

Electrically powered wheelchairs, scooters and their chargers — Requirements and test methods

The European Standard EN 12184:1999 has the status of a
British Standard

ICS 11.180; 29.200

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

National foreword

This British Standard is the English language version of EN 12184:1999.

The UK participation in its preparation was entrusted to Technical Committee CH/40, Sanitary chairs and wheelchairs, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

The UK submitted a negative vote on the text of EN 12184 mainly because it had taken so long in the drafting/voting stages. Due to the timescale it was felt that it required a review of the content, particularly against its many references to the ISO 7176 series, to bring it up to date before issue.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 24 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Health and Environment Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 August 1999

© BSI 04-2000

ISBN 0 580 32923 2

Amendments issued since publication

Amd. No.	Date	Comments
10713 Corrigendum	September 1999	Reason for negative UK vote inserted in National foreword

Contents

	Page
National foreword	Inside front cover
Foreword	2
Text of EN 12184	5

ICS 11.180; 29.200

Descriptors: Disabled persons, wheel chairs, electric equipment, specifications, design, performance evaluation, brakes, effectiveness, fatigue life, stability, speed, electrical properties, electromagnetic compatibility, safety, tests, information, utilization, labelling

English version

Electrically powered wheelchairs, scooters and their chargers — Requirements and test methods

Fauteuils roulants électriques, trotinettes et
leurs chargeurs — Exigences et méthodes
d'essai

Elektrorollstühle und -mobile und zugehörige
Ladegeräte — Anforderungen und
Prüfverfahren

This European Standard was approved by CEN on 18 February 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

© 1999 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

 **Documents**
Ref. No. EN 12184:1999 E
Document Sharing Hub

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 293, Technical aids for disabled persons, the Secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 1999, and conflicting national standards shall be withdrawn at the latest by September 1999.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex Z, which is an integral part of this standard.

This standard provides one means to demonstrate that electrically powered wheelchairs and scooters, which are also medical devices, conform to the essential requirements outlined in general terms in Annex 1 of the EU Directive 93/42 EEC. It is not intended to provide a means to show conformity with the requirements of any other Directive.

There are three levels of European Standards dealing with technical aids for disabled persons. These are as follows, with level 1 being the highest:

- Level 1: General requirements for technical aids
- Level 2: Particular requirements for families of technical aids
- Level 3: Specific requirements for types of technical aids.

Where standards for particular aids or groups of aids exist (level 2 or 3), the requirements of lower level standards take precedence over higher level standards. Therefore, to address all requirements for a particular aid, it is necessary to start with standards of the lowest available standard.

This is a combined level 2 and level 3 standard (lowest possible) for electrically powered wheelchairs and scooters, which are also medical devices, as specified in the Scope.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Contents

	Page
Foreword	2
Introduction	5
1 Scope	5
2 Normative references	5
3 Definitions	6
4 Test equipment	6
5 Type classes	7
6 General requirements	7
7 Design requirements	7
7.1 Footrests and legrests	7
7.2 Requirement for pneumatic tyres	7
7.3 Requirement for fitting a seat belt	7
7.4 Requirement for armrests and backrests	7
7.5 Requirement for wheelchairs intended for use as seats in motor vehicles	7
7.6 Requirements for braking systems	8
7.7 Requirement for component weight	8
7.8 Requirements for battery enclosures	8
7.9 Battery containers	8
7.10 Audible warning device	8
8 Performance requirements	8
8.1 Static, impact and fatigue strength — Requirements and test method for static, impact and fatigue strength	8
8.2 Parking brake performance and strength	8
8.3 Control input devices	9
8.4 Performance of driving characteristics	10
8.5 Surface temperature	11
8.6 Noise	11
8.7 Environmental protection	11
8.8 Resistance to ignition	11
8.9 Resistance to corrosion	12
9 Electrical requirements	12
9.1 General requirements	12
9.2 Requirement for controller switch	12
9.3 Requirement for power indicator	12
9.4 Requirements for circuit protection	12
9.5 Requirement for disengagement of automatic brakes	12
9.6 Requirements for connections to batteries	12
9.7 Requirements for battery chargers	12
9.8 Electromagnetic compatibility (EMC)	12

	Page
10 Information supplied by the manufacturer	14
10.1 General	14
10.2 User manual	14
10.3 Labelling	14
10.4 Specification sheets	15
Annex A (informative) Recommended design features	18
Annex B (informative) Recommended seating design	19
Annex C (informative) Recommendations for ease of operation	19
Annex D (informative) Recommendations for lighting	21
Annex E (informative) Resistance to corrosion	21
Annex F (informative) Mobile telephones	22
Annex Z (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	22
Figure 1 — Application of force on hand operated brakes	16
Figure 2 — Noise test — Measurement of noise generated by running wheelchair	17
Figure 3 — Noise test — Measurement of noise generated by seats, lifts etc.	17
Figure C.1 — Maximum reach of users seated in wheelchairs	20
Table 1 — Force to be applied to footplates	15
Table 2 — Driving characteristics — Test methods and requirements for different type classes	15
Table 3 — Driving characteristics — Test methods and requirements for all type classes	16
Table A.1 — Recommended length, width, ground clearance, turning radius and turn around width	19
Table Z.1 — Correspondence between this European Standard and EU Directives	22

Introduction

Where this standard does not apply to particular wheelchairs, contracting parties should consider if appropriate parts of this standard can be used. Manufacturers may also wish to consider if appropriate parts of this standard can be used to assess the performance of their products against the essential requirements of the Medical Devices Directive.

1 Scope

This European Standard specifies requirements and test methods for electrically powered wheelchairs and scooters with a maximum speed not exceeding 15 km/h intended to carry one person whose mass does not exceed 100 kg, including the following classifications from EN ISO 9999:1998:

- 12 21 21 Powered attendant-controlled wheelchairs
- 12 21 24 Electric motor-driven wheelchairs with manual steering
- 12 21 27 Electric motor-driven wheelchairs with powered steering

It also specifies requirements and test methods for manual wheelchairs with add on power kits used for propulsion.

It also specifies requirements and test methods for battery chargers for wheelchairs and scooters.

This European Standard does not apply in total to:

- wheelchairs intended for special purposes, such as sports;
- manually propelled wheelchairs with electrically powered ancillary equipment (only electrical features);
- custom-made wheelchairs;
- wheelchairs specially designed for, or with adaptations for, specific disabled persons;
- powered office chairs.

NOTE 1 The requirement for manually propelled wheelchairs with electrically powered ancillary equipment is specified in EN 12183:1999.

NOTE 2 Appropriate parts of the standard may be applied to the above products and other wheelchairs outside this Scope.

NOTE 3 The application of the standard is limited to wheelchairs with a maximum occupant mass of 100 kg because this is the maximum mass of dummy available in ISO 7176-11. Further work is needed to investigate the effects of people with larger body masses.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1041, *Information supplied by the manufacturer with medical devices*.

EN ISO 9999:1998, *Technical aids for disabled persons — Classification* (ISO 9999:1998).

prEN 12182:1999, *Technical aids for disabled persons — General requirements and test methods*.

EN 55022, *Limits and methods of measurement of radio disturbance characteristics of information technology equipment*.

ISO 6440, *Wheelchairs — Nomenclature, terms and definitions*.

ISO/FDIS 7176-1:1998, *Wheelchairs — Part 1: Determination of static stability*.

ISO 7176-2, *Wheelchairs — Part 2: Determination of dynamic stability of electric wheelchairs*.

ISO 7176-3, *Wheelchairs — Part 3: Determination of efficiency of brakes*.

ISO 7176-4, *Wheelchairs — Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance*.

ISO 7176-5, *Wheelchairs — Part 5: Determination of overall dimensions, mass and turning space*.

ISO 7176-6, *Wheelchairs — Part 6: Determination of maximum speed, acceleration and retardation of electric wheelchairs*.

ISO 7176-8:1998, *Wheelchairs — Part 8: Requirements and test methods for static, impact and fatigue strengths*.

ISO 7176-9, *Wheelchairs — Part 9: Climatic test for electric wheelchairs*.

ISO 7176-10, *Wheelchairs — Part 10: Determination of obstacle-climbing ability of electric wheelchairs*.

ISO 7176-11, *Wheelchairs — Part 11: Test dummies*.

ISO 7176-13, *Wheelchairs — Part 13: Determination of coefficient of friction of test surfaces*.

ISO 7176-14:1997, *Wheelchairs — Part 14: Power and control systems for electric wheelchairs — Requirements and test methods*.