INTERNATIONAL STANDARD

ISO 4210-1

Second edition
2023-01

Cycles — Safety requirements for bicycles —

Part 1: **Vocabulary**

Cycles — Exigences de sécurité pour les bicyclettes —

Partie 1: Vocabulaire

Reference number
ISO 4210-1:2023(E)

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Published in Switzerland

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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*.

This second edition cancels and replaces the first edition (ISO 4210-1:2014), which has been technically revised, 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).

The main changes are as follows:

— the configuration of Clause 3 was systematically changed;

— some corrections according to ISO/IEC Directives Part 2 were done;

— the definitions of "racing bicycle" and "crank assembly" were modified;

— the following terms and definitions: “handlebar grips portion”, “rigid, non-welded fork”, “sag”, “wheel and tyre assembly”, “crank assembly”, “dropper seat-post”, “seat mast cap” and “suspension dropper seat-post” were added.

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.

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.

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

Cycles — Safety requirements for bicycles —

Part 1: **Vocabulary**

1 Scope

This document specifies terms and definitions related to safety and performance requirements for the design, assembly, and testing of bicycles and sub-assemblies having maximum saddle height 635 mm or more.

This document does not apply to specialized types of bicycle such as delivery bicycles, recumbent bicycles, tandems, BMX bicycles, and bicycles designed and equipped for use in severe applications such as sanctioned competition events, stunting, or aerobatic manoeuvres.

NOTE For bicycles with a maximum saddle height of 435 mm or less, see national regulations for ride-on toys, and with a maximum saddle height of more than 435 mm and less than 635 mm, see ISO 8098[1].

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 Bicycle type

3.1.1
bicycle
two-wheeled vehicle that is propelled solely or mainly by the muscular energy of the person on that vehicle, in particular by means of pedals

3.1.2
city and trekking bicycle
bicycle (3.1.1) designed for use on *public roads* (3.3.3) primarily for means of transportation or leisure

3.1.3
delivery bicycle
bicycle (3.1.1) designed for the primary purpose of carrying goods

3.1.4
folding bicycle
bicycle (3.1.1) designed to fold into a compact form, facilitating transport and storage

3.1.5
mountain bicycle
bicycle (3.1.1) designed for use off-road on rough terrain, on *public roads* (3.3.3), and on *public pathways* (3.3.2), equipped with a suitably strengthened frame and other components, and, typically, with wide-section tyres with coarse tread patterns and a wide range of transmission gears

3.1.6
racing bicycle
bicycle (3.1.1) intended for high-speed amateur use on *public roads* (3.3.3) and having a steering assembly with multiple grip positions (allowing for an aerodynamic posture, such as drop bars or aerodynamic bars), a multi-speed transmission system, and a maximum mass of 12 kg for the *fully assembled bicycle* (3.2.5)

3.1.7
recumbent bicycle
bicycle (3.1.1) that places the rider in a laid-back reclining position

3.1.8
tandem
bicycle (3.1.1) with saddles for two or more riders, one behind the other

3.1.9
young adult bicycle
bicycle (3.1.1) designed for use on *public roads* (3.3.3) by a young adult whose mass is less than 40 kg, with *maximum saddle height* (3.2.6) of 635 mm or more and less than 750 mm

3.2 General terms

3.2.1
bolted joint
components joined together with threaded fasteners

3.2.2
composite material
component that is entirely or partially made of a non-metallic matrix material which is reinforced by metallic or non-metallic materials such as short or long fibres, fabric, or particles

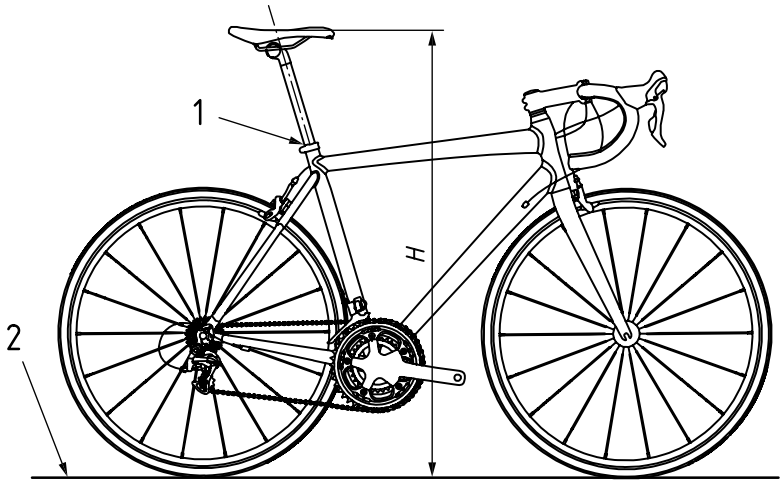
3.2.3
exposed protrusion
protrusion which, through its location and rigidity, could present a hazard to the rider either through heavy contact with it in normal use or should the rider fall onto it in an accident

3.2.4
fracture
unintentional separation into two or more parts

3.2.5
fully assembled bicycle
bicycle (3.1.1) fitted with all components necessary for its intended use

3.2.6
maximum saddle height
vertical distance from the ground to the point where the top of the seat surface is intersected by the seat-post axis, measured with the seat in a horizontal position and with the seat-post set to the *minimum insertion-depth mark* (3.2.7)

Note 1 to entry: See Figure 1.



Key

1 minimum insertion-depth mark

2 ground plane

H maximum saddle height

Figure 1 — Maximum saddle height

3.2.7
minimum insertion-depth mark
mark indicating the minimum insertion-depth of handlebar stem into *fork steerer* (*fork stem*) (3.5.3) or seat-post into frame

3.2.8
quick-release device
lever actuated mechanism that connects, retains, or secures a wheel or any other component

3.2.9
screw thread locking devices
device attached or applied to the threads of a nut or bolt, so that they do not unintentionally become unlocked

EXAMPLE Lock washers, lock nuts, thread locking compound, or stiff nuts.

3.2.10
simulated ground plane
plane used to orient a test part or assembly in a way that represents the cycle's alignment to the ground in a fully assembled cycle

3.2.11
visible crack
crack which results from a test, wherein that crack is visible to the naked eye

3.2.12
wheelbase
distance between the axes of the front and rear wheels of an unladen *bicycle* (3.1.1)

3.3 Driving environment

3.3.1
off-road rough terrain
coarse pebble tracks, forest trails, and other general off-road tracks where tree roots and rocks are likely to be encountered

3.3.2
public pathway
designated and adopted road, path, or track on which a *bicycle* (3.1.1) is legally permitted to travel where motorized traffic is excluded

3.3.3
public road
designated and adopted road, pavement, path, or track on which a *bicycle* (3.1.1) is legally permitted to travel and, on most though not all such public roads, *bicycles* (3.1.1) will share use with other forms of transport including motorized traffic

3.4 Brake

3.4.1
band brake
brake in which a circumferential band is wrapped around the exterior of a cylindrical drum which is attached to or incorporated in the wheel hub

3.4.2
brake lever
lever that operates a braking device

3.4.3
braking distance
distance travelled by a *bicycle* (3.1.1) between the *commencement of braking* (3.4.5) and the point at which the *bicycle* (3.1.1) comes to rest

3.4.4
braking force
F_{Br}
tangential rearward force between the tyre and the ground, or the tyre and the drum or belt of the test machine

3.4.5
commencement of braking
point on the test track or test machine at which the brake-actuating device operated directly by the rider's hand or foot or by a test mechanism starts to move from its rest position

Note 1 to entry: On the test track, this point is determined by the first brake-actuating device (front or rear) to operate.

3.4.6
disc brake
brake in which pads are used to grip the lateral faces of a thin disc attached to or incorporated in the wheel hub

3.4.7
hub brake
brake which acts directly on the wheel hub

3.4.8
rim-brake
brake in which brake shoes act on the rim of the wheel

3.5 Head assembly

3.5.1
aerodynamic extension
extension (or extensions) secured to the handlebar or stem, to improve the rider's aerodynamic posture