

AS 1638—1991
NZS 5419—1991

Australian Standard®
New Zealand Standard

**Motor vehicles—Light alloy road
wheels**

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

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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

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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.

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CONTENTS

	<i>Page</i>
1 SCOPE	4
2 REFERENCED DOCUMENTS	4
3 DEFINITIONS	4
4 CONSTRUCTION REQUIREMENTS	5
5 DAMAGED WHEELS	5
6 PERFORMANCE REQUIREMENTS	5
7 TYPE APPROVAL	9
8 MARKING	9
 APPENDICES	
A DYNAMIC CORNERING FATIGUE TEST	11
B DYNAMIC RADIAL FATIGUE TEST	13
C THIRTY DEGREE IMPACT TEST	15

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.