AS 1638—1991 NZS 5419—1991

# Australian Standard<sup>®</sup> 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

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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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# Motor vehicles—Light alloy road wheels

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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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## 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.