

AS 1646—1992

Australian Standard[®]

**Elastomeric seals for waterworks
purposes**

[Title allocated by Defence Cataloguing Authority:
ELASTOMERIC PACKING FOR SEALING PIPELINE SYSTEMS
(ANI: Packing, preformed (INC: 04521) NSC 5330)]

This Australian Standard was prepared by Committee WS/10, Flexible Jointing Gaskets. It was approved on behalf of the Council of Standards Australia on 7 May 1992 and published on 20 July 1992.

The following interests are represented on Committee WS/10:

Australian Clay Pipe Manufacturers Association
Brisbane City Council
Concrete Pipe Association of Australia
Confederation of Australian Industry
Engineering and Water Supply Department, S.A.
Melbourne Water
Plastics and Rubber Institute
The Plastics Industry Association
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Rural Water Commission, Vic.
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Australian Standard®

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purposes**

First published as AS A139-1964 (endorsement of
BS 2494-1955 subject to Australian amendment).
Second edition - 1972.
Revised and redesignated AS 1646-1974.
Second edition - 1984
Third edition - 1987.
Fourth edition - 1992.

Incorporating:
Amdt 1-1993
Amdt 2-1993

PREFACE

This Standard was prepared by the Standards Australia Committee on Flexible Jointing Gaskets to supersede AS 1646–1987, *Rubber joint rings for water supply, sewerage and drainage purposes*.

The principal changes to this edition are –

- (a) deletion of some prescriptive requirements relating to composition of the elastomer, or allowance of alternatives;
- (b) extension to include seals other than those for pipe joints;
- (c) inclusion of properties for ethylene propylene–diene terpolymers (EPDM) and nitrile–butadiene rubber (NBR) and deletion of butyl rubber (IIR);
- (d) inclusion of a Clause describing imperfections and criteria for acceptance;
- (e) inclusion of requirements for seals to be used or which may be used for the conveyance of potable water;
- (f) inclusion of appropriate test methods from AS 1683, *Methods of test for elastomers*, where available instead of BS 903, *Methods of testing vulcanized rubber*, and ASTM D1149–1986, *Test method for rubber deterioration – Surface ozone cracking in a chamber (flat specimen)*; and
- (g) inclusion of alternative methods for determining seal hardness.

Some requirements, relating to the manner in which seals are to be used with a product, are specified in the relevant Australian Standard for that product.

The Standard retains a number of prescriptive requirements and short-term property tests because acceptable performance requirements are not available. Examples are resistance to bacterial attack, where the problem has been addressed overseas but not resolved, resistance to UV radiation and combined effects of environment and strain. Elimination of further prescriptive requirements from future editions of this Standard will depend on the availability of acceptable performance requirements.

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FOREWORD

A designer of an installation should among other duties, evaluate the possible conditions to which the seals will be exposed.

The type of elastomer and its properties should be selected with consideration of several factors including the following:

- (a) The requirements of the regulatory authority within whose jurisdiction the seals are to be used.
- (b) Where appropriate the effects of the seal on the water conveyed.
- (c) Selection for particular environments:
 - (i) Internal – due to liquid conveyed, e.g. sewage at variable depths.
 - (ii) External –
 - (A) below ground due to –
 - (1) root intrusion;
 - (2) micro-organism attack; and
 - (3) temperature after jointing and before covering with fill; and
 - (B) above ground due to –
 - (1) ultraviolet light;
 - (2) ozone; and
 - (3) temperature.

STANDARDS AUSTRALIA

Australian Standard
Elastomeric seals for waterworks purposes

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for elastomeric seals to be used in pipeline systems which convey aqueous liquids at temperatures of less than 50°C. The Standard also specifies requirements for seals which incorporate root growth inhibitor and which are only intended for the conveyance of sewage or stormwater. The Standard does not specify the physical dimensions or hardness requirements.

NOTES:

- 1 Guidelines to purchasers on information to be specified at the time of the enquiry or order are given in Appendix A.
- 2 When seals are intended for use where the likelihood of micro-organism attack is high, special precautions may need to be taken.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

- 1291 Wooden and synthetic material folding rules
- 1683 Methods of test for elastomers
- 1683.11 Part 11: Tension testing of vulcanized rubber
- 1683.13 Part 13: Compression set of vulcanized rubber under constant deflection
- 1683.15.1 Part 15.1: International rubber hardness
- 1683.15.2 Part 15.2: Durometer hardness
- 1683.23 Part 23: Rubber — Vulcanized — Determination of resistance to liquids
- 1683.24 Part 24: Rubber — Vulcanized — Determination of resistance to ozone cracking — Static strain test
- 2193 Methods for calibration and grading of force-measuring systems of testing machines
- 3855(Int) Suitability of plumbing products for contact with potable water

ASTM

- D1278 Standard test methods for rubber from natural sources — Chemical analysis

BS

- 903 Methods of testing vulcanized rubber
- 903.A6 Part A6: Method for determination of compression set at ambient, elevated or low temperatures.
- 903.A39 Part A39: Determination of compression set under constant deflection at low temperatures
- 903.A42 Part A42: Determination of stress relaxation
- 2494 Elastomeric seals for joints in pipework and pipelines.

1.3 DEFINITIONS For the purposes of this Standard, the definitions below apply.

1.3.1 Backrind — a longitudinal imperfection in which the elastomer adjacent to the mould parting line shrinks below the level of the moulding as shown in 'U' or 'W' shape cross-section with the flash frequently being ragged or torn (see Figure 1.1).

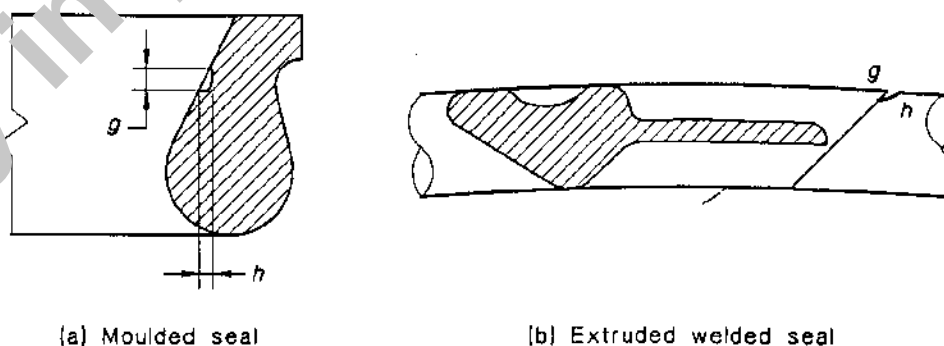


FIGURE 1.1 BACKRIND AND PARTING LINE INDENTATION