SLOVENSKI STANDARD
oSIST prEN 15194:2015

01-september-2015

Kolesa - Kolesa z električnim pomožnim pogonom - Kolo KEPP

Cycles - Electrically power assisted cycles - EPAC Bicycles

Fahrräder - Elektromotorisch unterstützte Räder - EPAC

Cycles - Cycles à assistance électrique - Bicyclettes EPAC

Ta slovenski standard je istoveten z: **prEN 15194**

ICS:

43.120	Električna cestna vozila	Electric road vehicles
43.150	Kolesa	Cycles

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EUROPEAN STANDARD

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English Version

Cycles - Electrically power assisted cycles - EPAC Bicycles

Cycles - Cycles à assistance électrique - Bicyclettes EPAC

Fahrräder - Elektromotorisch unterstützte Räder - EPAC

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If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN 15194:2015) has been prepared by Technical Committee CEN/TC 333 “Cycles”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15194:2009+A1:2011.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Introduction

This European Standard gives requirements for electrically power assisted cycles (EPAC).

This European Standard has been developed in response to demand throughout Europe. Its aim is to provide a standard for the assessment of electrically powered cycles of a type which are excluded from type approval by Directive 2002/24/EC.

Due to the limitation of the voltage to 48 VDC, there are no special requirements applicable to the EPAC in regard to protection against electrical hazards.

EPACs are vehicles which use the same traffic areas as cars, lorries and motorcycles, which is predominantly the street.

For this reason the products concerning EMC-testing have the same basic conditions. A basic example for better understanding is chapter 8 of the EC Directive 97/24 containing a very high value concerning the immunity test of electronic components with 30 V/m; nevertheless based on the application area it comes up of the implementation.

Manipulation of the electronic system of EPAC by other source of interference in the scope of the public road traffic could signify considerable risks for the user of EPAC. The standards EN 61000-6-1 as well as EN 61000-6-3 are standards for appliances in residential, commercial and light industrial environments that do not reach the values for the EMC immunity-test necessary in the road traffic area. In these standards, the EMC immunity of the electric and electronic systems will be tested only with 3 V/m, which is the tenth part of the requirements in chapter 8 of the EC Directive 97/24. These standards are unsuitable to obtain the urgent and necessary security level.

This document is a type C standard as stated in EN ISO 12100. The machinery concerned and the extent to which hazards, hazardous situations and hazardous events covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

This document is not applicable to EPACs which are manufactured before the date of its publication as EN.

1 Scope

This European Standard applies to EPAC for private and commercial use with exception of EPAC intended for hire from unattended station.

This European Standard is intended to cover all common significant hazards, hazardous situations and events (see Clause 4) of electrically power assisted bicycles, when used as intended and under condition of misuse that are reasonably foreseeable by the manufacturer.

This European Standard is intended to cover electrically power assisted bicycles of a type which have a maximum continuous rated power of 0,25 kW, of which the output is progressively reduced and finally cut off as the EPAC reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling.

This European Standard specifies requirements and test methods for engine power management systems, electrical circuits including the charging system for the assessment of the design and assembly of electrically power assisted bicycles and sub-assemblies for systems having a rated voltage up to and including 48 VDC or integrated battery charger with a 230 V input.

This European Standard specifies safety and performance requirements for the design, assembly, and testing of EPAC bicycles and subassemblies intended for use on public roads, and lays down guidelines for instructions on the use and care of such bicycles.

This European Standard applies to EPAC bicycles that have a maximum saddle height of 635 mm or more and that are intended for use on public roads.

2 Normative references

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.

EN 22248, *Packaging - Complete, filled transport packages - Vertical impact test by dropping (ISO 2248)*

EN 55014-1, *Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission*

EN 55014-2, *Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard*

EN 60034-1, *Rotating electrical machines - Part 1: Rating and performance*

EN 60335-1:2012, *Household and similar electrical appliances - Safety - Part 1: General requirements*

EN 61000-3-2, *Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤ 16A per phase) (IEC 61000-3-2)*

EN 61000-3-3, *Electromagnetic compatibility (EMC) – Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection (IEC 61000-3-3)*

EN ISO 12100, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100)*

EN ISO 13849, *Safety of machinery – Safety-related parts of control systems (ISO 13849)*

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

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

ISO 6742-1, *Cycles – Lighting and retro-reflective devices – Photometric and physical requirements – Part 1: Lighting equipment*

ISO 6742-2, *Cycles – Lighting and retro-reflective devices – Photometric and physical requirements – Part 2: Retro-reflective devices*

ISO 9633, *Cycle chains — Characteristics and test methods*

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

ISO 11451-1, *Road vehicles – Vehicle test methods for electrical disturbances from narrowband radiated electromagnetic energy – Part 1: General principles and terminology*

ISO 11452-1, *Road vehicles – Component test methods for electrical disturbances from narrowband radiated electromagnetic energy – Part 1: General principles and terminology*

ISO 11452-2, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 2: Absorber-lined shielded enclosure*

ISO 11452-3, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 3: Transverse electromagnetic mode (TEM) cell*

ISO 11452-4, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 4: Harness excitation methods*

ISO 11452-5, *Road vehicles — Component test methods for electrical disturbances from narrowband radiated electromagnetic energy — Part 5: Stripline*

EN 60068-2-75, *Environmental testing – Part 2: Tests – Test Eh: Hammer tests (IEC 60068-2-75)*

HD 60364-5-52:2011, *Electrical installations of buildings – Part 5-52: Selection and erection of electrical equipment – Wiring systems (IEC 60364-5-52:2009, mod.)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 55012, *Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of off-board receivers (CISPR 12)*

EN 55025:2008, *Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of on-board receivers (CISPR 25:2008)*

3 Terms and definitions

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

3.1
cycle
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

3.2
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

3.3
electrically power assisted cycle (EPAC)
cycle, equipped with pedals and an auxiliary electric motor, which cannot be propelled exclusively by means of this auxiliary electric motor, except in the start-up assistance mode

3.4
city and trekking bicycle
bicycle designed for use on public roads primarily for means of transportation or leisure

3.5
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

3.6
racing-bicycle
bicycle intended for high-speed amateur use on public roads 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

3.7
recumbent bicycle
bicycle that places the rider in a laid-back reclining position

3.8
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

3.9
fully assembled bicycle
bicycle fitted with all the components necessary for its intended use

3.10
delivery bicycle
bicycle designed for the primary purpose of carrying goods

3.11
folding bicycle
bicycle designed to fold into a compact form, facilitating transport and storage

3.12
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

3.13
brake-lever
lever that operates a braking device

3.14
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

3.15
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

3.16
braking distance
distance travelled by a bicycle between the commencement of braking (3.18) and the point at which the bicycle comes to rest

3.17
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

3.18
commencement of braking
point on the test track or test machine at which the brake actuating device operated directly by the riders 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.

3.19
brake-lever cut-off switch
device that cuts off the motor assistance while using the brake lever

3.20
composite materials
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

3.21
composite wheels
wheel assembly containing any composite material

3.22
continuous rated power
continuous (or constant) output power specified by manufacturer, at which the motor reaches its thermal equilibrium at given ambient conditions

3.23
thermal equilibrium
temperatures of motor parts which do not vary more than 2K per hour

3.24
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.

3.25
cut off speed
speed reached, by the EPAC, at the moment the current has dropped to zero or to the no load current value

3.26
drive belt
seamless ring belt which is used as a means of transmitting motive force