

Australian Standard<sup>®</sup>

**Elastomeric seals—Material  
requirements for pipe joint seals used in  
water and drainage applications**

**Part 1: Vulcanized rubber**

**STANDARDS**  
Australia



This Australian Standard® was prepared by Committee WS-010, Flexible Jointing Gaskets. It was approved on behalf of the Council of Standards Australia on 3 July 2007. This Standard was published on 5 February 2008.

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- Australasian Plastics and Rubber Institute
  - Australian Chamber of Commerce and Industry
  - Australian Industry Group
  - Certification Interests (Australia)
  - Plastics Industry Pipe Association of Australia
  - Rubber Manufacturers Association of Australasia
  - Water Services Association of Australia
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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 the public comment period.

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## PREFACE

This Standard was prepared by the Standards Australia Committee WS-010, Flexible Jointing Gaskets to supersede AS 1646.3.

The objective of this Standard is to set out requirements for a wide range of vulcanized synthetic elastomer seals used in water, sewerage and drainage applications, including the material requirements for specific applications. It is not normally referred to directly, but is used when AS 1646, *Elastomeric seals for waterworks purposes*, is referenced.

This Standard is identical with, and has been reproduced from EN 681-1—1996, *Elastomeric seals—Material requirements for pipe joint seals used in water and drainage applications—Part 1: Vulcanized rubber*.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text 'EN 681-1' should read 'AS 681.1'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.
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References to International Standards should be replaced by references to Australian Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian Standard</i>	
ISO		AS	
37	Rubber, vulcanized or thermoplastic—Determination of tensile stress-strain properties	1683.11	Methods of test for elastomers Tension testing of vulcanized or thermoplastic rubber
48	Rubber, vulcanized or thermoplastic—Determination of hardness (hardness between 10 IRHD and 100 IRHD)	1683.15.1	International rubber hardness
188	Rubber, vulcanized or thermoplastic—Accelerated ageing and heat resistance tests	1683.26	Rubber, vulcanized or thermoplastic—Accelerated ageing and heat resistance tests
471	Rubber—Temperatures, humidities and times for conditioning and testing	1683.20	Standard temperatures, humidities and times for conditioning and testing
1431-1	Rubber, vulcanized or thermoplastic; resistance to ozone cracking; Part 1: static strain test	1683.24	Methods of test for rubber—Determination of the resistance of vulcanized or thermoplastic rubbers to ozone cracking—Static strain test
1117	Rubber, vulcanized—Determination of the effect of liquids	1683.23	Rubber—Vulcanized—Determination of resistance to liquids
2285	Rubber, vulcanized or thermoplastic—Determination of tension set at normal and high temperatures	1683.9	Rubber, vulcanized or thermoplastic—Determination of tension set at normal and high temperatures

ISO 2859-1	Sampling procedures for inspection by attributes—Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	1199	Sampling procedures for inspection by attributes
		1199.1	Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
ISO 3951	Sampling procedures and charts for inspection by variables for percent nonconforming	2490	Sampling procedures and charts for inspection by variables for percent nonconforming

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## INTRODUCTION

The product (in accordance with this standard) which is in permanent or temporary contact with water, intended for human consumption, does not adversely affect the quality of the drinking water and does not contravene the EC Directives and EFTA Regulations on the quality of drinking water.

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## STANDARDS AUSTRALIA

## Australian Standard

**Elastomeric seals—Material requirements for pipe joint seals used in water and drainage applications**

## Part 1: Vulcanized rubber

**1 Scope**

This standard specifies requirements for materials used in vulcanized rubber seals for:

- 1) cold potable water supply (up to 50 °C);
- 2) hot potable and non-potable water supply (up to 110 °C);
- 3) drainage, sewerage and rainwater systems (continuous flow up to 45 °C and intermittent flow up to 95 °C);

The different designations of seals specified are defined according to their type, application and requirements (see Table 4).

General requirements for finished joint seals are also given; any additional requirements called for by the particular application are specified in the relevant product standards taking into account that the performance of pipe joints is a function of the seal material properties, seal geometry and pipe joint design. This standard should be used where appropriate with product standards which specify performance requirements for joints.

This standard is applicable to joint seals for all pipeline materials, including iron, steel, clay, fibre cement, concrete, reinforced concrete, plastics and glass-reinforced plastics.

It is applicable to elastomeric components of composite or non-composite seals. In the case of composite seals for materials of hardness ranges from 76 IRHD to 95 IRHD, the requirements for elongation at break, compression set and stress relaxation apply only when the material is participating in the sealing function, or the long term stability of the seal.

Joint seals made with an enclosed void as part of their design are included in the scope of this European Standard.

**2 Normative references**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 37, Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties.

ISO 48, Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD).

ISO 188, Rubber, vulcanized — Accelerated ageing or heat-resistance tests.

ISO 471, Rubber — Times, temperatures, and humidities for conditioning and testing.

ISO 815, Rubber, vulcanized or thermoplastic — Determination of compression set at ambient, elevated or low temperatures.

ISO 166, Rubber, vulcanized — Determination of tear strength of small test pieces (Delft test pieces).

ISO 1451-1, Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static strain

ISO 1629, Rubber and latices — Nomenclature.

ISO 1817, Rubber, vulcanized — Determination of the effect of liquids.

ISO 2285, Rubber, vulcanized or thermoplastic — Determination of tension set at normal and high temperatures.

ISO 2859-1, Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.

ISO 3302, Rubber — Dimensional tolerances for use with products.