

Australian/New Zealand Standard™

**Metallic flanges for waterworks  
purposes**



## **AS/NZS 4087:2011**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee WS-022, Valves for Water Supply Purposes. It was approved on behalf of the Council of Standards Australia on 15 March 2011 and on behalf of the Council of Standards New Zealand on 13 May 2011.  
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The following are represented on Committee WS-022:

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*This Standard was issued in draft form for comment as DR 4087.*

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# Australian/New Zealand Standard™

## **Metallic flanges for waterworks purposes**

Originated as AS 4087—1993.  
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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WS-022, Valves for Water Supply Purposes, to supersede AS 4087—2004.

The objective of this Standard is to provide manufacturers with requirements for metallic flanges for waterworks purposes and installers of flanged components with 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 bolting 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.

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 first 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 allowable operating pressure (AOP). The table below indicates bolting compatibility between AS 4087 and AS 2129 flanges.

<b>Bolting compatibility</b>	
<b>AS/NZS 4087 Flange classification</b>	<b>AS 2129 Flange classification</b>
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) Incorporation of previous amendments.
- (b) Requirements specified for non-circular flanges, including type tests based on ISO 2531, *Ductile iron pipes, fittings, accessories and their joints for water or gas applications*.
- (c) Inclusion of maximum allowable type test pressures, adopted from AS 2129, *Flanges for pipes, valves and fittings*.
- (d) Amendments to some flange hub dimensions to overcome bolt assembly impracticalities.

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.

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## FOREWORD

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

- (a) Material of construction.
- (b) Pressure class.
- (c) Configuration.
- (d) DN (nominal size).
- (e) Whether installed in buried or submerged or above-ground situations and for the last, the method of support (i.e. beam action).
- (f) 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 higher flange pressure class should be specified. For example a PN 10 grey cast iron butterfly valve should incorporate a Figure B2 PN 14 flange and a PN 25 ductile iron fitting should incorporate a Figure B6 PN 35 flange. Test pressures for the pipeline component or appurtenance should be as given in the pipeline component or appurtenance Standard.

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/STANDARDS NEW ZEALAND

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**Australian/New Zealand Standard**  
**Metallic flanges for waterworks purposes**

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## 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. The external shapes of flanges may alternatively be any other shape.

It covers nominal sizes with pressure ratings for PN 14, PN 16, PN 21 and PN 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 appurtenances that are primarily intended for the conveyance or storage of water or wastewater.

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

**1.2 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.

**1.3 NORMATIVE REFERENCES**

The normative documents referenced in this Standard are listed in Appendix A.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

**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.