance
Water Services Association of Australia

Keeping Standards up-to-date

Standards are living documents which 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 Standards may also be withdrawn.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 which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Web Shop at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

Australian Standards™ and other products and services developed by Standards Australia are published and distributed under contract by SAI Global, which operates the Standards Web Shop.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to the Chief Executive, Standards Australia, GPO Box 476, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 03434.

Australian Standard™

Metallic flanges for waterworks purposes

Originated as AS 4087—1993.
Previous edition 1996.
Third edition 2004.
Reissued incorporating Amendment No. 1 (August 2005)

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

ISBN 0 7337 6313 8

PREFACE

This Standard was prepared by the Standards Australia Committee WS-022, Valves For Water Supply Purposes, to supersede AS 4087—1996.

This Standard incorporates Amendment No. 1 (*August 2005*). *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 manufacturers with requirements for metallic flanges for waterworks purposes and installers of flanged components guidance on the most appropriate jointing requirements to achieve a satisfactory long-term watertight joint.

The first flange standard published in Australia was AS B52-1931, which was an endorsement of BS 10, the inch series flange British Standard, *Flanges and flanges for pipes valves and fittings*. Britain metricated in 1970 and adopted European (ISO) dimensions for flanges whilst Australia chose to continue with the same inch series flange dimensions. AS 2129, *Flanges for pipes, valves and fittings,* was published in 1978 to supersede AS B52 but incorporated 'soft metric' dimensions. The AS/NZS 4331 series, *Metallic flanges*, was published in 1995 as an endorsement of ISO hard metric flanges

A1 The most common AS 2129 flange tables used for waterworks purposes were Tables D, C, E, F and H with pressure ratings of 700, 1200, 1400, 2100 and 3500 kPa respectively. Table C flanges were subsequently re-rated to 1400 kPa in AS 2129—1991 to reflect industry experience.

AS 4087 was published in 1993 to provide a dedicated flange Standard for waterworks purposes with a rationalized range of flanges. Table E was eliminated and flanges were designated by Class allowable operating pressure (AOP). The table below indicates bolting compatibility between AS 4087 and AS 2129 flanges.

Bolting compatibility	
AS 4087 Flange classification	**AS 2129 Flange classification**
PN 14	D, C
PN 16	D, C
PN 21	F, H
PN 35	F, H

The principal changes to this Edition are as follows:

(a) Replacement of PN 14 with PN 16 for steel flanges.

(b) Amendments to the allowable operating pressures (AOPs) to align with waterworks practices.

(c) Deletion of sizes greater than DN 150 for copper alloys.

(d) Inclusion of additional sizes for ductile cast iron and steel flanges.

(e) Amendments to the specifications for jointing materials.

For applications outside the limits specified in this Standard the appropriate flange details may be determined from AS 2129, *Flanges for pipes, valves and fittings,* and AS/NZS 4331, *Metallic flanges*.

Statements expressed in mandatory terms in notes to figures are deemed to be requirements of this Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

Page

FOREWORD

Limitations on the use of flanges specified in this Standard may be imposed by one or more of the following:

(f) Material of construction.

(g) Pressure class

(h) Configuration.

(i) DN (nominal size).

(j) Whether installed in buried or submerged or above-ground and for the last, the method of support, i.e., beam action.

(k) Requirements of any relevant product Standard.

Where a pipeline component or appurtenance has an allowable operating pressure (AOP) that is different to an available flange pressure class for the relevant material, the next highest flange pressure class should be specified. For example a PN 16 grey cast iron butterfly valve should incorporate a Figure B2 PN 14 flange and a PN 20 ductile iron fitting should incorporate a Figure B6 PN 35 flange.

The designer of a pipeline or pressure-retaining equipment should evaluate the possible conditions to which flanges will be exposed. The designer should determine whether flanges according to this Standard are suitable for the proposed application.

STANDARDS AUSTRALIA

Australian Standard
Metallic flanges for waterworks purposes

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for circular flanges manufactured from copper alloy, grey cast iron, ductile cast iron, or steel. It covers nominal sizes with pressure ratings for PN 14, 16, 21 and 35 at operating temperatures not exceeding 80°C. The Standard also specifies requirements for jointing materials.

Flanges are suitable for use on pipes, pipe fittings, valves and other equipment that are primarily intended for the conveyance or storage of water or wastewater.

1.2 REFERENCED DOCUMENTS

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

1.3 APPLICATION

Flange dimensions shall be in accordance with Appendix B.

NOTES:

1 Guidelines for designers and installers on the selection of correct jointing requirements for flanges are detailed in Appendix C.

2 Guidelines for purchasers on information that should be supplied at the time of enquiry or order are detailed in Appendix D.

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.4.1 Allowable operating pressure (AOP)

The allowable internal pressure, excluding surge that a component can safely withstand in service.

1.4.2 Allowable site test pressure (ASTP)

Maximum pressure applied on site in a newly installed pipeline (includes a safety factor and allowances for surge).

1.4.3 Coating

A corrosion-inhibiting medium applied to the surface of a flange.

1.4.4 DN (nominal size)

An alphanumeric designation of size for components of a pipework system, which is used for reference purposes. It comprises the letters DN followed by a dimensionless whole number, which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections.

1.4.5 Flange contact surface

That part of the flange face upon which the gasket is compressed.

