

INTERNATIONAL  
STANDARD

**ISO**  
**7141**

Second edition  
1995-11-15

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**Passenger cars — Light alloy wheels —  
Impact test**

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*Voitures particulières — Roues en alliage léger — Essai de choc*

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Reference number  
ISO 7141:1995(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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7141 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 19, *Wheels*.

This second edition cancels and replaces the first edition (ISO 7141:1981), of which figure 1 has been modified and to which editorial alignments have been made.

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# Passenger cars — Light alloy wheels — Impact test

## 1 Scope

This International Standard specifies a laboratory test procedure to evaluate the axial (lateral) kerb impact collision properties of a wheel manufactured either wholly or partly of light alloys. It is intended for passenger car applications, with the purpose of screening and/or quality control of the wheel.

The vocabulary used is in accordance with ISO 3911.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3911:—<sup>1)</sup>, *Wheels and rims — Vocabulary, designation and marking*.

## 3 Test equipment

**3.1 New wheels**, fully processed, representative of wheels intended for passenger car application, fitted with a tyre.

NOTE 1 Tyres and wheels used in the tests should not be used subsequently on a vehicle.

**3.2 Impact loading test machine** with a vertically acting striker having an impacting face at least 125 mm wide and at least 375 mm long and sharp edges broken by radius or chamfer, in accordance

with figure 1. The striker mass,  $m$ , within a tolerance of  $\pm 2\%$ , expressed in kilograms, shall be as follows:

$$m = 0,6W + 180$$

where  $W$  is the maximum static wheel loading, as specified by the wheel and/or vehicle manufacturer, expressed in kilograms.

**3.3 Mass** of 1 000 kg.

## 4 Calibration

Ensure, by means of a test calibration adapter, that the 1 000 kg mass (3.3) applied vertically to the centre of the wheel fixing as shown in figure 2 causes a deflection of  $7,5 \text{ mm} \pm 0,75 \text{ mm}$  when measured at the centre of the beam.

## 5 Test procedure

**5.1** Mount the test wheel (3.1) and tyre in the test machine (3.2) such that the impact loading is applied to the rim flange of the wheel. The wheel shall be mounted with its axis at an angle of  $13^\circ \pm 1^\circ$  to the vertical with its highest point presented to the striker.

The tyre mounted on the test wheel shall be the smallest nominal section width tubeless radial-ply tyre intended for use on that wheel. The inflation pressure shall be that specified by the vehicle manufacturer or, in the absence of such specification, it shall be 200 kPa.

The temperature of the test environment shall remain within a range of  $10^\circ\text{C}$  to  $30^\circ\text{C}$  throughout the test period.

**5.2** Ensure that the wheel is mounted on the hub fixture with dimensionally representative fixings such as would be used on a vehicle. Manually tighten the

1) To be published. (Revision of ISO 3911:1977)

fixings to a value or by a method as recommended by the vehicle or wheel manufacturer.

Because the design of wheel centre members may vary, test a sufficient number of locations on the wheel rim circumference to ensure that the integrity of the centre members is assessed. Use new wheels each time.

**5.3** Ensure that the striker is over the tyre, and overlaps the rim flange by  $25 \text{ mm} \pm 1 \text{ mm}$ . Raise the striker to a height of  $230 \text{ mm} \pm 2 \text{ mm}$  above the highest part of the rim flange and allow it to fall.

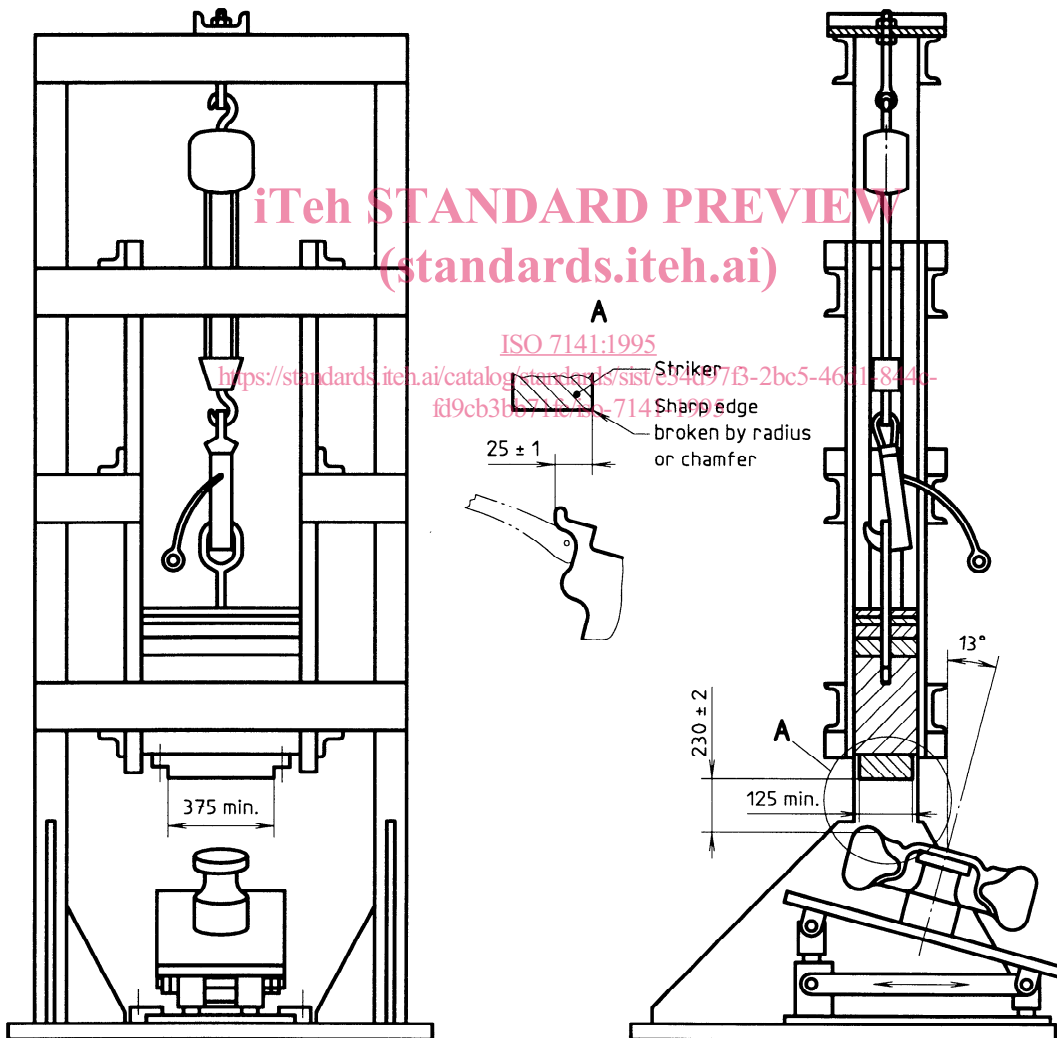
**6 Faillure criteria**

The wheel is considered to have failed the test if any of the following apply:

- a) visible fracture(s) penetrate through a section of the centre member of the wheel assembly;
- b) the centre member separates from the rim;
- c) the tyre loses all air pressure within 1 min.

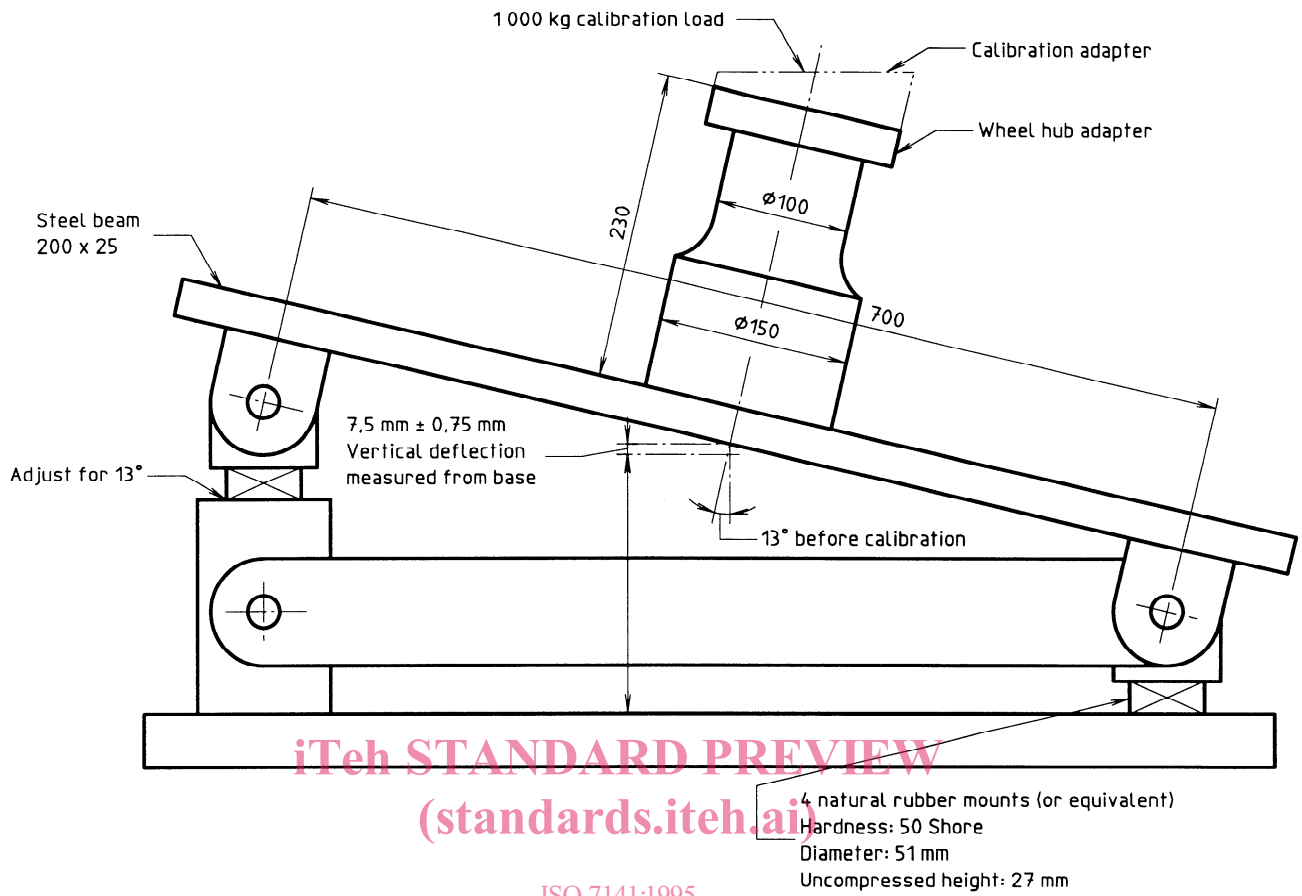
The wheel is not considered to have failed the test by deformation of the wheel assembly or by fractures in the area of the rim section struck by the face plate of the striker.

Dimensions in millimetres



**Figure 1 — Impact loading test machine**

Dimensions in millimetres



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**Figure 2 — Application of loading to centre of wheel mount**

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**Descriptors:** road vehicles, private cars, light alloys, vehicle wheels, tests, impact tests, test equipment.

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