DRAFT INTERNATIONAL STANDARD ISO/DIS 8098

ISO/TC **149**/SC **1** Secretariat: **JISC**

Voting begins on **2012-10-04** Voting terminates on **2013-03-04**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Cycles — Safety requirements for bicycles for young children

Cycles — Exigences de sécurité relatives aux bicyclettes pour jeunes enfants

[Revision of second edition (ISO 8098:2002)]

ICS 43.150; 97.190

ISO/CEN PARALLEL PROCESSING

This 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.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 8098 was prepared by Technical Committee ISO/TC 149, *Cycles*, Subcommittee SC 1, *Cycles and major sub-assemblies*.

This third edition cancels and replaces the second edition (ISO 8098:2002), of which has been technically revised.

Introduction

Safety requirements for bicycles intended to be ridden on public roads by adults and children aged about eight years and older (i.e. bicycles having saddle heights of 635 mm and above) are given in ISO 4210.

While ISO 8098 follows the lines of ISO 4210, it covers requirements for bicycles suitable for young children aged from about four to eight years. These bicycles are not intended to be ridden on public roads and should not be presumed to be suitably equipped for that purpose.

For safety requirements for toy bicycles intended for very young children see EN 71-1.

Cycles — Safety requirements for bicycles for young children

1 Scope

This International Standard specifies safety and performance requirements and test methods for the design, assembly and testing of fully assembled bicycles and sub-assemblies for young children. It also provides guidelines for instructions on the use and care of the bicycles.

This International Standard is applicable to bicycles with a maximum saddle height of more than 435 mm and less than 635 mm, propelled by a transmitted drive to the rear wheel.

It is not applicable to special bicycles intended for stunting (e.g. BMX bicycles).

2 Normative references

The following referenced documents are indispensable for the application 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 1101, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

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

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

ISO 8124-3, *Safety of toys — Part 3: Migration of certain elements*

ISO 11243, *Cycles — Luggage carriers for bicycles – Concepts, classification and testing*

3 Terms and definitions

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

3.1
bicycle
two-wheeled cycle

3.2
brake-lever
a lever which operate the brake device

3.3
braking force
tangential rearward force between the tyre and the ground or the tyre and the drum or belt of the test machine

3.4
crank assembly
for fatigue testing it consists of the two cranks, the pedal-spindles or adaptors, the bottom-bracket spindle, and the first component of the drive system, e.g. the chain-wheel cluster

3.5
cycle
any vehicle that has at least two wheels and is propelled solely or mainly by the muscular energy of the person on that vehicle, in particular by means of pedals

3.6
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

3.7
highest gear
the gear ratio which gives the greatest distance travelled for one rotation of the cranks

3.8
lowest gear
the gear ratio which gives the shortest distance travelled for one rotation of the cranks

3.9
maximum inflation pressure
maximum tyre pressure recommended by the tyre manufacturer for a safe and efficient performance

3.10
maximum saddle height
vertical distance from the ground to the top of the saddle surface, measured with the saddle in a horizontal position with the seat-post set to the minimum insertion depth

3.11
pedal tread surface
surface of a pedal that is presented to the underside of the foot

3.12
quick-release devices
a lever actuated mechanism that connects, retains, or secures a wheel or any other component

3.13
stabilizers
removable auxiliary wheels fitted to enable the rider to balance

3.14
toe-clip
device attached to the pedal to grip the toe end of the rider's shoe but permitting withdrawal of the shoe

3.15
toe-strap
device to securely locate a rider's shoe on a pedal

3.16
visible crack
crack which results from a test where that crack is visible to the naked eye

4 Requirements and test methods

4.1 Brake tests and strength tests – special requirements

4.1.1 Definition of brake tests

Brake tests to which accuracy requirements apply, as in 4.1.4, are those specified in 4.7.2.2.3 to 4.7.8.4 inclusive.

4.1.2 Definition of strength tests

Strength tests to which accuracy requirements apply, as in 4.1.4, are those involving static, impact or fatigue loading as specified in 4.8 to 4.14 inclusive and 4.16.

4.1.3 Numbers and condition of specimens for the strength tests

In general, for static, impact and fatigue tests, each test shall be conducted on a new test sample, but if only one sample is available, it is permissible to conduct all of the tests on the same sample with the sequence of testing being fatigue, static and impact.

When more than one test is conducted on the same sample, the test sequence shall be clearly recorded in the test report or record of testing.

During fatigue testing, the forces shall be applied and released progressively.

NOTE It should be noted that if more than one test is conducted on the same sample, earlier test can influence the results of subsequent tests. Also, if a sample fails when it has been subjected to more than one test, a direct comparison with single testing is not possible.

In all strength tests, specimens shall be in the fully finished condition.

It is permitted to carry out tests with dummy assemblies such as a fork or handlebar when carrying out frame or handlebar stem tests.

4.1.4 Accuracy tolerances of test conditions for brake tests and strength tests

4.1.4.1 Tolerances

Unless stated otherwise, accuracy tolerances based on the nominal values shall be as follows:

— Forces and torques 0/+5 %

— Masses and weights ± 1 %

— Dimensions ± 1 mm

— Angles ± 1°

— Time duration ± 5 s

— Temperatures ± 2 °C

— Pressures ± 5 %

4.2 Toxicity

The following items which come into intimate contact with the rider (i.e. causing any hazard due to sucking or licking) shall comply with any national regulations:

— all paints;

— handlebar handgrips;

— surface of the saddle.

4.3 Sharp edges

Exposed edges that could come into contact with the rider's hands, legs etc., during normal riding or normal handling and normal maintenance shall not be sharp.

4.4 Security and strength of safety-related fasteners

4.4.1 Security of screws

Any screws used in the assembly of suspension systems or screws used to attach generators, brake-mechanisms and mud-guards to the frame or fork, and the saddle to the seat-post shall be provided with suitable locking devices, e.g., lock-washers, lock-nuts, thread locking compound or stiff nuts.

NOTE 1 The screws used to attach hub-generator are not included.

NOTE 2 Fasteners used to assemble hub and disc brakes should have heat-resistant locking devices.

4.4.2 Minimum failure torque

The minimum failure torque of bolted joints for the fastening of handlebars, handlebar-stems, bar-ends, saddles and seat-posts shall be at least 50 % greater than the manufacturer's recommended tightening torque.

4.4.3 Quick-release devices

Quick-release devices shall not be fitted.

4.4.4 Foot location devices

Toe-straps and toe-clips shall not be fitted.

4.5 Crack detection methods

Standardised methods should be used to emphasise the presence of cracks where visible cracks are specified as criteria of failure in tests specified in this International Standard.

NOTE For example, suitable dye-penetrant methods are specified in ISO 3452.

4.6 Protrusions

4.6.1 Requirement

4.6.1.1 Exposed protrusions

Any rigid exposed protrusion longer than 8 mm (see *L* in Figure 1) after assembly except:

a) the front gear-change mechanism at the chain wheel;

b) the gear-change mechanism at the rear wheel;

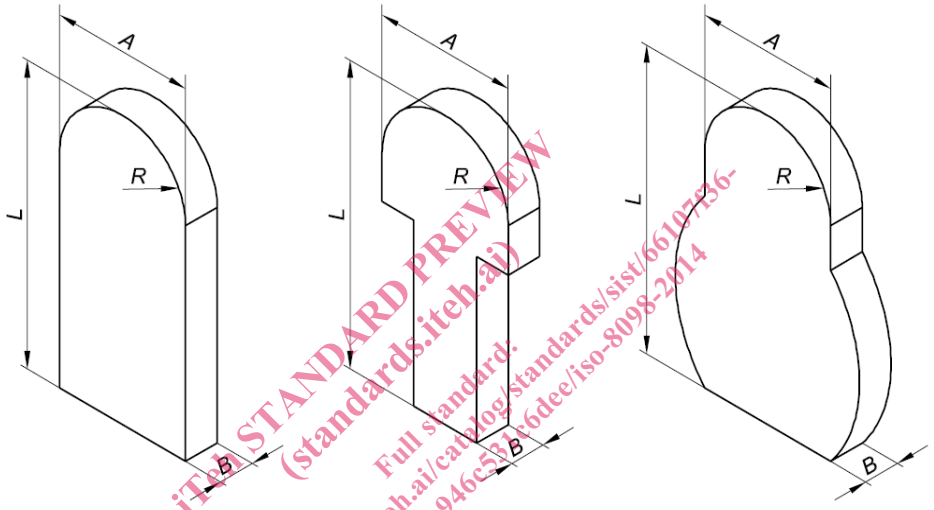
c) the rim-brake mechanism at the front and rear wheels;

d) reflectors;

e) a lamp-bracket fitted on the head-tube.

shall terminate in a radius, *R* (see Figure 1), of not less than 6,3 mm. Such protrusions shall have a major end dimension, *A*, not less than 12,7 mm and a minor dimension, *B*, not less than 3,2 mm.

Dimensions in millimetres



Key

R ≥ 6,3

A ≥ 12,7

B ≥ 3,2

Figure 1 — Examples of minimum dimensions of exposed protrusions

4.6.1.2 Exclusion zone, protective devices and screw threads

There shall be no protrusions on the top tube of a bicycle frame between the saddle and a point 300 mm forward of the saddle, with the exception that control cables no greater than 6,4 mm in diameter and cable clamps made from material no thicker than 4,8 mm may be attached to the top tube.

Foam pads attached to the bicycle frame to act as protective cushions are permitted, provided that the bicycle meets the requirements for protrusions when the pads are removed.

A screw thread that is an exposed protrusion shall be limited to a protrusion length of one major diameter of the screw beyond the internally threaded mating part.

4.6.2 Test method

Conduct the test with a protrusion test cylinder (which simulates a limb) having the dimensions shown in Figure 2.

Dimensions in millimetres

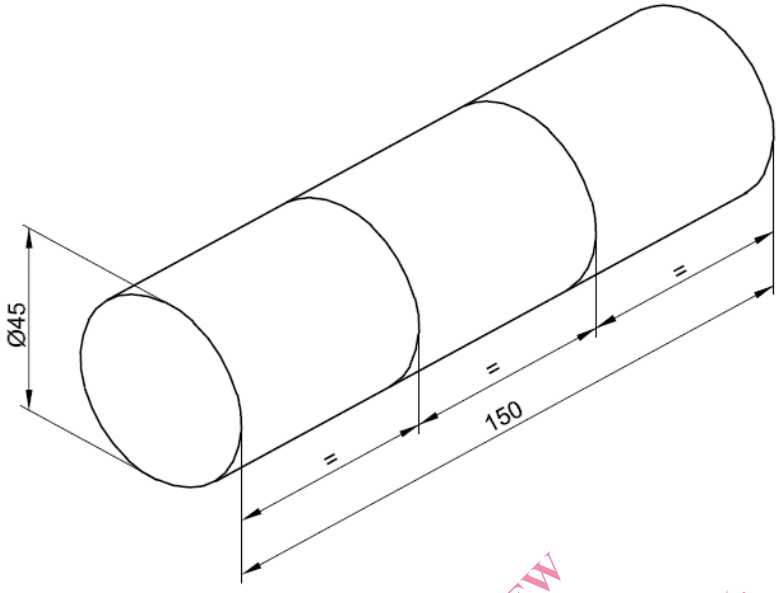
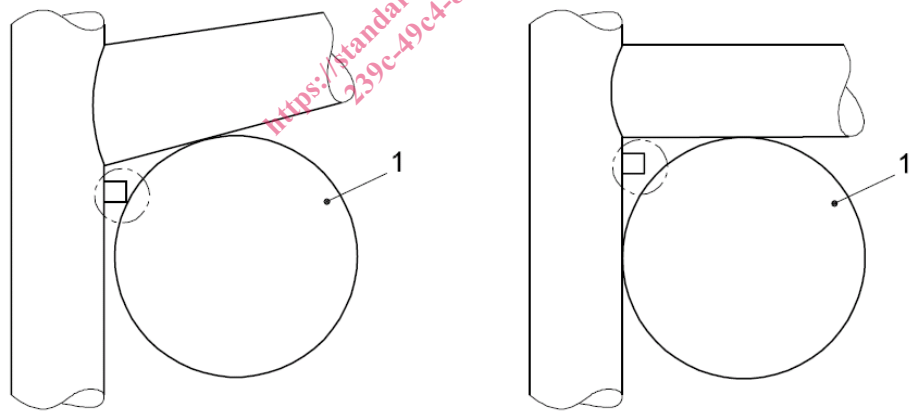


Figure 2 — Exposed protrusion test cylinder

Manoeuvre the test cylinder in all possible attitudes towards any rigid protrusion on the bicycle. If the central 50 mm long section of the cylinder contacts the protrusion, that protrusion shall be considered to be an exposed protrusion and it shall comply with 4.6.1.1.

Examples of protrusions that need and do not need to comply with the requirements are shown in Figure 3.



a) needs to comply

b) does not need to comply

Key
1 Test cylinder

Figure 3 — Examples of protrusions