

Australian/New Zealand Standard™

**Technical systems and aids for disabled  
or handicapped persons—Wheelchair  
tiedown and occupant-restraint systems**

**Part 1: Requirements and test methods  
for all systems  
(ISO 10542-1:2001, MOD)**



## **AS/NZS 10542.1:2009**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-067, Mobility Appliances for People with Disabilities. It was approved on behalf of the Council of Standards Australia on 28 January 2009 and on behalf of the Council of Standards New Zealand on 9 March 2009. This Standard was published on 30 March 2009.

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The following are represented on Committee ME-067:

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Australian Association of Occupational Therapists  
Australian Rehabilitation and Assistive Technology Association  
Consumers Federation of Australia  
Engineers Australia  
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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-067, Mobility Appliances for People with Disabilities, to supersede AS 2942—1994, *Wheelchair occupant restraint assemblies for motor vehicles*, which will remain available superseded.

This Standard is an adoption with national modifications, and has been reproduced from ISO 10542-1:2001, ISO 10542-1:2001, *Technical systems and aids for disabled or handicapped persons—Wheelchair tiedown and occupant-restraint systems, Part 1: Requirements and test methods for all systems*.

For the purpose of this Standard, the ISO text is modified as set out in Appendix ZZ.

AS/NZS 10542 consists of the following parts, under the general title *Technical systems and aids for disabled or handicapped persons—Wheelchair tiedown and occupant-restraint systems*:

Part 1: Requirements and test methods for all systems (this Standard)

Part 2: Four-point strap-type tiedown systems

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References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>	<i>Australian/New Zealand Standard</i>
ECE	AS/NZS
Regulation 16 Uniform provision concerning the approval of safety belts and restraint systems for adult occupants of power-driven vehicles	2596 Seatbelt assemblies for motor vehicles (ECE Regulation No.16, MOD)

Only international reference documents that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The terms ‘normative’ and ‘informative’ are used to define the application of the annex or appendix to which they apply. A ‘normative’ annex or appendix is an integral part of a standard, whereas an ‘informative’ annex or appendix is only for information and guidance.

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## INTRODUCTION

Providing effective protection for the wheelchair-seated occupant of a motor vehicle usually requires that equipment be installed to secure the wheelchair and restrain the occupant of the wheelchair. ISO 10542 is applicable to this motor-vehicle adaptive equipment, which is referred to as wheelchair tiedown and occupant restraint systems (WTORS). The requirements and test methods of this part of ISO 10542 apply to all WTORS that use belt-type occupant-restraint systems. Additional parts of ISO 10542 will address specific types of WTORS, or deal with particular applications, and will supplement and/or modify the requirements of this part of ISO 10542. If an additional part of ISO 10542 exists for a particular type of WTORS, this part of ISO 10542 is not to be used alone for that WTORS.

This part of ISO 10542 places particular emphasis on design requirements, test procedures, and requirements with regard to the performance of WTORS in a frontal impact. Performance of WTORS used with rear-facing wheelchairs involved in frontal impacts, performance of WTORS in rear, side and rollover impacts, and performance of WTORS used with wheelchair-seated children, may be addressed in future versions of this part of ISO 10542 and its additional parts. Transportation-related requirements for wheelchairs that are suitable for occupant seating during motor-vehicle transportation are specified in ISO 7176-19.

The use of only a pelvic belt as an occupant restraint is unlikely to provide adequate safety to a wheelchair user in the event of a frontal impact. Therefore, this part of ISO 10542 only includes test set-ups and procedures for occupant restraints that incorporate both a pelvic and an upper torso restraint.

## AUSTRALIAN/NEW ZEALAND STANDARD

**Technical systems and aids for disabled or handicapped persons—  
Wheelchair tiedown and occupant-restraint systems**

## Part 1:

## Requirements and test methods for all systems (ISO 10542-1:2001, MOD)

**1 Scope**

This part of ISO 10542 specifies test methods and requirements for design and performance, for instructions and warnings to installers and users, and for product marking and labelling for wheelchair tiedown and occupant-restraint systems (WTORS). It applies to all WTORS that use belt-type occupant restraints that are intended for adult-occupied wheelchairs used as forward-facing seats by passengers and drivers of motor vehicles.

This part of ISO 10542 applies primarily to complete WTORS, but other parts of ISO 10542 can also be applied to components and subassemblies sold separately and for replacement parts.

This part of ISO 10542 applies to WTORS intended for use with all types of manual and powered wheelchairs intended for use by adults, including three- and four-wheeled scooters.

**2 Normative references**

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10542. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10542 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3795, *Road vehicles, and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*.

ISO 6487, *Road vehicles — Measurement techniques in impact tests — Instrumentation*.

UN/ECE R 16, *Uniform provisions concerning the approval of safety belts and restraint systems for adult occupants of power-driven vehicles*, Revision 3, Amendment 3, 27 February 1996.

FMVSS 209, Standard No. 209; *Seat belt assemblies*. Federal Motor Vehicle Safety Standards, 49 CFR part 571.209, 1 October, 1992.

**3 Terms and definitions**

For the purposes of this part of ISO 10542, the following terms and definitions apply.

**3.1****adult**

person having a mass greater than 36 kg