

FINAL
DRAFT

INTERNATIONAL
STANDARD

ISO/FDIS
4210-2

ISO/TC 149/SC 1

Secretariat: JISC

Voting begins
on: 2015-05-07

Voting terminates
on: 2015-07-07

Cycles — Safety requirements for bicycles —

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

Cycles — Exigences de sécurité des bicyclettes —

Partie 2: Exigences pour bicyclettes de ville et de randonnée, de jeune adulte, de montagne et de course

Please see the administrative notes on page iii

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.



Reference number
ISO/FDIS 4210-2:2015(E)

© ISO 2015



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015

All rights reserved. Unless otherwise specified, 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
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

Positive votes shall not be accompanied by comments.

Negative votes shall be accompanied by the relevant technical reasons.

Contents		Page
Foreword		vii
Introduction		viii
1 Scope		1
2 Normative references		2
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.....		3
4.3.3 Folding bicycle mechanism.....		3
4.4 Crack detection methods.....		3
4.5 Protrusions.....		3
4.6 Brakes.....		3
4.6.1 Braking systems.....		3
4.6.2 Hand-operated brakes.....		4
4.6.3 Attachment of brake assembly and cable requirements.....		5
4.6.4 Brake-block and brake-pad assemblies — Security test.....		5
4.6.5 Brake adjustment.....		6
4.6.6 Hand-operated braking-system — Strength test.....		6
4.6.7 Back-pedal braking system — Strength test.....		6
4.6.8 Braking performance.....		6
4.6.9 Brakes — Heat-resistance test.....		9
4.7 Steering.....		9
4.7.1 Handlebar — Dimensions.....		9
4.7.2 Handlebar grips and plugs.....		10
4.7.3 Handlebar stem — Insertion-depth mark or positive stop.....		10
4.7.4 Handlebar stem to fork steerer — Clamping requirements.....		10
4.7.5 Steering stability.....		11
4.7.6 Steering assembly — Static strength and security tests.....		11
4.7.7 Handlebar and stem assembly — Fatigue test.....		13
4.8 Frames.....		13
4.8.1 Suspension-frames — Special requirements.....		13
4.8.2 Frame — Impact test (falling mass).....		13
4.8.3 Frame and front fork assembly — Impact test (falling frame).....		14
4.8.4 Frame — Fatigue test with pedalling forces.....		14
4.8.5 Frame — Fatigue test with horizontal forces.....		14
4.8.6 Frame — Fatigue test with a vertical force.....		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 Suspension forks — Special requirements.....		15
4.9.4 Front fork — Static bending test.....		15
4.9.5 Front fork — Rearward impact test.....		15
4.9.6 Front fork — Bending fatigue test plus rearward impact test.....		15
4.9.7 Forks intended for use with hub- or disc-brakes.....		16
4.9.8 Tensile test for a non-welded fork.....		16
4.10 Wheels and wheel/tyre assembly.....		16
4.10.1 Wheels/tyre assembly — Concentricity tolerance and lateral tolerance.....		16
4.10.2 Wheel/tyre assembly — Clearance.....		16
4.10.3 Wheel/tyre assembly — Static strength test.....		17

4.10.4	Wheels — Wheel retention	17
4.10.5	Wheels — Quick-release devices — Operating features	18
4.11	Rims, tyres, and tubes	18
4.11.1	General	18
4.11.2	Tyre inflation pressure	18
4.11.3	Tyre and rim compatibility	18
4.11.4	Tubular tyres and rims	18
4.11.5	Rim-wear	19
4.11.6	Greenhouse effect test for composite wheels	19
4.12	Front mudguard	19
4.13	Pedals and pedal/crank drive system	19
4.13.1	Pedal tread	19
4.13.2	Pedal clearance	20
4.13.3	Pedal — Static strength test	21
4.13.4	Pedal — Impact test	21
4.13.5	Pedal — Dynamic durability test	21
4.13.6	Drive system — Static strength test	21
4.13.7	Crank assembly — Fatigue test	22
4.14	Drive-chain and drive belt	22
4.14.1	Drive-chain	22
4.14.2	Drive belt	22
4.15	Chain-wheel and belt-drive protective device	22
4.15.1	Requirements	22
4.15.2	Chain-wheel disc and drive pulley disc diameter	23
4.15.3	Chain and drive belt protective device	24
4.15.4	Combined front gear-change guide	25
4.16	Saddles and seat-posts	26
4.16.1	Limiting dimensions	26
4.16.2	Seat-post — Insertion-depth mark or positive stop	26
4.16.3	Saddle/seat-post — Security test	26
4.16.4	Saddle — Static strength test	27
4.16.5	Saddle and seat-post clamp — Fatigue test	27
4.16.6	Seat-post — Fatigue test	27
4.17	Spoke protector	27
4.18	Luggage carriers	28
4.19	Road test of a fully assembled bicycle	28
4.20	Lighting systems and reflectors	28
4.20.1	General	28
4.20.2	Wiring harness	28
4.20.3	Lighting systems	28
4.20.4	Reflectors	28
4.21	Warning device	29
5	Manufacturer's instructions	29
6	Marking	31
6.1	Requirement	31
6.2	Durability test	31
Annex A (informative) Steering geometry		32
Bibliography		33

ISO/FDIS 4210-2:2015(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.

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 149, *Cycles*, Subcommittee SC 1, *Cycles and major sub-assemblies*.

This second edition cancels and replaces the first edition (ISO 4210-2:2014), which has been technically revised.

ISO 4210 consists of the following parts, under the general title *Cycles — Safety requirements for bicycles*:

- *Part 1: Terms and definitions*
- *Part 2: Requirements for city and trekking, young adult, mountain and racing bicycles*
- *Part 3: Common test methods*
- *Part 4: Braking test methods*
- *Part 5: Steering test methods*
- *Part 6: Frame and fork test methods*
- *Part 7: Wheels and rim test methods*
- *Part 8: Pedal and drive system test methods*
- *Part 9: Saddles and seat-post test methods*