Taiwan Bicycle Industry Standard

TBIS

4210-1

Second edition

2018.01.01

Cycles — Safety requirements for bicycles —

Part 1:

Terms and definitions

Reference number:
ISO 4210-1:2014

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Foreword

Taiwan Bicycle Industry Standard (TBIS) is approved and announced by Taiwan Bicycle Association (TBA). The preparatory work of "Taiwan Bicycle Industry Standard" is carried out by the technical expert committee from TBIS. When TBA members are interested in the related standard that has been announced, and after they are approved by the R&D and patent committee of TBA, they will become the member of the technical expert committee of TBIS. TBA and Cycling & Health Tech Industry R&D Center (CHC) are in close cooperation to handle all matters applied and established by TBIS.

The structure, establishing process and revising of this standard should be proposed to and get determined by the R&D and Patent Committee of TBA. This standard is implemented after the announcement of TBA. Please be aware, some part of this document may involve patent rights. TBIS has no legal obligation to mark out where all or part of the patent is involved.

Background description:

After 2015, The International Organization for Standardization 4210: 2014 (ISO 4210:2014) will be the most commonly used safety standard in global bicycle industry. Although ISO 4210 is not a mandatory inspection standard in various economic markets, they are still requesting their bicycle products suppliers to follow the basis of ISO 4210 safety requirements. However, this phenomenon represents that they are unable to differentiate the quality and grade differences between bicycles and spare parts. In order to keep up the competitiveness of our bicycle industry in the international market, the technical expert committee of TBIS uses ISO 4210 as their investigation basis and propose a higher level of product safety and standard service, to establish TBIS especially for this purpose. To highlight on the quality, performance and reliability of those components that has passed TBIS inspection, which have already exceeded the international standard. In the meantime, TBIS is developing on the safety standard and testing technology on those bicycle parts that are excluded in ISO 4210, to ensure the product and identify the differences between product performance, which has become an important reference to drive the improvement on Taiwan bicycle industry Research & Design units.

Establishment History

1st: [TBIS General Meeting (rev. NP) Discussion] Total 13 companies and 18 industry experts participate, 2015.06.25.

2nd: [TBIS Working Draft (rev. WD) Discussion] Total 13 companies and 18 industry experts participate, 2015.06.25.

3rd: [TBIS Committee Draft (rev.CD) Discussion] Total 14 companies and 22 industry experts participate, 2015.07.21.

4th: [TBIS Enquiry stage (rev. DTS) Discussion] Total 15 companies and 19 industry experts participate, 2015.09.02.

5th: [TBIS Approval Stage (rev. FDTS) Discussion] Total 17 companies and 19 industry experts participate, 2015.10.28.

6th: [TBIS Subject Meeting] Total 17 companies and 19 industry experts participate, 2015.10.28.

7th: [TBIS Enquiry stage (rev. DTS) Discussion] Total 20 companies and 21 industry experts participate, 2016.04.22.

8th: [TBIS Approval Stage (rev. FDTS) Discussion] Total 18 companies and 18 industry experts participate, 2015.06.24.

9th: [TBIS Subject Meeting] Total 15 companies and 16 industry experts participate, 2016.11.04.

10th: [TBIS Enquiry stage (rev. DTS) Discussion] Total 16 companies and 16 industry experts participate, 2017.04.20.

11th: [TBIS Approval Stage (rev. FDTS) Discussion] Total 13 companies and 13 industry experts participate, 2017.07.28.

Introduction

The purpose of this TBIS is to build the world's leading bicycle industry standards and norms bicycle manufacturing process to ensure product safety and external benefits effectively (including announcing internationally, producing high-valued products, and leading the R&D of bicycle industry, etc.), highlighting the product inspected by TBIS is in compliance with a higher safety requirement. While riding the bicycle on public roads, the laws and regulations of the country will be applicable.

TBIS 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 rims test methods*

— *Part 8: Pedals and drive system test methods*

— *Part 9: Saddles and seat-post test methods*

Reference

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4210-1, *Cycles — Safety requirements for bicycles — Part 1: Terms and definitions*

ISO 4210-3:2014, *Cycles — Safety requirements for bicycles — Part 3: Common test methods*

ISO 4210-4:2014, *Cycles — Safety requirements for bicycles — Part 4: Braking test methods*

ISO 4210-5:2014, *Cycles — Safety requirements for bicycles — Part 5: Steering test methods*

ISO 4210-6:2015, *Cycles — Safety requirements for bicycles — Part 6: Frame and fork test methods*

ISO 4210-7:2014, *Cycles — Safety requirements for bicycles — Part 7: Wheel and rim test methods*

ISO 4210-8:2014, *Cycles — Safety requirements for bicycles — Part 8: Pedal and drive system test methods*

ISO 4210-9:2014, *Cycles — Safety requirements for bicycles — Part 9: Saddle and seat-post test methods*

ISO 5775-1, *Bicycle tyres and rims — Part 1: Tyre designations and dimensions*

ISO 5775-2, *Bicycle tyres and rims — Part 2: Rims*

Modify TBIS 4210-1:2018 as follows:

Sec. 2.54

Cross country

Cross country is one of mountain bikes, applicable to rough roads without pavement and rough grounds needing special bicycle operational skills. The jump and falling heights are less than 61cm.

Cycles — Safety requirements for bicycles —

Part 1:
Terms and definitions

1 Scope

This part of TBIS 4210 specifies terms and definitions related to safety and performance requirements for the design, assembly, and testing of bicycles and sub-assemblies having saddle height as given in Table 1.

This part of TBIS 4210 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 ISO 8124-1, and with a maximum saddle height of more than 435 mm and less than 635 mm, see ISO 8098.

Table 1 — Maximum saddle height

Dimensions in millimetres

Bicycle type	City and trekking bicycles	Young adult bicycles	Mountain bicycles	Racing bicycles
Maximum saddle height	635 or more	635 or more and less than 750	635 or more	635 or more

2 Terms and definitions

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

2.1
aerodynamic extension
extension (or extensions) secured to the handlebar or stem, to improve the rider's aerodynamic posture

2.2
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

2.3
bar end
extension secured to the end of a handlebar to provide an additional hand grip and usually with its axis perpendicular to the axis of the end of the handlebar

2.4
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

2.5
bolted joint
components joined together with threaded fasteners

2.6
brake lever
lever that operates a braking device

2.7
braking distance
distance travelled by a bicycle between the *commencement of braking* (2.10) and the point at which the bicycle comes to rest

2.8
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

2.9
city and trekking bicycle
bicycle designed for use on public roads primarily for means of transportation or leisure

2.10
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.

2.11
composite material
component that is entirely or partially made of a non-metallic matrix materials which is reinforced by metallic or non-metallic materials such as short or long fibres, fabric, or particles

2.12
composite wheels
wheel assembly containing any composite material

2.13
crank assembly
assembly for fatigue testing consisting of the drive side and the non-drive side crank arm, the pedal-spindle adaptors, the bottom-bracket spindle, and the first component of the drive system

EXAMPLE The chain-wheel set.

2.14
delivery bicycle
bicycle designed for the primary purpose of carrying goods

2.15
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

2.16
drive belt
seamless ring belt which is used as a means of transmitting motive force

2.17
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

2.18
dummy fork
test fork manufactured to specific characteristics which can be substituted within a test for either the fork supplied by the manufacturer or where a fork has not been supplied

2.19
folding bicycle
bicycle designed to fold into a compact form, facilitating transport and storage

2.20
fracture
unintentional separation into two or more parts

2.21
fork steerer (fork stem)
part of a fork that rotates about the steering axis of a bicycle frame head tube

Note 1 to entry: It is normally connected to the fork crown or directly to the fork legs and is normally the point of connection between the fork and the handlebar stem.

2.22
fully assembled bicycle
bicycle fitted with all components necessary for its intended use

2.23
highest gear
gear ratio which gives the greatest distance travelled for one rotation of the cranks

2.24
hub brake
brake which acts directly on the wheel hub

2.25
hub generator
electric generating device built in the wheel hub

2.26
lowest gear
gear ratio which gives the shortest distance travelled for one rotation of the cranks

2.27
maximum inflation pressure
maximum tyre pressure recommended by the tyre or rim manufacturer for a safe and efficient performance

Note 1 to entry: If the rim and tyre both indicate a maximum inflation pressure, the maximum inflation pressure is the lower of the two pressures indicated.

2.28
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

2.29
minimum insertion-depth mark
mark indicating the minimum insertion-depth of handlebar stem into fork steerer (fork stem) or seat-post into frame

2.30
mountain bicycle
bicycle designed for use off-road on rough terrain, on public roads, and on public pathways, 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

2.31
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

2.32
pedal tread surface
surface of a pedal that is presented to the underside of the foot

2.33
primary retention system
system that keeps the front/rear wheel securely attached to the frame/fork dropouts while riding

2.34
public pathway
any designated and adopted road, path, or track on which a bicycle is legally permitted to travel where motorized traffic is excluded

2.35
public road
any designated and adopted road, pavement, path, or track on which a bicycle is legally permitted to travel and, on most though not all such public roads, bicycles will share use with other forms of transport including motorized traffic

2.36
pulley
rotating wheel mounted on an axle that contains, around its circumference, teeth or grooves over which a belt can pass to transmit power

2.37
quick-release device
lever actuated mechanism that connects, retains, or secures a wheel or any other component

2.38
quick-release pedal (clip-less pedal)
pedal that contains a device for the attachment of a rider's foot/shoe that can be released by foot movement alone

2.39
racing bicycle
bicycle intended for high-speed amateur use on public roads and having a steering assembly with multiple grip positions (allowing for an aerodynamic posture), a multi-speed transmission system, tyre width not greater than 28 mm, and a maximum mass of 12 kg for the fully assembled bicycle

2.40
recumbent bicycle
bicycle that places the rider in a laid-back reclining position

2.41
rim-brake
brake in which brake shoes act on the rim of the wheel

2.42
screw thread locking devices
devices 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.

2.43
seat-post
component that clamps the saddle (with a bolt or assembly) and connects it with the frame

2.44
secondary retention system
system that retains the front wheel in the fork dropouts when the primary retention system is in the open (unlocked) position

2.45
simulated ground plane
plane used to orient a test part or assembly in a way that represents the cycles alignment to the ground in a fully assembled cycle

2.46
suspension fork
front fork incorporating controlled, axial flexibility to reduce the transmission of road shocks to the rider

2.47
suspension frame
frame incorporating controlled, vertical flexibility to reduce the transmission of road shocks to the rider

2.48
tandem
bicycle with saddles for two or more riders, one behind the other

2.49
toe clip
device attached to the pedal to grip the toe end of the rider's shoe but permitting withdrawal of the shoe

2.50
visible crack
crack which results from a test, wherein that crack is visible to the naked eye

2.51
wheel
assembly or combination of hub, spokes or disc, and rim, but excluding the tyre assembly

2.52
wheelbase
distance between the axes of the front and rear wheels of an unladen bicycle

2.53
young adult bicycle
bicycle designed for use on public roads by a young adult whose weight is less than 40 kg, with maximum saddle height of 635 mm or more and less than 750 mm

2.54
Cross country
Cross country is one of mountain bikes, applicable to rough roads without pavement and rough grounds needing special bicycle operational skills. The jump and falling heights are less than 61cm.

Bibliography

[1] ISO 8124-1, *Safety of toys — Part 1: Safety aspects related to mechanical and physical properties*

[2] ISO 8098, *Cycles — Safety requirements for bicycles for young children*