
**Cycles — Luggage carriers for bicycles
— Requirements and test methods**

*Cycles — Porte-bagages pour bicyclettes — Exigences et méthodes
d'essai*

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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 documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 149, *Cycles*, Subcommittee SC 1, *Cycles and major sub-assemblies*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 333, *Cycles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11243:2016), which has been technically revised.

The main changes are as follows:

- change of Scope;
- the following terms and definitions; “cycle specific luggage carrier”, “non cycle specific luggage carrier”, “exposed protrusion” were added;
- improvement of [Clause 3](#) and [Clause 4](#);
- improvement of [5.1](#) and [5.5.2](#);
- addition of [5.6](#);
- improvement of [5.9](#), [5.10](#) and [5.11](#);
- addition of [5.12](#);
- improvement of [5.13](#);
- improvement of [Clause 6](#), [Clause 7](#) and [Clause 8](#);
- deletion of some annexes and addition of some annexes with changes in the text.

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 www.iso.org/members.html.

Introduction

This document has been developed in response to demand throughout the world, and the aim has been to ensure that luggage carrier manufactured in conformity with it will be as safe as is practically possible. The tests have been designed to ensure the strength and durability of the luggage carrier, demanding high quality throughout and consideration of safety aspects from the design stage onwards.

The scope has been limited to safety considerations and has specifically avoided standardization of components.

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Cycles — Luggage carriers for bicycles — Requirements and test methods

1 Scope

This document specifies safety and performance requirements for the design and testing of both non cycle specific luggage carriers intended for mounting (with or without tools) and cycle specific luggage carriers mounted on complete cycles. It applies to luggage carriers intended to be positioned above and adjacent to the wheels of cycles. This document lays down guidelines for instructions on the use and care of such luggage carriers.

This document does not apply to removable luggage (for example, handlebar bags or baskets that are not permanently attached).

Toy carrier intended to be mounted on bicycles for young children in the scope of ISO 8098 are not covered by this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

luggage carrier

device, including containers such as baskets, that is mounted and permanently attached above and/or adjacent to the rear wheel(s) (in the case of a rear luggage carrier) or front wheel(s) (in the case of a front luggage carrier) of a cycle and that is designed for carrying luggage or children in child seats

3.2

cycle specific luggage carrier

luggage carrier that is removable, designed to be mounted on a specific cycle

3.3

non cycle specific luggage carrier

luggage carrier sold as a separate accessory intended to be mounted on a wide range of suitable cycles

3.4

luggage carrier platform

flat part of the *luggage carrier* (3.1) upon which loads may be placed or fixed, or the flat top rail from which panniers may be hung, or the bottom part of a container

Note 1 to entry: The bottom part of a container, for example a basket.

**3.5
luggage carrier platform length**

L

maximum overall length of the *luggage carrier platform* (3.4)

**3.6
visible crack**

crack which results from a test, wherein that crack is visible to the naked eye

[SOURCE: ISO 4210-1:2023, 3.2.11]

**3.7
fracture**

unintentional separation into two or more parts

[SOURCE: ISO 4210-1:2023, 3.2.4]

**3.8
exposed protrusion**

protrusion which, through its location and rigidity, could present a hazard to the rider either through heavy contact with it in normal use or should the rider fall onto it in an accident

[SOURCE: ISO 4210-1:2023, 3.2.3]

**3.9
toy carrier**

luggage carrier with a part intended for containing a maximum mass of 1 kg and not intended to carry luggage

**3.10
permanently attached luggage carrier**

luggage carrier (3.1) which is permanently attached

Note 1 to entry: For example, luggage carrier welded to the frame.

**3.11
normal rear luggage carrier**

rear luggage carrier supported by fixings to the bicycle frame close to the rear wheel axle

**3.12
frame-mounted beam luggage carrier**

rear luggage carrier that is structurally a cantilever, fixed to the bicycle frame in front and/or above the rear wheel

Note 1 to entry: It may also be fixed to the seat post, in addition to the frame, but receives no support from the bicycle frame near to the axle of the rear wheel.

**3.13
seat-post mounted beam luggage carrier**

rear luggage carrier that is structurally a cantilever, fixed to the seat post of the bicycle without additional fixings to the frame

**3.14
above wheel front luggage carrier**

front luggage carrier with a platform upon which loads can be placed above the front wheel

**3.15
low-load front luggage carrier**

front luggage carrier that is exclusively designed for carrying a pair of panniers, where the “platform” is a pair of rails (from which the panniers hang), one each side of the wheel and not more than 200 mm above the lower points of attachment of the luggage carrier near to the axle of the front wheel

3.16**front mounted container**

container such as a basket that is mounted and permanently attached above the front wheel of a bicycle and that is exclusively designed for carrying luggage

3.17**maximum load capacity**

maximum load that can be carried

Note 1 to entry: The restrictions of maximum load capacity are defined in [Table 1](#).

3.18**electrically power assisted cycle****EPAC**

cycle, equipped with pedals and an auxiliary electric motor, which cannot be propelled exclusively by means of this auxiliary electric motor, except in the walk assistance mode

[SOURCE: ISO/TS 4210-10:2020, 3.2]

3.19**platform height**

height measured from wheel axis to the luggage carrier platform

4 The restrictions of maximum load capacity for the types of non cycle specific luggage carrier

Manufacturers of non cycle specific luggage carrier shall take into consideration any restrictions laid down in [Table 1](#).

For cycle specific luggage carrier, the manufacturer is responsible for determining the maximum load capacity.

For designs exceeding the capacity restrictions, a risk assessment should be performed by the manufacturer in particular addressing the effect of the higher load capacity and to identify suitable measures to address the identified risks.

In [Table 1](#), the maximum limit (if any) for the load capacity is indicated for each type of non cycle specific luggage carrier that falls within the scope of this document. The applicable requirements and test methods differ according to the type and maximum load capacity.

Table 1 — The restrictions of maximum load capacity for the types of non cycle specific luggage carrier

Type of luggage carrier	Rear			Front		
	Normal rear luggage carrier	Beam carriers		Above wheel front luggage carrier	Low-load front luggage carrier	Front mounted container
		Seat post-mounted beam luggage carrier	Frame-mounted beam luggage carrier			
Restriction of maximum load capacity, kg	no limit	10	27	10	18	10

NOTE Maximum load capacity does not include the battery mass if so equipped.

NOTE Examples of luggage carrier configurations are shown in [Annex C](#).

5 Requirements and test methods

5.1 General

The fatigue tests shall be done on the same sample and fasteners. Static tests and the additional tests on child seat compatible luggage carriers can be conducted on a new test sample, but if only one test sample is available, it is permissible to conduct all of the tests on the same sample with the sequence of testing in the order: dynamic load tests, static tests.

When more than one test is conducted on the same sample, the test sequence shall be clearly recorded in the test report or record of testing.

If the luggage carrier is made of plastics or metal and plastics, it shall be submitted to the tests in [5.13](#) after being tested according to [5.9](#), [5.10](#), [5.11](#) and [5.12](#).

In the strength tests, all components shall be in the fully-finished condition.

The luggage carrier shall be tested using the connecting interface position(s) and type(s) according to the luggage carrier manufacturer's specifications.

When the manufacturer allows more than one mounting configuration the stiffest and weakest configuration shall be tested. The stiffness is determined by measuring the largest and smallest displacement of the each configuration according the method described in [5.11](#).

The luggage carrier shall be tested with all accessories provided (e.g. lock, pumps, etc.).

For luggage carrier intended to be fitted on an electrically power assisted cycle (EPAC) and designed to include a battery, the test shall be performed with the maximum battery load [see [Clause 7 q](#)] in addition to the mass defined in [Clause 4](#).

For maximum load capacity under 27 kg, the user shall be warned that the product is not suitable for the transportation of a child seat. See [Clause 6.2 e](#).

Permanently attached luggage carriers are not within the scope of this document. However, manufacturers should take into consideration and apply all clauses of this document except [5.8](#), [5.13](#), [6.2 c](#)) and [6.2 e](#)) as a basis of safety requirements.

5.2 Tolerances

Unless stated otherwise, accuracy tolerances based on the nominal values shall be as follows.

Forces	0/+5 %
Masses	±1 %
Dimensions	±1 mm
Angles	±1°
Time duration	±5 s
Temperatures	±2 °C
Frequencies and linear stroke	±5 %

Torque wrenches shall have a maximum permissible relative deviation of ±6 %

Note Unilateral tolerance such as 0/+5 % allows variation to occur in only one direction. The minimum applied force shall be the standard force plus the maximum permissible error of the equipment. Typically, the equipment is set at half the tolerance (+2,5 %).

5.3 Crack detection methods

Standardized methods may be used to emphasize the presence of cracks where visible cracks are specified as criteria of failure in tests specified in this document.

NOTE For example, suitable dye-penetrant methods are specified in ISO 3452-1 and ISO 3452-2.

5.4 Sharp edges

Exposed edges that could come into contact with the rider's or a transported person's hands, legs, etc., during normal riding or normal handling and normal maintenance shall be neither sharp nor designed such that injuries can arise when the bicycle is used correctly. Spring ends shall be rounded or fitted with protective caps.

5.5 Security of safety-related fasteners

5.5.1 Security of screws

Any screws used in the internal assembly of the luggage carrier shall be provided with suitable locking devices, for example, lock-washers, lock-nuts, stiff nuts or thread locking compound.

5.5.2 Minimum failure torque

The minimum failure torque of screws for the fastening of the luggage carrier to the cycle shall be at least 20 % greater than the manufacturer's maximum recommended tightening torque.

NOTE For example, mechanical and physical properties of bolts are specified in ISO 898-1.

5.6 Minimum requirements for rear luggage carriers to which a child seat could be attached

Except for luggage carriers using a manufacturer-specific child seat mounting system, a luggage carrier platform maximum width of 175 mm is recommended for rear luggage carriers to which a child seat could be attached. And the maximum load capacity of the rear luggage carrier shall be at least 27 kg.

NOTE Some child seats can have other additional attaching requirements.

5.7 Protrusions

This requirement is intended to address the hazards associated with the users of bicycles falling on projections or rigid components on a bicycle, possibly causing internal injury or skin puncture.

A screw thread that is an exposed protrusion shall be limited to a protrusion length of one major diameter of the screw beyond the internally threaded mating part.

5.8 Rear luggage carriers — Provision for lighting

The rear aspect of any rear luggage carrier not equipped with an integral rear lamp and reflector can be equipped with a bracket or brackets, either as an integral part or separate accessory (or accessories) to allow the fitting of a rear lamp and reflector.

When this requirement is satisfied by the provision of separate accessories, these accessories should be included when the luggage carrier is sold.

5.9 Dynamic load tests

5.9.1 Requirement

When tested by the methods described in [5.9.3](#), [5.9.4](#) and [5.9.5](#), there shall be no fractures or visible cracks in any part of the luggage carrier or fasteners and the specifically designed mounting points of the luggage carrier. The loading methods for [5.9.3](#) and [5.9.4](#) are shown in [5.9.2](#).

NOTE Alternative dynamic test requirements and test methods are given in [Annex B](#).

5.9.2 General loading method

The mounting method for the dynamic load test of cycle specific luggage carriers and non cycle specific luggage carriers differ. The mounting requirements are given in [Annex A](#).

Attach a specified weight with a mass equal to the maximum load capacity stated by the manufacturer.

The specified weight (maximum load capacity given by the manufacturer) shall be applied in the middle of the platform = $L/2$ and $W/2$ this is illustrated in [Figure 1](#). Tolerance ± 5 mm on the position of the weight. The clamping shall not deform the tube or the platform:

- For luggage carriers with a platform, a weight or weights shall be evenly distributed on more than 70 % area of the top surface of the luggage carrier platform;
- The centre of gravity of this weight shall coincide with this position and also lie within $h = 40$ mm of the centreline of the top of the platform;
- Luggage carriers that are suitable for mounting side bags, that side bags can be filled with the balls that have a typical diameter of 40 mm and 24 g (e.g. squash balls) until reaching the load capacity, other dimension and mass can be used to obtain a good matching between mass and volume. The mass shall be evenly distributed;
- The total width of the weight shall not exceed the luggage carrier platform width by more than 100 mm. A weight or weights shall be attached in the best possible way to prevent movement. The attachments for the weight are not included in the test weight;
- Front-mounted containers or baskets can be filled with balls that have a typical diameter of 40 mm and 24 g mass (e.g. squash balls), until reaching the load capacity other dimension and mass can be used to obtain a good matching between mass and volume. The load is secured by a film to avoid moving during dynamic test.
- For low-load front luggage carriers and low-load rear luggage carriers with special attachments according to the manufacturer specification, separate weights shall be attached on each side with no connecting bar. Each weight shall equal half the rated capacity. This can be arranged with a balanced pair of weights. Each weight clamped around each top rail.