

# INTERNATIONAL STANDARD

# ISO 7176-13

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## Wheelchairs —

### Part 13 : Determination of coefficient of friction of test surfaces

*Fauteuils roulants*

*Partie 13 : Détermination du coefficient de frottement des surfaces d'essai*



Reference number  
ISO 7176-13 : 1989 (E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing international Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7176-13 was prepared by Technical Committee ISO/TC 173, *Technical systems and aids for disabled or handicapped persons*.

ISO 7176 consists of the following parts under the general title *Wheelchairs*:

- *Part 1: Determination of static stability*
- *Part 2: Determination of dynamic stability of electric wheelchairs*
- *Part 3: Determination of efficiency of brakes*
- *Part 4: Determination of energy consumption of electric wheelchairs*
- *Part 5: Determination of overall dimensions, mass and turning space*
- *Part 6: Determination of maximum speed, acceleration and retardation of electric wheelchairs*
- *Part 7: Determination of seating dimensions — Definitions and measuring methods*
- *Part 8: Static, impact and fatigue strength tests for wheelchairs*
- *Part 9: Climatic tests for electric wheelchairs*
- *Part 10: Determination of obstacle-climbing ability of electric wheelchairs*
- *Part 11: Test dummies*
- *Part 13: Determination of coefficient of friction of test surfaces*
- *Part 14: Power and controls*

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## Wheelchairs —

### Part 13 : Determination of coefficient of friction of test surfaces

#### 1 Scope

This part of ISO 7176 specifies a test method for determining the coefficient of friction of a test surface that has a rough texture, such as unfinished concrete. In the event that the test method is used for smooth or polished surfaces, care should be exercised that the coefficient of friction is measured as being constant over the whole area of the test surface.

Several test procedures for wheelchairs, e.g. those specified in ISO 7176-1, ISO 7176-2, ISO 7176-3, ISO 7176-6 and ISO 7176-12, require that the coefficient of friction of the test surface be within specified limits.

#### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7176. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7176 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of ISO maintain registers of currently valid International Standards.

ISO 48 : 1979, *Vulcanized rubbers — Determination of hardness (hardness between 30 and 85 IRHD)*.

ISO 4662 : 1986, *Rubber — Determination of rebound resilience of vulcanizates*.

ISO 6440 : 1985, *Wheelchairs — Nomenclature, terms and definitions*.

#### 3 Definitions

For the purposes of this part of ISO 7176, the definitions given in ISO 6440 and the following apply:

**test surface** : Roadway, floor, support surface or plane on which a wheelchair is tested

#### 4 Principle

The coefficient of friction between a wheelchair and a test surface depends on the properties of the wheelchair tyre and the test surface. Since it is desirable to compare the test results of

different wheelchairs on comparable test surfaces, this test procedure has been developed in order to define the test surface in terms of the coefficient of friction using a standard method which is independent of the wheelchair being tested.

The method consists of pulling a specific block with an interface of standard rubber at a specified speed over the test surface.

#### 5 Test apparatus

##### 5.1 Test block

The test block shall be made from solid steel with a flat bottom surface and shall have the dimensions shown in figure 1.

The rounded ends shall be fitted with a ring or similar fastening which will allow the block to be pulled across the test surface with the force acting parallel to the test surface and at a distance 50 mm below the top surface of the block.

The mass of the test block and ring with the rubber attached shall be  $5 \text{ kg} \pm 0,06 \text{ kg}$ .

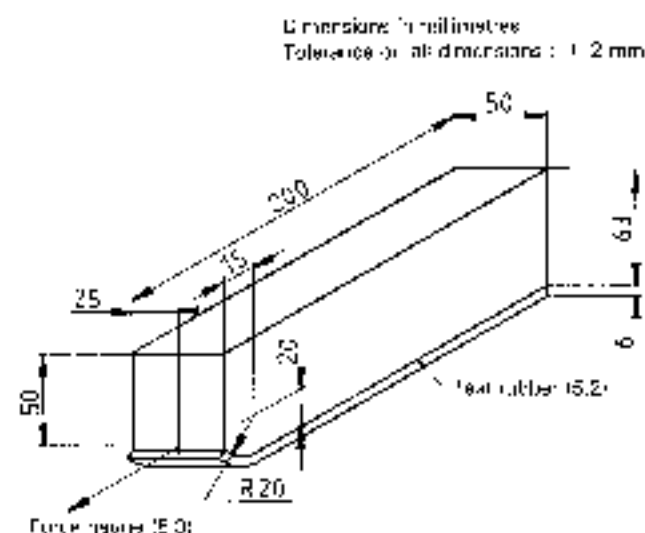


Figure 1 — Test block