



SLOVENSKI STANDARD
SIST EN 17404:2022

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Kolesa - Kolesa z električnim pomožnim pogonom - Gorska kolesa EPAC

Cycles - Electrically power assisted cycles - EPAC Mountain bikes

Fahrräder - Elektromotorisch unterstützte Räder - EPAC Mountainbikes

Cycles - Cycles à assistance électrique - Bicyclettes tout terrain EPAC

Ta slovenski standard je istoveten z: EN 17404:2022

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ICS:

43.120	Električna cestna vozila	Electric road vehicles
43.150	Kolesa	Cycles

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Cycles - Electrically power assisted cycles - EPAC Mountain bikes

Cycles - Cycles à assistance électrique - Bicyclettes tout terrain EPAC

Fahrräder - Elektromotorisch unterstützte Räder - EPAC Mountainbikes

This European Standard was approved by CEN on 27 March 2022.

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

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EN 17404:2022 (E)**European foreword**

This document (EN 17404:2022) has been prepared by Technical Committee CEN/TC 333 “Cycles”, the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2022, and conflicting national standards shall be withdrawn at the latest by November 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

This document gives requirements for EPAC Mountain bikes.

This document 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 Regulation (EU) No 168/2013.

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

Following the completion of a risk analysis, the focus in this document is on EPAC Mountain bikes. City and trekking EPACs are considered in EN 15194. This document is to be used in conjunction with EN 15194:2017.

This document supplements or modifies the corresponding clauses in EN 15194:2017, so as to convert it into for EPAC Mountain bikes. Where a particular subclause of EN 15194:2017 is not mentioned in this document, that subclause applies. When this document states “addition”, “modification” or “replacement”, the relevant text of EN 15194:2017 is to be adapted accordingly.

This document does not cover battery and vibration issues due to a work under development in TC 333, not ready and not consolidated yet as “state of the art”.

This document is a type C standard as stated in EN ISO 12100:2010. 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.

In real life situation an EPAC Mountain bike can fall over to the side causing the battery holder to break without damage to the battery case itself. While the standard contains a strength test for the battery an additional test is required for the situation described. This will be considered at the next revision. The battery holder should withstand this realistic and typical situation. Risk assessment carried out by the manufacturer should identify suitable measures to deal with this situation until it can be dealt with in the standard.

EN 17404:2022 (E)

1 Scope

For the purpose of this document the scope of EN 15194:2017 is applicable with the following addition.

This document specifies specific requirements applicable to EPAC Mountain bikes.

EPAC-MTB category 5 according to EN 17406:2020+A1:2021, Table 1 is not covered by this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 15194:2017, *Cycles - Electrically power assisted cycles - EPAC Bicycles*

EN 60529:1991,¹ *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN ISO 4210-2:2015, *Cycles - Safety requirements for bicycles - Part 2: Requirements for city and trekking, young adult, mountain and racing bicycles (ISO 4210-2:2015)*

EN ISO 4210-5:2014, *Cycles - Safety requirements for bicycles - Part 5: Steering test methods (ISO 4210-5:2014, Corrected version 2015-02-01)*

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

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

EN ISO 4210-9:2014, *Cycles - Safety requirements for bicycles - Part 9: Saddles and seat-post test methods (ISO 4210-9:2014)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply. Not all definitions are applicable to EPACs.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

¹ As impacted by EN 60529:1991/A1:2000, EN 60529:1991/A2:2013, EN 60529:1991/corrigendum May 1993, EN 60529:1991/A2:2013/AC:2019-02 and EN 60529:1991/AC:2016-12.

3.1

EPAC Mountain bike

EPAC-MTB

electrically power assisted cycle 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

4 Safety requirements and/or protective measures

4.1 General

EPAC-MTBs shall comply with the safety requirements and/or protective/risk reduction measures of this clause. In addition, EPAC-MTBs shall be designed according to the principles of EN ISO 12100:2010 for relevant but not significant hazards, which are not dealt with by this document. It includes evaluation of such risks for all relevant components.

Means shall be provided to the user to prevent an unauthorized use of the EPAC-MTBs e.g. key, locks, electronic control device.

4.2 Electrical requirements

4.2.1 Electric circuit

EN 15194:2017, 4.2.1 applies.

4.2.2 Controls and symbols

EN 15194:2017, 4.2.2 applies.

4.2.3 Batteries

EN 15194:2017, 4.2.3 applies.

4.2.4 Battery charger

EN 15194:2017, 4.2.4 applies.

4.2.5 Electric cables and connections

EN 15194:2017, 4.2.5 applies.

4.2.6 Wiring

EN 15194:2017, 4.2.6 applies.

4.2.7 Power cables and conduits

EN 15194:2017, 4.2.7 applies.

4.2.8 External and internal electrical connections

EN 15194:2017, 4.2.8 applies.

4.2.9 Moisture resistance

The electrical components of a fully assembled EPAC shall be tested and shall comply with IP X5 requirements according to EN 60529:1991¹.

4.2.10 Mechanical strength test

EN 15194:2017, 4.2.10 applies.

EN 17404:2022 (E)**4.2.11 Maximum speed for which the electric motor gives assistance**

EN 15194:2017, 4.2.11 applies.

4.2.12 Start-up assistance mode

EN 15194:2017, 4.2.12 applies.

4.2.13 Power management

EN 15194:2017, 4.2.13 applies.

4.2.14 Maximum power measurement – measurement at engine shaft

EN 15194:2017, 4.2.14 applies.

4.2.15 Electromagnetic Compatibility

EN 15194:2017, 4.2.15 applies.

4.2.16 Failure mode

EN 15194:2017, 4.2.16 applies.

4.2.17 Anti-tampering measure

EN 15194:2017, 4.2.17 applies.

4.3 Mechanical requirements**4.3.1 General**

EN 15194:2017, 4.3.1 applies.

4.3.2 Sharp edges

EN 15194:2017, 4.3.2 applies.

4.3.3 Security and strength of safety-related fasteners

EN 15194:2017, 4.3.3 applies.

4.3.4 Protrusions

EN 15194:2017, 4.3.4 applies.

4.3.5 Brakes

EN 15194:2017, 4.3.5 applies except Table 1 that is replaced by the following:

When tested in accordance with EN 15194:2017, 4.3.5.9.5, the bicycle shall fulfil the requirements shown in Table 1.

Table 1 — Calculated braking performance value

Forces in N

Condition	Brake in use	Minimum braking performance value, B_p
Dry	Front only	425
	Rear only	280
Wet	Front only	220
	Rear only	140

4.3.6 Steering**4.3.6.1 General**

EN ISO 4210-2:2015, 4.7 MTB applies except the following.

4.3.6.2 Steering assembly – Static strength and security tests**4.3.6.2.1 Handlebar and stem assembly – Lateral bending test**

Replace Table 2 of ISO 4210-5:2014 with the following Table 2.

Table 2 — Force on handlebar

Force, F_2	1 000 N
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4.3.6.2.2 Test method for Stage 1

Force, F_3 of 1 600 N (same as EN ISO 4210-5:2014 MTBs)

4.3.6.2.3 Requirement for Stage 2

Force, F_4 2 600 N (same as EN ISO 4210-5:2014 MTBs)

4.3.6.2.4 Handlebar to handlebar-stem – Torsional security test

Replace Table 4 of ISO 4210-5:2014 with the following Table 3.

Table 3 — Torque on handlebar

Torque, T_1	80 Nm
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4.3.6.2.5 Handlebar-stem to fork steerer – Torsional security test

Replace Table 5 of ISO 4210-5:2014 with the following Table 4.

Table 4 — Torque on handlebar stem

Torque, T_2	50 Nm
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4.3.6.2.6 Bar-end to handlebar – Torsional security test

Replace Table 6 of ISO 4210-5:2014 with the following Table 5.