AS 3518.1—1988

Australian Standard®

ACRYLONITRILE BUTADIENE STYRENE (ABS) PIPES AND FITTINGS FOR PRESSURE APPLICATIONS

Part 1—PIPES

This Australian Standard was prepared by Committee PL/1, ABS Pipe Systems. It was approved on behalf of the Council of the Standards Association of Australia on 25 October 1987 and published on 4 January 1988.

The following interests are represented on Committee PL/1:

Australian Mining Industry Council

Australian Shippers Council

Council of Australian Food Technology Associations Incorporated

Department of Local Government Queensland

Electricity Commission of New South Wales

Electricity Supply Association of Australia

Engineering and Water Supply Department South Australia

Hunter District Water Board

Melbourne and Metropolitan Board of Works

Metropolitan Water Sewerage and Drainage Board, N.S.W.

Plastics Institute of Australia

Water Authority of Western Australia

Water Supply and Sewerage Department Queensland

This Standard was issued in draft form for comment as DR 86109.

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First published as AS 3518.1—1988.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 4797 9

PREFACE

This Standard was prepared by the Association's Committee PL/1, ABS Pipe Systems, acting under the authority of the Plastics Standards Board, following a request from the Plastics Institute of Australia.

The Standard specifies requirements for pipes up to 200 mm nominal size manufactured from acrylonitrile butadiene styrene (ABS) polymer for pressure and non-pressure applications for conveyance of potable water and other liquids and gases. Pipes manufactured in accordance with this Standard are not intended for the transport of gaseous fuels.

A test is currently being developed to measure the effect of long term pressure cycling on plastics piping systems, and may be included in a future edition of this Standard.

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FOREWORD

The hydrostatic design stresses of the pipes specified in this Standard have been determined by the application of a safety factor 2.13 to the extrapolated 50-year long-term hydrostatic stress value at 20°C.

The ovality tolerance on outside diameter has been calculated as ± 0.5 per cent of the average of the maximum and minimum mean outside diameters, applicable to Classes 9, 12 and 15. No ovality tolerance is placed on sizes in Class 4.5 and Class 6 because the thinner walled pipes may easily be rounded when inserted into sockets.

The wall thicknesses for pressure pipes specified in this document have been calculated from formulas which take into account the maximum allowable hoop stress of the material and the working pressure and diameter of the pipes.

The formulas used are as follows:

(a) $T_{min} = \dfrac{P.D_{m\ max}}{2S + P}$ with minimum of 1.6 mm.

(b) $T_{max} = 1.10\ T_{min} + 0.2$ mm.

where

T_{min} = minimum wall thickness, in millimetres

T_{max} = maximum wall thickness, in millimetres

$D_{m\ max}$ = maximum mean outside diameter, in millimetres

P = maximum static working pressure, in megapascals at 20°C

S = maximum allowable hoop stress, in megapascals.

For the materials covered by this specification, the value of maximum allowable design hoop stress has been taken at 7.50 MPa.

In the interests of serviceability, and irrespective of the calculated minimum wall thickness, no wall thickness less than 1.6 mm is used in this Standard.

The wall thickness for Class T pipe is increased so that when threaded in accordance with AS 1722.1, the pipe can be rated as Class 12.