

Australian/New Zealand Standard™

Wheelchair seating

**Part 4: Seating systems for use in
motor vehicles**



AS/NZS ISO 16840.4:2014

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-067, Assistive Technology Products for Persons with Disability. It was approved on behalf of the Council of Standards Australia on 8 January 2014 and on behalf of the Council of Standards New Zealand on 30 January 2014. This Standard was published on 17 February 2014.

The following are represented on Committee ME-067:

Assistive Technology Suppliers Australasia
Association of Consultants in Access Australia
Australian Rehabilitation and Assistive Technology Association
Bus & Coach Association of New Zealand
Consumers Federation of Australia
Department of Family and Communities (SA)
Engineers Australia
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-067, Assistive Technology Products for Persons with Disability.

The objective of this Standard to specify test methods and requirements for design and performance, for instructions and warnings, and for product marking and labelling of seating systems intended to be used as a forward-facing seat in a motor vehicle when fitted to a manual or powered wheelchair. It evaluates the frontal crashworthiness performance of complete seating systems for occupancy by adults or children of mass equal to or greater than 22 kg.

This Standard is identical with, and has been reproduced from ISO 16840-4:2009, *Wheelchair seating, Part 4: Seating systems for use in motor vehicles*.

As this Standard is reproduced from an International Standard, the following applies:

- (a) In the source text this part of ISO 16840 should read this Australian/New Zealand Standard.
- (b) A full point substitutes for a comma when referring to a decimal marker.

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>
ISO	AS/NZS
7176 Wheelchairs	3696 Wheelchairs
7176-19 Part 19: Wheeled mobility devices for use as seats in motor vehicles	3696.19 Part 19: Wheeled mobility devices for use as seats in motor vehicles
	AS/NZS ISO
10542 Technical systems and aids for disabled or handicapped persons—Wheelchair tiedown and occupant-restraint systems	10542 Technical systems and aids for disabled or handicapped persons—Wheelchair tiedown and occupant-restraint systems
10542-1 Part 1: Requirements and test methods for all systems	10542.1 Part 1: Requirements and test methods for all systems

Only normative references that have been adopted as Australian or Australian/New Zealand Standard have been listed.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

CONTENTS

1	Scope	1
2	Normative references	1
3	Terms and definitions.....	2
4	Design requirements	6
4.1	Reduction of sharp edges.....	6
4.2	Accommodation of vehicle-anchored occupant restraints	6
5	Performance requirements	7
5.1	Frontal impact test.....	7
5.2	Accommodation of vehicle-anchored occupant belt restraints	8
6	Identification, labelling, user instructions, warning and disclosure requirements	8
6.1	Identification and labelling	8
6.2	Pre-sale literature.....	9
6.3	User instructions	9
6.4	User warnings	9
7	Documentation of compliance	10
7.1	General.....	10
7.2	Test report	10
7.3	Frontal impact test.....	11
7.4	Design, labelling and literature requirements	11
Annex A	(normative) Test method for frontal impact test	12
Annex B	(normative) Specifications for the surrogate wheelchair base used for impact testing of a seating system	19
Annex C	(informative) Wheelchair seating system — Static test method	24
Annex D	(normative) Test method for rating the seating system's accommodation of vehicle-anchored belt restraints	33
Annex E	(informative) Recommended user instructions and user warnings	37
Bibliography	40

INTRODUCTION

Transportation safety research has demonstrated that the design of the vehicle seat, the occupant restraints and seat compartment in motor vehicles play a vital role in protecting the occupant in the event of a crash. For some wheelchair users, it is not feasible to transfer to the seat provided by the vehicle manufacturer and they must remain seated in their wheelchair while travelling in a vehicle. ISO 7176-19 provides a means of evaluating the design and frontal crashworthiness performance of complete wheelchairs when used as forward-facing seats in motor vehicles. However, it is common practice that a seating system from one manufacturer and a wheelchair base from another manufacturer be used to form the complete wheelchair. Wheelchair seating systems may also be intended for use on multiple models of wheelchair bases. For this reason, there is a need to be able to evaluate the design and performance of wheelchair seating systems independent of the commercial wheelchair bases on which they may be installed. This part of ISO 16840 provides a means of assessing frontal impact crashworthiness of seating systems without the host wheelchair by using a surrogate wheelchair base.

Manufacturers may choose to not test customized variations of a given seating system. The manufacturer may test a representative variation of the seating system and it is for the manufacturer to document how the results of this test would apply to the limitations in use and instructions for use supplied with the product.

This part of ISO 16840 is intended to encourage safer motor vehicle transportation of wheelchair users by increasing the availability of wheelchair seating systems that comply with basic principles of occupant protection. This part of ISO 16840 should not be used to deny or limit wheelchair user access to motor vehicle transportation.

Currently this part of ISO 16840 addresses only complete wheelchair seating systems and the test requirements are representative of frontal impact conditions. However, future versions may address testing of the individual components of the seating system as well as other directions of impact such as side or rear.

AUSTRALIAN/NEW ZEALAND STANDARD

Wheelchair seating**Part 4:
Seating systems for use in motor vehicles****1 Scope**

This part of ISO 16840 specifies test methods and requirements for design and performance, for instructions and warnings and for product marking and labelling of seating systems intended to be used as a forward-facing seat in a motor vehicle when fitted to a manual or powered wheelchair. It evaluates the frontal crashworthiness performance of complete seating systems for occupancy by adults or children of mass equal to or greater than 22 kg.

This part of ISO 16840 only applies to complete wheelchair seating systems including attachment hardware, designed to be used with a wheelchair base tested as part of a wheelchair system that conforms to ISO 7176-19 performance requirements and that has securement points for use with four-point, strap-type tiedowns.

This part of ISO 16840 applies to seating systems designed to be used with occupant restraints that anchor either to the vehicle, the tiedown system, the seating system or the wheelchair base.

Seating systems that are intended only for use with a specific wheelchair base should be tested to ISO 7176-19 using the specifically intended wheelchair base.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 898-7, *Mechanical properties of fasteners — Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm*

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

ISO 7176-19:2008, *Wheelchairs — Part 19: Wheeled mobility devices for use as seats in motor vehicles*

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*

ISO 10542-2, *Technical systems and aids for disabled or handicapped persons — Wheelchair tiedown and occupant-restraint systems — Part 2: Four-point strap-type tiedown systems*

FMVSS 201, *Standard No. 201, Occupant protection in interior impact. (Federal Motor Vehicle Safety Standards), 49 CFR 571.201*

ECE Regulation 21, *Uniform provisions concerning the approval of vehicles with regard to their interior fittings, Revision 2, Amendment 2*

ASTM E527-83 (2003), *Standard Practice for Numbering Metals and Alloys (UNS)*