

This is a preview of "ISO 4210-2:2023". [Click here to purchase the full version from the ANSI store.](#)

Third edition
2023-01

Cycles — Safety requirements for bicycles —

Part 2: Requirements for city and trekking, young adult, mountain and racing bicycles

Cycles — Exigences de sécurité pour les bicyclettes —

*Partie 2: Exigences pour bicyclettes de ville et tout chemin (trekking),
jeunes adultes, tout-terrain et de course*



Reference number
ISO 4210-2:2023(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

This is a preview of "ISO 4210-2:2023". [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
Foreword.....	v
Introduction.....	vii
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 Requirements.....	2
4.1 Toxicity.....	2
4.2 Sharp edges.....	2
4.3 Security and strength of safety-related fasteners.....	2
4.3.1 Security of screws.....	2
4.3.2 Minimum failure torque.....	2
4.3.3 Folding bicycle mechanism.....	2
4.4 Crack detection methods.....	3
4.5 Exposed protrusions.....	3
4.6 Brakes.....	3
4.6.1 Braking systems.....	3
4.6.2 Hand-operated brakes.....	3
4.6.3 Attachment of brake assembly and cable requirements.....	4
4.6.4 Brake-block and brake-pad assemblies — Security test.....	5
4.6.5 Brake adjustment.....	5
4.6.6 Hand-operated braking-system — Strength test.....	5
4.6.7 Back-pedal braking system — Strength test.....	5
4.6.8 Braking performance.....	5
4.6.9 Brakes — Heat-resistance test.....	8
4.7 Steering.....	8
4.7.1 Handlebar — Dimensions.....	8
4.7.2 Handlebar grips and plugs.....	9
4.7.3 Handlebar stem — Insertion-depth mark or positive stop.....	9
4.7.4 Handlebar stem to fork steerer — Clamping requirements.....	10
4.7.5 Steering stability.....	10
4.7.6 Steering assembly — Static strength and security tests.....	11
4.7.7 Handlebar and stem assembly — Fatigue test.....	12
4.8 Frames.....	12
4.8.1 Suspension-frames — Special requirements.....	12
4.8.2 Frame — Impact test (falling mass).....	13
4.8.3 Frame and front fork assembly — Impact test (falling frame).....	13
4.8.4 Frame — Fatigue test with pedalling forces.....	13
4.8.5 Frame — Fatigue test with horizontal forces.....	13
4.8.6 Frame — Fatigue test with a vertical force.....	13
4.8.7 Rear brake mount tests.....	14
4.9 Front fork.....	14
4.9.1 General.....	14
4.9.2 Means of location of the axle and wheel retention.....	14
4.9.3 Tyre clearance test — Suspension fork.....	14
4.9.4 Front fork — Tensile test.....	14
4.9.5 Front fork — Static bending test.....	14
4.9.6 Front fork — Rearward impact test.....	14
4.9.7 Front fork — Bending fatigue test plus rearward impact test.....	15
4.9.8 Forks intended for use with hub- or disc-brakes.....	15
4.9.9 Steerer tube — fatigue test.....	15
4.10 Wheels and tyre assembly.....	16
4.10.1 Wheels and tyre assembly — Rotational accuracy — Concentricity tolerance and lateral tolerance.....	16

This is a preview of "ISO 4210-2:2023". [Click here to purchase the full version from the ANSI store.](#)

4.10.2	Wheel and tyre assembly — Clearance	16
4.10.3	Wheel and tyre assembly — Static strength test.....	16
4.10.4	Wheels — Wheel retention.....	16
4.10.5	Wheels — Quick-release devices — Operating features.....	17
4.10.6	Wheel and tyre assembly — Greenhouse effect test for composite wheels	17
4.10.7	Wheel and tyre assembly — Heat resistance tests for composite rims used in conjunction with rim brake.....	18
4.10.8	Wheel and tyre assembly — Overpressure test.....	18
4.10.9	Wheel and tyre assembly — Information for users.....	19
4.11	Front mudguard.....	19
4.12	Pedals and pedal/crank drive system	19
4.12.1	Pedal tread.....	19
4.12.2	Pedal clearance.....	20
4.12.3	Pedal — Static strength test.....	21
4.12.4	Pedal — Impact test.....	21
4.12.5	Pedal — Dynamic durability test.....	21
4.12.6	Drive system — Static strength test.....	21
4.12.7	Crank assembly — Fatigue test.....	22
4.13	Drive-chain and drive belt.....	22
4.13.1	Drive-chain.....	22
4.13.2	Drive belt.....	22
4.14	Chain-wheel and belt-drive protective device	22
4.14.1	Requirements.....	22
4.14.2	Chain-wheel disc and drive pulley disc diameter.....	23
4.14.3	Chain and drive belt protective device.....	24
4.14.4	Combined front gear-change guide.....	25
4.15	Saddles and seat-posts.....	25
4.15.1	Limiting dimensions	25
4.15.2	Seat-post — Insertion-depth mark or positive stop.....	25
4.15.3	Saddle/seat-post — Security test.....	26
4.15.4	Saddle and saddle rail — Static strength test.....	26
4.15.5	Saddle and seat-post assembly — Fatigue test.....	26
4.15.6	Seat-post — Fatigue test.....	26
4.16	Spoke protector	27
4.17	Luggage carriers	27
4.18	Road test of a fully assembled bicycle.....	27
4.19	Lighting systems and reflectors	27
4.19.1	General.....	27
4.19.2	Wiring harness.....	27
4.19.3	Lighting systems	28
4.19.4	Reflectors.....	28
4.20	Warning device	28
5	Manufacturer's instructions	28
6	Marking.....	30
6.1	Requirement.....	30
6.2	Durability test.....	31
Annex A (informative) Steering geometry		32
Bibliography.....		33

This is a preview of "ISO 4210-2:2023". Click here to purchase the full version from the ANSI store.

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 4210-2:2015), which has been technically revised.

The main changes as follows:

- improvement of [4.3.2](#) Minimum failure torque;
- change in minimum braking performance value in [Table 2](#) of [4.6.8.1.3](#);
- improvement of [4.6.9](#);
- improvement of [4.7.2](#);
- addition of a requirement for angle-adjustable handlebar stem in [4.7.6.3](#);
- addition of [4.8.7](#);
- addition of [4.9.8.3](#);
- addition of [4.9.9](#);
- re-arrangement of requirements for “Wheel and tyre assembly”, “Rims, tyres, and tubes”;
- improvement of [4.10.2](#);
- change in test force of [4.10.4.3](#);
- addition of [4.10.7](#);

This is a preview of "ISO 4210-2:2023". [Click here to purchase the full version from the ANSI store.](#)

- improvement of [4.11](#);
- change in option c) of [4.14](#);
- addition of [4.15.4.2](#);
- improvement of [4.15.6](#);
- addition of icons in [Clause 6](#).

A list of all parts in the ISO 4210 series can be found on the ISO website.

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.

This is a preview of "ISO 4210-2:2023". [Click here to purchase the full version from the ANSI store.](#)

Introduction

This document has been developed in response to demand throughout the world, and the aim has been to ensure that bicycles manufactured in conformity with this document will be as safe as is practically possible. The tests have been designed to ensure the strength and durability of individual parts as well as of the bicycle as a whole, 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.

For the purpose of improving the safety of luggage carriers, revision work of ISO 11243, referenced in [4.17](#), is in progress. In case this revision work involves requirements for the entire bicycle, this document will incorporate those requirements in the next revision.

If the bicycle should be used on public roads, national regulations apply.