### ISO/DISFDIS 6563:2023(E)

ISO/TC 22/SC 40

Secretariat: UNI

Date: 2025-03-20

# Rear load carrier for wheeled vehicles — Requirements and test methods

Porte-charges arrière pour véhicules à roues — Exigences et méthodes d'essai

# iTeh Standards t<del>ps://standards.iteh.</del> IFDIS stagev

ISO/FDIS 6563

https://standards.iteh.ai/catalog/standards/iso/3c94228d-36c4-4577-9bfb-a23618d0d390/iso-fdis-6563

Edited DIS - MUST BE USED FOR FINAL DRAFT

#### © ISO <u>2023</u>2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office CP 401 • Ch. de Blandonnet 8 CH-1214 Vernier, Geneva Phone: + 41 22 749 01 11

Fax: +41 22 749 09 47

Email<u>E-mail</u>: copyright@iso.org Website: <u>www.iso.org</u>

Published in Switzerland

# iTeh Standards (https://standards.iteh.ai) Document Preview

**ISO/FDIS 6563** 

https://standards.iteh.ai/catalog/standards/iso/3c94228d-36c4-4577-9bfb-a23618d0d390/iso-fdis-6563

### Contents

Forev	word	iv
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Classification related to the fastening	4
5 5.1 5.2 5.3 5.4	Requirements and test methods General test conditions Lighting – Signalling Rear license plate on vehicle External projections Materials	
5.5 5.6 5.7 5.8	Static load bearing capacity (vertical force $F_z$ , longitudinal force $F_x$ and lateral for Dynamic test Resistance of straps and mechanical fixing parts for attaching bicycles to the recarrier in respect to the elongation force $F_s$	orce F <sub>y</sub> ) .12 15 ar load 20
6 6.1 6.2	Product marking Requirement Testing	23 23 24
7 7.1 7.2	User information Assembly instructions User instructions	24 24 25
Anne	ex A (normative) Test bicycle	26
Anne	ex B (normative) Construction specification for "Belgian pavé" test rack	29
Anne Anne	ex C (informative) Types of rear load carriers ex D (informative) Rear license plate	<b>31</b> iso-fdis-6563 <b>41</b>
Anne	ex E (informative) Measurement of displacements	45
Anne	ex F (informative) Classification of coupling balls for towing hitches	55
Anne	ex G (informative) Typical test setup for the static and crash test	57
Bibli	ography	62

### 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see <a href="https://www.iso.org/directives">www.iso.org/directives</a>).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <u>www.iso.org/patents</u>. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see <u>www.iso.org/iso/foreword.html</u>.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 40, *Specific aspects for light and heavy commercial vehicles, busses and trailers*.

**D/FDIS 656** 

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at <u>www.iso.org/members.html</u>.

# Rear load carrier for wheeled vehicles — Requirements and test methods

### 1 Scope

This document specifies the minimum functional safety requirements for rear load carriers intended for attachment on the rear of passenger cars and light commercial vehicles with a maximum gross weight up to 3,5 t as defined in ISO 1176. This document does not apply to incomplete and supplemental rear load carriers.

This document establishes technical specifications and test methods that offer both road users and users of the rear load carriers a minimum level of functional safety when the rear load carriers are being used in accordance with the manufacturer's instructions.

Moreover, the requirements of this document complement the directives from UNECE-\_R 26 and its successive amendments concerning these products.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 1103, Road vehicles — Coupling balls for caravans and light trailers — Dimensions

ISO 1431–1, Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static and dynamic strain testing

ISO 3888-\_2, Passenger cars — Test track for a severe lane-change manoeuvre — Part 2: Obstacle avoidance

ISO 179-1, Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test

ISO 4892-2, Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps

ISO 9227, Corrosion tests in artificial atmospheres — Salt spray tests

IEC/IEEE 82079-\_1, Preparation of information for use (instructions for use) of products — Part 1: Principles and general requirements

EN 12195-2:2000, Load restraint assemblies on road vehicles - Safety - Part 2: Web lashing made from manmade fibres

### **3** Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— — ISO Online browsing platform: available at <u>https://www.iso.org/obp</u>

— IEC Electropedia: available at <u>https://www.electropedia.org/</u>

### 3.1 <mark>3.1</mark>

### rear load carrier

device intended for carrying bicycles, cargo, luggage and goods on the rear of a wheeled vehicle

### 3.2 <del>3.2</del>

### mass of the rear load carrier

 $m_{\rm s}$ 

mass of which includes the rear load carrier including means of attachment and all mounted parts, in kg

Note 1 to entry: Mounted parts are lighting, adapters, straps, etc.

### 3.3 3.3

mass of the test load  $m_{\rm tb}$  mass of representative test load, in kg

3.4 3.4 total mass

#### total $m_{total} = m_s + m_{tb}$

mass of the system comprising rear load carrier (3.1) and payload on vehicle, in kg

Note 1 to entry: Mounted parts are lighting, adapters, straps, etc.

Note 2 to entry: The total mass works on the total centre of gravity.

### 3.5 <del>3.5</del>

#### lifting force

#### $F_{\rm z}$

force applied during testing to simulate the vertical components of the force caused by the vertical effect of the load upward,  $+F_z$ , and downward,  $-F_z$ , as defined in Figure 1, in N



#### Key

- 1 carrying surface
- 2 zero-\_Z-\_plane (horizontal reference plane)
- 3 zero-\_Y-\_plane (vertical longitudinal reference plane)
- 4 zero-\_X-\_plane (vertical lateral reference plane)

### Figure 1 — Application directions of the forces $F_x$ , $F_y$ and $F_z$

© ISO 2025 – All rights reserved

### 3.6 <del>3.6</del>

### longitudinal force

### $F_{\rm x}$

**longitudinal** force applied during testing to simulate the horizontal components of the forces directed forwards,  $-F_x$ , and backwards,  $+F_x$ , in the direction of travel, which are caused by the load as defined in Figure 1 Figure 1, in N

### 3.7 <mark>3.7</mark>

### lateral force

 $F_{\rm y}$ 

force applied during testing to simulate the horizontal components of the lateral forces directed to the right,  $+F_y$ , and left,  $-F_y$ , in the direction of travel, which are caused by the load as defined in Figure 1, in N

### 3.8 <mark>3.8</mark>

### tensile force of the strap

### Fs

force applied during testing to simulate the elongation behaviour caused by the load acting on the straps, in N

### 3.9 <del>3.9</del>

d

### residual displacement at a given point

*D* difference between the position before and after each step of the test, for the contact points of the *rear load carrier* (3.1) to vehicle, in mm

Note 1 to entry: A contact point can be a supporting point, a fixation point or all other connecting points.

# **3.10 3.10** displacement of the load

### **Document Previ**

difference between the position of each load on the *rear load carrier* (3.1) at each attachment point before and after the relevant test, in mm

### 3.1173.111 and ards.iteh.ai/catalog/standards/iso/3c94228d-36c4-4577-9bfb-a23618d0d390/iso-fdis-6563

### residual displacement of the internal components of rear load carriers

difference in the distance between the position of the interface to any component of the *rear load carrier* (3.1) that ensures the interface to the vehicle, and the component of the rear load carrier on which it is mounted, before and after the relevant test, in mm

### 3.12 **3.12**

### functional safety

transport of the *rear load carrier* (3.1) so as to ensure road safety and prevent loss

### 4 Classification related to the fastening

Depending on the attachment to the vehicle, the following distinctions are made:

- a) a)–fitted to the trunk lid or rear wall (see Figures C.1.C.1 and C.2.C.2););
- b) b)–fitted to the hatch (see Figures C.3 C.3 and C.4 C.4);):
- c) c) fitted to the coupling ball or plate (see Figures C.5.C.6, C.6, C.6 and C.7.C.7););

- d) d) fitted to the spare wheel (see Figure C.8.6.8););
- e) e) fitted on and in the chassis (see Figure C.9C.9).).

### 5 Requirements and test methods

### 5.1 General test conditions

### 5.1.1 Measurement uncertainties

Unless otherwise stated, the measurement uncertainties based on the N values shall correspond to the following:

—	speed	1±5%.1 Standards
_	pressure	±5 %;
—	temperatures	±5 °C;
—	time (e.g. test duration)	±5 s;
—	angles	±2°;
_	dimensions	±2 %;
—	masses and weights	±2 %;
—	forces and torques	±5 %;

### 5.1.2 Description and test load S://StandardS.iten.ai)

Static: The test shall be carried out with the permissible maximum payload indicated by the manufacturer, but with 30 kg payload as a minimum, unless otherwise specified for individual tests (i.e. boxes, baskets). For rear load carriers for bicycles, the test shall be carried out with one test bicycle per rail according to the data in <u>Annex AAnnex A.</u>

The force shall be applied according to <u>Table 1</u>.

Rear load carrier	Force application occurs	Position of the centre of gravity
Bike rear load carrier	At the centre of gravity of each bike	See <u>Annex A</u>
Ski or snowboard rear load carrier	At the centre of gravity of each pair of skis or snowboard	Equivalent substitute device can be used
Other rear load carrier	At the centre of gravity of the equipment carried	Equivalent substitute device can be used

Dynamic: The test shall be carried out with the permissible maximum payload indicated by the manufacturer, including the relevant safety factors, but with 30 kg payload as a minimum, unless otherwise specified for individual tests. For rear load carriers for bicycles, the test shall be carried out with one test bicycle per rail according to the data in <u>Annex AAnnex A.</u>

### 5.1.3 Interfaces to the vehicle

### 5.1.3.1 Coupling balls

For the test outlined in 5.7 clause 5.7, the coupling balls shall be:

a) a) in accordance with ISO 1103;

NOTE Coupling balls with a diameter of minimum 49,00 mm can also occur in road traffic owing to wear (see UNECE-<u>r</u>R 55).

- b) b)-metallically bare surface without paint-based surface treatment;
- c) c)-degreased;
- d) <del>d)</del>-steel.

### 5.1.3.2 Other interfaces on the vehicle to other attachments

The data of the interface manufacturer shall be observed, e.g. for spare wheel holders.

### 5.1.4 Test samples and sequence

Five test samples shall be used for the tests. The sequence of the tests shall follow Figure 2. Figure 2.

# (https://standards.iteh.ai

**ISO/FDIS 6563** 

https://standards.iteh.ai/catalog/standards/iso/3c94228d-36c4-4577-9bfb-a23618d0d390/iso-fdis-6563

© ISO 2023 - All rights reserved



ISO/FDIS 6563

https://standards.iteh.ai/catalog/standards/iso/3c94228d-36c4-4577-9bfb-a23618d0d390/iso-fdis-6563



Figure 2 — Test sequence

The following test sequence shall be followed:

- a) a)-study of the instruction for fitting and use of leaflet (in accordance with IEC/IEEE 82079-\_1);
- b) b)–preconditioning, mountability and assembling tests;

Edited DIS -

- c) c) dynamic tests:
  - 1) 1) Belgian pavé test;

  - 3) 3) evasion test;
  - 4) 4) braking test;
  - 5) <del>5)</del> city crash test.

Deviations from the test sequence shall be documented.

d) d)–preconditioning of the specimen used for static tests;

### e) e)-static tests:

- 1) 1) lifting force  $+F_z$  and  $-F_z$ ;
- 2) 2) longitudinal force + $F_x$  and - $F_x$ ;
- 3) 3) lateral force + $F_y$  and - $F_y$ ;
- 4) 4) ——if necessary, testing of straps and attachment elements;
- f) f)—other tests (resistance to corrosion, material, etc.).

### 5.2 Lighting – Signalling **Document Preview**

LightingUNECE-R 48 provides regulation for lighting and light signal devices shall be in accordance with UNECE-R 48. See Annex DAnnex D. ISO/FDIS 6563

https://standards.iteh.ai/catalog/standards/iso/3c94228d-36c4-4577-9bfb-a23618d0d390/iso-fdis-6563 **5.3 Rear license plate on vehicle** 

If the license plate on the vehicle is partly hidden by the rear load carrier or by the load itself, it is necessary to mount it visibly or duplicate it on the rear load carrier. Examples are given in <u>Annex D</u> (Figures D.1 - <u>D.4 Annex D</u>.). The manufacturer shall advise the user by including a warning in the instructions for use (see 7.27.2) to duplicate the license plate and its lighting devices on the rear load carrier.

### 5.4 External projections

The area that can be touched by a ball with a diameter of 165 mm after mounting the rear load carrier shall not exhibit any parts with a rounding radius of less than 2,5 mm.

NOTE See ECE-\_R 26.

### 5.5 Materials

### 5.5.1 General material requirements

The following requirements and associated tests apply for components whose failure would also entail a failure of the overall system or detachment or loss of the load, or which would render safe driving of the vehicle impossible.

The rear load carrier shall fulfil the requirements outlined in 5.75.7 and 5.85.8 with the materials used, in the temperature range between -20 °C and +60 °C.

This shall be shown by one of the following methods:

a) a) material certification and report showing that the design is suitable for functional safety;

EXAMPLE The report of the technical specification of the material or sample provided by the manufacturer or certification from the manufacturer.

- b) b) by direct testing under the extreme conditions outlined in 5.5.15.5.1;
- c) c) -reference to applicable material standards.

### 5.5.2 Corrosion resistance

### 5.5.2.1 Requirements

When tested in accordance with 5.5.2.2 5.5.2.2, no base metal corrosion of functional parts is permissible during the test.

### 5.5.2.2 Test methods

All parts of the rear load carriers need to be exposed to a neutral salt spray test with 5 % sodium chloride for 168 h. The functional parts, whose failure would lead to loss of the load, shall not exhibit any base metal corrosion. The test shall be performed in accordance with ISO 9227. The functional parts shall be assembled when tested.

### 5.5.3 Weather resistance

## 5.5.3.1 Requirements and test methods for the weather resistance of elastomers subject to tensile loads

After the test, no weather damage shall occur that impairs the function of the attachment elements.

Elastomers subject to tensile load are exposed to an ozone concentration of  $(50 \pm 5)$  pphm<sup>+1</sup> for 48 h. After the test, the sample shall be loaded in accordance with ISO 1431-1, with an elongation of  $(20 \pm 2)$  %. Cracks are not permissible.

© ISO 2025 – All rights reserved

Edited DIS -

10

<sup>&</sup>lt;sup>1</sup> pphm: Parts ozone per hundred millions.

<sup>1)</sup> pphm: parts ozone per hundred millions.