AS/NZS ISO 7176.16:2013
ISO 7176-16:2012

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Australian/New Zealand Standard™

Wheelchairs

Part 16: Resistance to ignition of postural support devices

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 23 July 2013 and on behalf of the Council of Standards New Zealand on 5 August 2013.
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The following are represented on Committee ME-067:

Association of Consultants in Access Australia
Australian Rehabilitation on Assistive Technology
Bus and Coach Association of New Zealand
Consumer Federation Australia
Department of Family and Communities (SA)
Engineers Australia
Independent Living Centres Australia
Medical Aids Subsidy Scheme
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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 is to specify requirements and test methods to assess the resistance to ignition by match flame equivalent of all postural support devices that are supplied to be part of a wheelchair or its seating system.

This Standard is identical with, and has been reproduced from ISO 7176-16:2012, *Wheelchairs*, Part 16: *Resistance to ignition of postural support devices*.

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

(a) In the source text 'this part of ISO 7176' 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:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO		AS/NZS ISO	
7176	Wheelchairs	7176	Wheelchairs
7176-26	Part 26: Vocabulary	7176.26	Part 26: Vocabulary
		AS/NZS	
8191	Furniture—Assessment of ignitibility of upholstered furniture	3744	Furniture—Assessment of ignitibility of upholstered furniture
8191-2	Part 2: Ignition source: match flame equivalent	3744.2	Part 2: Ignition source—Match flame equivalent

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

INTRODUCTION

The ignition and subsequent burning of wheelchairs is very rare, but can occur as a result of:

— being close to a burning object such as a fire beside the wheelchair;

— overheating of any electrical or electronic device on the wheelchair;

— fire sources (such as cigarettes or matches) falling onto the wheelchair.

Wheelchair occupants are at particular risk of injury or death from these fires and resulting fumes because they may not have the ability to move away from the wheelchair.

Wheelchairs can be considered to be comprised of the following components:

a) structural components such as the frame, wheels, etc., which are essential to the mechanical integrity of the wheelchair;

b) postural support devices, such as sling seats, sling backs, arm supports, foot supports, etc., which are attached to the wheelchair and/or its seating system and are primarily intended to give postural support to the wheelchair occupant;

c) components to manage tissue integrity, such as seat or back support cushions, which are intended to have primarily a clinical function to minimize the risks of skin damage (these may also be intended to control posture);

d) power-related components such as motors, energy sources, controllers, etc., which are required for the functioning of powered wheelchairs.

Each of the above components has a different severity of risk associated with their likelihood of igniting and of their resulting harm to the wheelchair occupant. ISO standards have been published or are in preparation to specify requirements and test methods for the above categories of components in order to help manufacturers and purchasers of wheelchairs to design and procure wheelchairs and their components which are appropriate for the risk of ignition balanced against the requirements of the wheelchair occupant. The aim of these ISO standards is to provide appropriate alternatives to using furniture-based standards, to reflect the uses and purposes of wheelchairs and their accessories.

The development of an ISO standard on the resistance to ignition of structural components [see list item a) above] has not yet commenced. The most likely sources of ignition are proximity to a heat source such as an electric radiator or domestic fire or a heat source such as a lighted match or cigarette falling onto the structure.

The tissue integrity components [see c)] are the subject of a draft ISO standard (ISO 16840-10), and permit a less stringent resistance to ignition based upon their priority for their clinical function which can override the need for a high resistance to ignitability.

The power related components [see d)] are the subject of ISO 7176-14 which specifies requirements to prevent overheating in electrical components that could lead to a fire.

This part of ISO 7176 is primarily concerned with the resistance to ignition of postural support devices [see b)] of a wheelchair. These typically include arm supports, sling seats, sling backs, lower leg supports, foot supports, lateral supports, head supports, etc. The most likely source of ignition is an open flame source falling onto the component's surface or into gaps between surfaces. Consequently, this part of ISO 7176 is written around resistance to an ignition source equivalent to a lighted match in contact with a test sample of an assembly of the upholstered part's composite materials in both a vertical and horizontal orientation. This part of ISO 7176 replaces ISO 7176-16:1997 since the latter only related to upholstered parts of a wheelchair and was originally based on furniture test methods and requirements, and therefore was not appropriate for clinically oriented components on a wheelchair.

The requirements of this part of ISO 7176 have been set at a basic minimum level and are less severe than mandatory requirements in some countries. Good practice is also to use materials which minimize

the risk of release of toxic substances as a result of ignition. Materials chosen shall also comply with biocompatibility requirements.

The day-to-day usage of a wheelchair can affect its materials' resistance to ignition through cyclic loading, movement of materials, washing, cleaning, etc. Manufacturers will often take these effects into account as part of their risk assessment when selecting materials for their products, to minimize the effects of this normal use. However, although this part of ISO 7176 can be used on parts that have been used, etc., the test samples specify new or unused parts.

Different environments commonly encountered by some wheelchair occupants can also affect the flammability of materials. For example, home oxygen systems, delivery systems for drugs carried in an inflammable medium, etc., can turn an inert material into a flammable one. Dust and other materials accumulated within the chair have also been found to be a source of readily ignitable material. Wheelchair manufacturers and occupants should be aware of these risks, and design and use wheelchairs accordingly, as covered by ISO 14971.

This part of ISO 7176 describes testing an assembly of the composite of materials as used in the wheelchair component, because the resistance to ignition of these materials individually may be quite different from those when assembled as a composite. Hence the results of testing to this part of ISO 7176 do not give any indication of the resistance to ignition of any of the separate individual materials of the postural support device.

AUSTRALIAN/NEW ZEALAND STANDARD

Wheelchairs

Part 16: Resistance to ignition of postural support devices

1 Scope

This part of ISO 7176 specifies requirements and test methods to assess the resistance to ignition by match flame equivalent of all postural support devices that are supplied to be part of a wheelchair or its seating system.

This part of ISO 7176 only determines the resistance to ignition of the devices tested and not the ignitability of the complete wheelchair.

This part of ISO 7176 does not apply to the resistance to ignition of other parts of a wheelchair, e.g. wheels, framework.

This part of ISO 7176 does not take into consideration changes in resistance to ignition as a result of washing or use.

This part of ISO 7176 allows for the separate testing of inferior/superior supports (e.g. arm supports), which are usually used in the horizontal plane, and anterior/posterior/lateral/medial supports (e.g. thoracic harnesses, calf panels), which are usually used in the vertical plane.

Until such time as a flammability standard is available for the testing of other components or accessories of the wheelchair, it is advisable that any structural components considered to be at risk are tested at least to the ignitability levels of this part of ISO 7176.

NOTE 1 The requirements of this part of ISO 7176 have been set at a basic minimum level and are less severe than mandatory requirements in some countries.

Where practical, it is advisable that manufacturers use materials with superior resistance to ignition.

NOTE 2 Requirements for the control of risks from sources of fire created by electrical and electronic components are included in ISO 7176-14.

2 Normative references

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

ISO 8191-2:1988, *Furniture — Assessment of ignitability of upholstered furniture — Part 2: Ignition source: match flame equivalent*

ISO 7176-15, *Wheelchairs — Part 15: Requirements for information disclosure, documentation and labelling*

ISO 7176-26, *Wheelchairs — Part 26: Vocabulary*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7176-26 and the following apply.