AS 1638—1991
NZS 5419—1991

Australian Standard®
New Zealand Standard

Motor vehicles—Light alloy road wheels

This Standard was prepared under a joint arrangement by the Standards Association of New Zealand and Standards Australia. It was approved for publication on behalf of the Standards Council of New Zealand on 22 June 1990, and on behalf of the Council of Standards Australia on 20 July 1990. It was published on 11 February 1991.

The following organizations are represented on the Committees responsible for this Standard:

Standards Association of New Zealand Committee 50/-, Mechanical and General, Divisional Committee
Department of Labour
Department of Scientific and Industrial Research
Energy and Resources Advisory Committee
Institution of Professional Engineers, New Zealand
Ministry of Transport
National Council of Women
New Zealand Manufacturers' Federation

Standards Australia Committee MT/3, Aluminium and Aluminium Alloys
Aluminium Development Council
Metal Trades Industry Association of Australia
Railways of Australia Committee
Society of Automotive Engineers—Australasia

Additional interests participating in preparation of Standard:
Australian Automobile Association
Automobile manufacturers
Confederation of Australia Motor Sport
Department of Transport—Road Safety Division
Diecasting companies
Roads and Traffic Authority of NSW
Wheel manufacturing companies

Review of Standards. To keep abreast of progress in industry, Joint Australian/New Zealand Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Joint Standards and related publications will be found in the Standards Australia and Standards New Zealand Catalogue of Publications; this information is supplemented each month by the magazines 'The Australian Standard' and 'Standards New Zealand', which subscribing members receive, and which give details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Joint Standards, addressed to the head office of either Standards Australia or Standards New Zealand, are welcomed. Notification of any inaccuracy or ambiguity found in a Joint Australian/New Zealand Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in Australia in draft form for comment as DR 86108.

AS 1638—1991
NZS 5419—1991

Australian Standard®
New Zealand Standard

Motor vehicles—Light alloy road wheels

In Australia
First published as AS 1638—1974.
Second edition 1991.

In New Zealand
First published as NZS 5419—1977.
Second edition 1991.

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Standards House,
155 The Terrace,
Wellington 6001 New Zealand

ISBN 0 7262 6538 1

PREFACE

This Standard is issued as a Joint Standard under the terms of the Memorandum of Understanding between Standards Australia and the Standards Association of New Zealand with the objective of reducing technical barriers to trade between the two nations.

It was prepared by the Standards Australia Committee on Aluminium and Aluminium Alloys to supersede AS 1638—1974 and NZS 5419—1977, *Aluminium alloy road wheels for passenger cars and derivatives (cast one-piece and composite constructions)*.

This Standard sets out requirements for magnesium alloy wheels in addition to aluminium wheels included in the previous edition. A vertical impact test was considered for inclusion in the Standard, but it was felt that insufficient information was available on the test to warrant its inclusion at this time.

In this edition, quality control requirements have been deleted, since they are considered inappropriate in product Standards.

CONTENTS

STANDARDS AUSTRALIA

Australian/New Zealand Standard
Motor vehicles—Light alloy road wheels

1 SCOPE This Standard sets out the minimum requirements for the type approval based on performance testing of light aluminium alloy and magnesium alloy road wheels for vehicles with a gross mass not exceeding 3.5 t. The wheels may be cast, wrought or of composite construction.

It applies to wheels which are designed for normal driving conditions, and does not purport to apply to wheels which will not fracture or fail under conditions such as may be experienced in an accident. It should be noted that wheels conforming to this Standard may fracture under conditions similar to those which produce severe buckling or failure in steel wheels.

This Standard does not specify the materials to be used in the manufacture of the wheels. Suitable alloy designations may be selected from AS 1874, for aluminium alloys, and BS 2970 for magnesium alloys.

NOTES:

1 This Standard does not apply to trailer wheels, caravan wheels and motorcycle wheels.

2 Wheels complying with this Standard are also required to comply with the requirements of relevant statutory authorities.

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

AS
1874 Aluminium and aluminium alloys—Ingots and castings

2536 Surface texture

BS
2970 Specification for magnesium alloy ingots and castings

3 DEFINITIONS For the purpose of this Standard the definitions below apply.

3.1 Average radial runout—the difference between radial runouts on each individual bead seat at the same radial location around the flange.

3.2 Batch—a quantity of wheels or components of similar type and composition, made and handled under the same conditions, e.g. on the same day or shift.

3.3 Crack—any discernible discontinuity which forms two free surfaces and which is initiated, or propagates, during testing.

3.4 Feature—a non-dimensional sectional profile scaled down from an accurate drawing.

3.5 Fracture—a crack extending completely through the section.

3.6 Gross vehicle mass—the maximum mass of a loaded motor vehicle as specified by the manufacturer.

3.7 Light alloy road wheel—a wheel made predominantly of aluminium or magnesium alloy, and made either in one piece or by composite construction (see Figures 1 and 2).

3.8 Maximum wheel loading—the maximum vertical static load on any wheel as specified by the vehicle manufacturer for the particular application, or as derived from published loading criteria for the maximum permitted tyre size in the Tyre and Rim Association of Australia's Standards Manual, or from any of the following publications:

(a) The Tyre & Rim Association Inc. Year Book (USA).

(b) The Japanese Automobile Tyre Manufacturers Association Year Book.

(c) The European Tyre & Rim Technical Organization's Data Book.

NOTE: These publications are obtainable from the individual associations.

3.9 Offset—the distance between the wheel mounting face and the rim centreline. This distance is termed 'positive' when the mounting face is outboard of the rim centreline, and 'negative' when inboard of the rim centreline.

3.10 Runout—the maximum variation of position (i.e. full indicator movement) of the considered feature, without axial movement, with respect to a fixed point during one complete revolution about the datum axis.