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English Version

## Roller sports equipment - Skateboards - Safety requirements and tests methods

Équipement de sports à roulettes - Planches à roulettes -  
Exigences de sécurité et méthodes d'essai

Rollsportgeräte - Skateboards - Sicherheitstechnische  
Anforderungen und Prüfverfahren

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## Foreword

This document (EN 13613:2009) has been prepared by Technical Committee CEN/TC 136 "Sports, playground and other recreational equipment", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2009, and conflicting national standards shall be withdrawn at the latest by October 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13613:2001.

Annex A is informative.

In relation to EN 13613:2001, the following main changes have been introduced:

- a) classification in 4.1 modified;
- b) velocity in 6.7.2 and 6.10.2 changed;
- c) marking in Clause 7 d) and e) modified;
- d) service and maintenance in 8.3 a) and f) modified;
- e) WARNING in 8.4 modified.

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

## 1 Scope

This standard specifies requirements for non-motorized skateboards which are supplied for use by one rider at a time.

The skateboards covered by this standard are graded by performance criteria for different categories of body weight.

This standard is not applicable for skateboards for use by a rider up to 20 kg. EN 71-1 is applicable for those.

This standard does not apply to individual components.

## 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.

EN 22768-1, General tolerances — *Part 1: Tolerances for linear and angular dimensions without individual tolerance indications (ISO 2768-1:1989)*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **skateboard**

fully assembled and useable sports equipment consisting of one deck on two trucks and wheels on which the rider can propel him/herself and which can be steered by shifting his/her body mass

### 3.2

#### **mid-steering setting**

setting between the positions of the softest and hardest steering settings

### 3.3

#### **softest steering setting**

setting achieved when for example an action bolt (Kingpin) is unscrewed so that the cushion is just relieved of any pressure from it

### 3.4

#### **hardest steering setting**

setting achieved when for example an action bolt (Kingpin) is fully tightened so that the cushion is subjected to maximum pressure from it

## 4 Classification

### 4.1 Class A

Skateboards intended for use by a rider of more than 20 kg up to 100 kg mass.

### 4.2 Class B

Skateboards intended for use by a rider of more than 20 kg up to 50 kg.

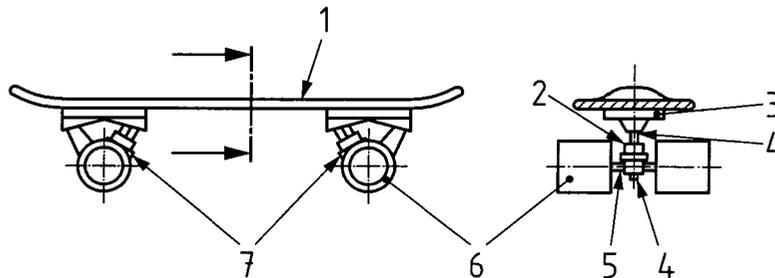
## 5 Construction

### 5.1 General

Typical components of a skateboard are illustrated in Figure 1.

NOTE Figure 1 is only an example for reference.

General tolerances: EN 22768-v.



#### Key

- 1 Deck
- 2 Cushion
- 3 Riser pad
- 4 Action bolt (Kingpin)
- 5 Axle
- 6 Wheels
- 7 Trucks

Figure 1 — Components of a skateboard

### 5.2 Requirements

**5.2.1** There shall be no projections above the upper surface of the deck. The complete upper surface of the deck shall be equipped with an anti-slide surface.

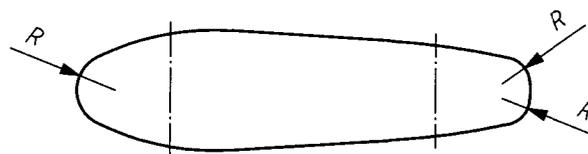
**5.2.2** When tested in accordance with 6.8, it shall not be possible to touch, with the test cylinder (see 6.8.2), any projection which has a length greater than 10 mm and less than 100 mm<sup>2</sup> in area.

**5.2.3** When the action bolt (kingpin) of the truck is fully tightened, no part of the action bolt shall be in contact with the underside of the deck.

**5.2.4** If a part of the axles and means of securing the wheels shall project beyond the outer edge of the wheels than the axle and means of securing the wheels shall not project beyond the deck.

All edges on the skateboard which can come into contact with parts of the body during normal use shall be rendered safe, or shaped so that injuries cannot occur.

**5.2.5** The corners and edges of the deck shall be rounded off and free from burr and sharp or protruding edges. The outlines of the deck shall be rounded off with a minimum radius of 10 mm as shown in Figure 2.



#### Key

R ≥ 10 mm

Figure 2 — Radius of edges of deck

**5.2.6** Where self-locking nuts are used, the entire thread, including the locking section, shall be in contact with the bolt. Self-locking nuts and other self-locking fixings that are loosened several times for the purpose of modification or servicing, shall be suitable for this purpose. The information supplied by the manufacturer shall indicate if self-locking nuts and other self-locking elements can lose their effectiveness.

**5.2.7** When tested in accordance with 6.5, the coefficient of adhesion ( $\mu_0$ ) of the wheels shall be a minimum of 0,3.

**5.2.8** When tested in accordance with 6.6, the wheel bearings shall not get stuck or disintegrate.

**5.2.9** When tested in accordance with 6.7, 6.9 and 6.10 no part of the skateboard shall break, there shall be no signs of functional damage and no fastening devices shall have worked loose.

## **6 Test methods**

### **6.1 General**

All tests shall be carried out on fully assembled skateboards at the mid-steering setting.

### **6.2 Test specimens**

Two skateboards of the same type shall be tested in accordance with the order described in 6.3.

### **6.3 Order of testing**

#### **6.3.1 Specimen 1**

The specimen shall be subjected to the test in the following order:

- a) wheel adhesion test (see 6.5);
- b) speed test (see 6.6);
- c) endurance test (see 6.7).

#### **6.3.2 Specimen 2**

The specimen shall be subjected to the test in the following order:

- a) test of external design (see 6.8);
- b) drop test (see 6.9);
- c) impact test (see 6.10).

### **6.4 Conditioning and testing temperatures**

Unless otherwise specified the skateboards shall be conditioned and tested either at a temperature of  $(23 \pm 2)$  °C and a relative humidity of  $(50 \pm 5)$  % or at a temperature of  $(20 \pm 2)$  °C and a relative humidity of  $(65 \pm 5)$  %.

## 6.5 Wheel adhesion test

### 6.5.1 Principle

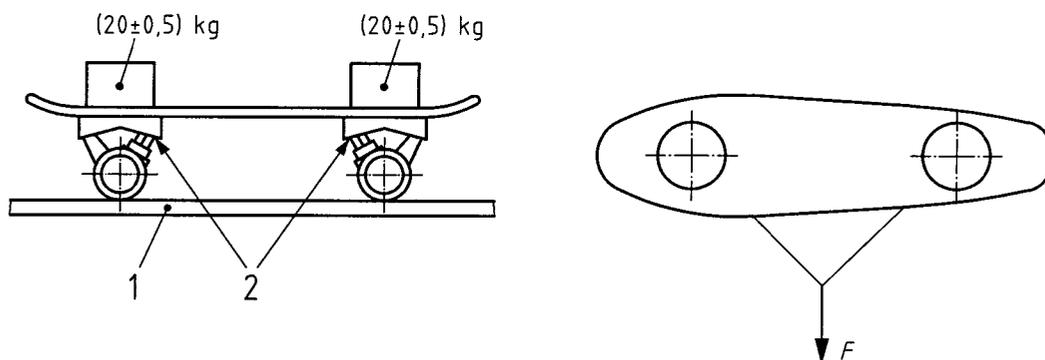
The wheel adhesion is tested by pulling a wheel along a steel plate with a fine brushed and degreased surface of arithmetical mean roughness  $R_a$  of 1,5  $\mu\text{m}$  to 2,0  $\mu\text{m}$ .

### 6.5.2 Apparatus

Steel plate, with a parallel lay and surface texture between  $R_a = 1,5 \mu\text{m}$  and  $R_a = 2,0 \mu\text{m}$  and two weights, each of  $(20 \pm 0,5)$  kg mass.

### 6.5.3 Procedure

Degrease the tyre surface of the wheels of the skateboard and the steel plate. Measure the mass of the skateboard. Load the skateboard with a mass of  $(20 \pm 0,5)$  kg over each axle and place it on the steel plate so that the lay is perpendicular to the force  $F$  to be applied. Apply force without shock to the trucks (see Figure 3) and when the wheels are at the point of slipping, measure the applied force  $F$ .



#### Key

- 1 Steel plate
- 2 Point of application of force

Figure 3 — Adhesion test apparatus

### 6.5.4 Calculation of results

Calculate the coefficient of adhesion of the wheels  $\mu_0$  from Equation (1):

$$\mu_0 = \frac{F}{(40 + m) \times g} \quad (1)$$

where

- $F$  is the force applied, in newtons;
- $m$  is the mass of the skateboard, in kilograms;
- $g$  is the acceleration due to gravity, i.e. 9,81  $\text{m/s}^2$ .

## 6.6 Speed test

### 6.6.1 Principle

A loaded skateboard is driven at speed and the wheel bearings are examined for signs of damage.

### 6.6.2 Procedure

For skateboards Class A, place a mass of  $(50 \pm 0,5)$  kg over the one axle set of wheels under test. Run the skateboard continuously at a speed of  $(20 \pm 0,5)$  km/h for at least 6 min.

For skateboards Class B, place a mass of  $(40 \pm 0,5)$  kg over the one axle set of wheels under test. Run the skateboard continuously at a speed of  $(20 \pm 0,5)$  km/h for at least 3 min.

Note whether or not the wheel bearings seize up or disintegrate.

## 6.7 Endurance test

### 6.7.1 Principle

One set of wheels of a skateboard not tested in accordance with 6.6 is subjected to a simulation of normal wear and tear using a cylindrical ramp apparatus. The skateboard is then examined for any damage to its functionality.

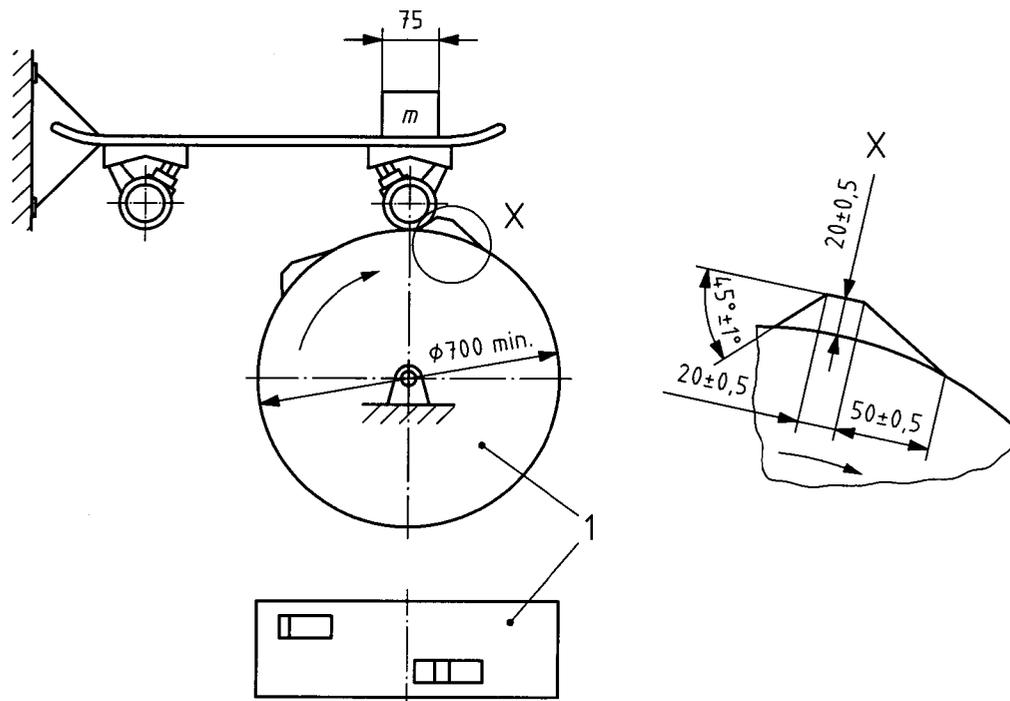
### 6.7.2 Apparatus

The test is carried out on a drum rotating at a circumferential speed of 0,5 m/s.

The drum is fitted with ramps offset one to another and evenly spaced.

The distance between these ramps shall be such that the skateboard passes over at least one ramp in 1,5 s (see Figure 4).

Linear dimensions in millimetres

**Key**

- 1 Drum  
 m mass

**Figure 4 — Diagram of endurance test apparatus****6.7.3 Procedure**

Test the set of wheels of the skateboard referred to in 6.7.1 while the skateboard is allowed only to move vertically on the tested end and is fixed horizontally and vertically on the other end of the skateboard (see Figure 4).

Place a mass  $m = (40 \pm 0,5)$  kg for skateboards of Class A and  $m = (25 \pm 0,5)$  kg for Class B over a length of 75 mm centrally over the deck axle.

For skateboards Class A and B set the cylinder in motion and run it until the distance covered by the wheels under test is  $(25 \pm 0,5)$  km.

Note whether or not there is any breakage, signs of functional damage, or any fastening devices have worked loose.

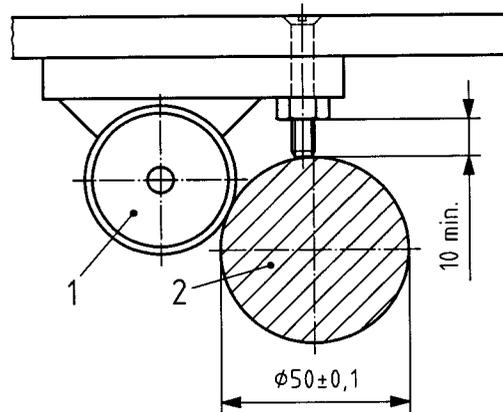
**6.8 External design****6.8.1 Principle**

A test cylinder is used to assess protruding parts.

### 6.8.2 Apparatus

Test cylinder of diameter  $(50 \pm 0,1)$  mm and minimum length 150 mm (see Figure 5).

Dimensions in millimetres



#### Key

- 1 Wheel
- 2 Test cylinder

Figure 5 — Example of use of test cylinder

### 6.8.3 Procedure

Using the cylinder (see 6.8.2), test any projecting parts such as screws and levers that project by more than 10 mm and less than  $100 \text{ mm}^2$  in area.

Present the cylinder at any angle to the part under test.

Note whether or not the part under test touches the outer surface, excluding the ends, of the cylinder.

## 6.9 Drop test

### 6.9.1 Principle

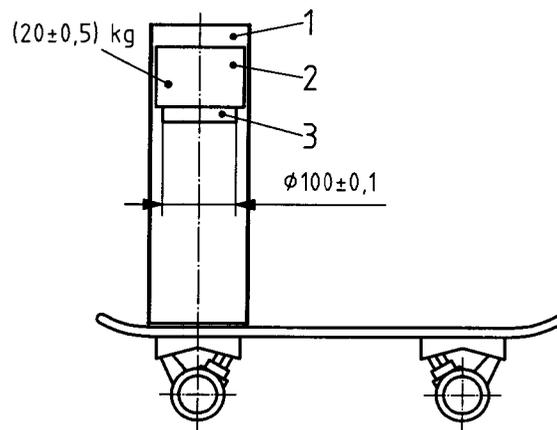
A cylindrical mass is dropped freely on to various points on a skateboard, which is then examined for any damage to its integrity.

### 6.9.2 Apparatus

The test apparatus shall consist of

- a) a cylindrical weight, of mass  $(20 \pm 0,5)$  kg and diameter  $(100 \pm 0,1)$  mm (see Figure 6);
- b) a sheet of rubber, fitted to the weight, of thickness of  $(17 \pm 1)$  mm and  $(70 \pm 2)$  Shore A; and
- c) a guide tube, (see Figure 6).

Dimensions in millimetres

**Key**

- 1 Guide tube
- 2 Test weight
- 3 Rubber sheet

**Figure 6 — Apparatus for drop test****6.9.3 Procedure**

Drop the cylindrical weight, in free fall, down the guide tube on to the centre of the skateboard three times, then three times on to the central area of one axle, and finally three times on to the central area of the other axle. During the test, hold the skateboard to prevent it from rolling away.

For skateboards Class A, drop the weight through  $(300 \pm 5)$  mm on to the centre of the board and through  $(200 \pm 5)$  mm on to the centre of the axles.

For skateboards Class B, drop the weight through  $(200 \pm 5)$  mm on to the centre of the board and through  $(200 \pm 5)$  mm on to the centre of the axles.

Carry out the test after the skateboard has been conditioned for at least 24 h at conditions specified in 6.4. If plastic material is used for decks or trucks the skateboard has to be conditioned for at least 6 h at a temperature of  $(-5 \pm 1)$  °C. Start the test within 1 min of removing the skateboard from the conditioning environment and complete it within 5 min.

Note whether or not there is any breakage, signs of functional damage or any fastening devices have worked loose.

**6.10 Impact test****6.10.1 Principle**

A skateboard is driven against a kerb and is examined for damage to its integrity.

**6.10.2 Apparatus**

Dynamic impact test rig, comprising the following:

- a) skateboard is accelerated in a controlled fashion up to 18 km/h;
- b) a kerb, with a height equal to the diameter of the wheel, held rigidly in position.

### 6.10.3 Procedure

Drive the skateboard three times against the kerb.

Note whether or not there is any breakage, signs of functional damage, or any fastening devices have worked loose.

## 7 Marking

Each skateboard shall be legibly and durably marked with the following information:

- a) the number of this European Standard;
- b) the name, trademark or other means of identification of the manufacturer or retailer;
- c) means of identification of the product;
- d) maximum mass limit of the user;
- e) advice: The use of protective equipment is recommended.

## 8 Information supplied by the manufacturer

### 8.1 General

All skateboards shall be supplied with information supplied by the manufacturer.

This document shall contain, in text or picture form, at least the information in accordance with 8.2 to 8.5.

### 8.2 Information about the construction of the skateboard

The following shall be included:

- a) a note to the effect that no modifications shall be made that can impair safety;
- b) a note indicating if self-locking nuts and other self-locking fixings can lose their effectiveness.

### 8.3 Instructions for use

The following notes shall be included:

- a) notes concerning limitations of use according to regulations of road safety and recommendations regarding or descriptions of suitable surfaces (flat, clean, dry and where possible away from other road users);
- b) use of the following protective equipment: hand/wrist protection, knee protection, head protection and elbow protection;
- c) instruction to check that the skateboard steering mechanism, if present, is correctly adjusted and that the connective components are firmly secured;
- d) description for using and for braking.

#### 8.4 Servicing and maintenance instructions

Clear note stating that regular maintenance enhances the safety of the equipment.

This includes:

- a) note regarding the maintenance of the bearings;
- b) replacement of wheels and cushions (where possible or present);
- c) lubrication of the bearings;
- d) steering adjustment;
- e) note to remove any sharp edges created through use;
- f) inspection;
- g) note to look for splinters and cracks in the deck and to replace when needed.

#### 8.5 Skateboards safety code

**WARNING — Skateboarding can be dangerous.**

Proposal for details see Annex A.

## Annex A (informative)

### Skateboard safety code

- a) Choose to skateboard in places which allow you to improve your skills, not on pavements or streets, where serious accidents have happened to skateboarders and other people.
- b) Children under eight years of age should be supervised at all times when skateboarding.
- c) Learn everything slowly, including new tricks. When losing balance don't wait until you fall, step off and start again. Ride down gentle slopes at first. Then ride slopes where your speed is only as fast as you can run off the board without falling.
- d) Most serious skateboard injuries are broken bones so learn to fall (by rolling if possible) without the skateboard first.
- e) Skateboarders starting to learn need to try with a friend or parent. Most bad accidents happen in the first month.
- f) Before you jump off a skateboard watch where it may go: it could injure someone else.
- g) Avoid skateboarding on wet or uneven surfaces.
- h) Join a club in your area and learn more. Prove you are a good skateboarder and care about yourself and others.

## Bibliography

- [1] EN 71-1, Safety of toys — *Part 1: Mechanical and physical properties*