

INTERNATIONAL
STANDARD

ISO
11154

First edition
2023-03

Road vehicles — Roof load carriers

Véhicules routiers — Porte-charges de toit



Reference number
ISO 11154:2023(E)

© ISO 2023



COPYRIGHT PROTECTED DOCUMENT

© ISO 2023

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
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Symbols, types and designation.....	2
4.1 Symbols.....	2
4.2 Types.....	3
4.3 Designation.....	4
5 Attachment to the vehicle.....	4
6 Safety requirements, tests.....	4
6.1 Measurement uncertainties.....	4
6.2 General.....	4
6.3 Resistance of the materials.....	5
6.4 Test procedure.....	5
6.5 Test conditions.....	6
6.6 Test specimens.....	6
6.7 Test instruments.....	6
6.7.1 Roof-box dummy for load simulation.....	6
6.7.2 Test wheel.....	7
6.7.3 Test skis.....	7
6.7.4 Test snowboards.....	7
6.7.5 Test surfboard.....	7
6.7.6 Test surf mast.....	8
6.7.7 Test boat.....	8
6.7.8 Test ladder.....	8
6.7.9 Test roof box.....	8
6.7.10 Test air deflector device.....	8
6.7.11 Test basket.....	8
6.8 External design.....	9
6.9 Functional design.....	9
6.10 Attachment and type of load during the test.....	9
6.11 Operational safety.....	12
6.11.1 General.....	12
6.11.2 Vibration resistance.....	12
6.11.3 Lane change test.....	13
6.11.4 Brake test.....	14
6.11.5 Requirements and test criteria for lane change test (6.11.3) and brake test (6.11.4).....	14
6.12 Static load bearing capacity.....	14
6.12.1 General requirements.....	14
6.12.2 General test.....	16
6.12.3 Testing the forces in the direction of travel; height of the force application point.....	16
6.12.4 Requirements for forces in the direction of travel $-F_x$	20
6.12.5 Requirements for forces opposing the direction of travel $+F_x$	20
6.12.6 Testing the forces opposing the direction of travel $+F_x$	20
6.12.7 Requirements for forces 20° horizontal to the direction of travel (only for Types A and B).....	20
6.12.8 Testing the forces 20° horizontal to the direction of travel (only for Types A and B).....	21
6.12.9 Requirements for the stress due to vertical forces.....	21
6.12.10 Testing the stress due to vertical forces.....	21

6.12.11	Requirements for the stress due to lateral forces	22
6.12.12	Testing the stress due to lateral forces	22
6.13	Crash simulation stress	23
6.13.1	Requirement for the crash simulation stress	23
6.13.2	Testing the crash simulation stress	23
6.14	Corrosion resistance	24
6.14.1	Requirements for the corrosion resistance of components with galvanic surface protection	24
6.14.2	Testing the corrosion resistance of components with galvanic surface protection	24
6.15	Weather resistance	25
6.15.1	Requirements for the weather resistance of plastic straps parts and attachment elements exposed to UV	25
6.15.2	Testing the weather resistance of plastic parts and means of attachment	25
6.15.3	Cold resistance of plastic parts and attachment elements	25
6.15.4	Heat resistance of plastic parts (apart from Type G)	26
6.16	Functional safety of roof boxes Type G	26
6.16.1	Requirements	26
6.16.2	Test	27
6.17	Lock and hinge test on the roof box	27
6.17.1	Requirements	27
6.17.2	Test	27
7	Marking	27
7.1	Requirement	27
7.2	Test	28
8	Instructions for use	28
8.1	General	28
8.2	Examples of safety notes in instructions for use	29
8.3	Initial assembly	29
8.4	Content	29
	Annex A (normative) Test bicycle	31
	Annex B (informative) Requirements for a Belgian block test track	33
	Annex C (informative) Determination of the payload	35
	Annex D (informative) Example of safety notes in instructions for use	36
	Annex E (informative) Presentation of the force application	37
	Annex F (normative) Measuring displacement, <i>d</i>	42
	Bibliography	49

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 22, *Road vehicles*, Subcommittee SC 40, *Specific aspects for light and heavy commercial vehicles, busses and trailers*.

This first edition cancels and replaces ISO/PAS 11154:2006, which has been technically revised.

The main changes are as follows:

- update and revision of document structure, which results in renumbering;
- update and revision [Clause 2](#);
- update and revision [Clause 6](#);
- addition of test procedure [\(6.4\)](#);
- addition of lane change test [\(6.11.3\)](#);
- addition of brake test [\(6.11.4\)](#);
- revision of [6.12.2](#), changing application of force from 10 min to 1 min.

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.

Road vehicles — Roof load carriers

1 Scope

This document applies for roof racks of passenger cars and light commercial vehicles up to a permissible total weight of 3,5 t according to ISO 1176 and specifies requirements and test methods for these. It is also valid for roof racks mounted on trailers.

So-called magnetic or suction foot racks, i.e. roof racks whose attachment on the vehicle is only via magnetic forces or vacuum, are excluded from this document.

This document provides safety-related requirements under consideration of the weight, centre of gravity, air resistance and other safety-relevant properties for structures of roof racks for which no other technical or statutory regulations otherwise apply and which are not listed in 4.2. In individual cases, test requirements can extend beyond these requirements.

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

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

ISO 4210-2, *Cycles — Safety requirements for bicycles — Part 2: Requirements for city and trekking, young adult, mountain and racing bicycles*

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

EN 15194, *Cycles — Electrically power assisted cycles — EPAC Bicycles*

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

3.1

roof rack

device, which is attached directly or indirectly via other roof rack forms on the roof of passenger cars or vehicles derived from this and which are suitable for the transportation of *loads* (3.2)

3.2

load

transport goods which can be transported with the *roof racks* (3.1) provided for this