

A Practical Guide for SMEs

LEVA-EU & SBS Briefing on Standardisation for Light Electric Vehicles



2024



Small Business Standards (SBS) is a European non-profit association representing and defending the interests of Small and Medium-sized Enterprises (SMEs) in standardisation at the European and international levels. Its 22 members are national and European sectoral and interprofessional associations representing around 22, 5million SMEs in Europe.

Rue Jacques de Lalaing 4, 1000 Brussels, Belgium • info@sbs-sme.eu • T +32 (0) 472 26 03 76 • www.sbs-sme.eu • Transparency Register 653009713663-08



Established in 2017, LEVA-EU is the only trade association in Europe to work exclusively for Light Electric Vehicles (LEVs). LEVA-EU represents the strategic interests of vehicle and component manufacturers, importers, distributor as well as LEV service providers to promote the development, sale, and use of LEVs in the EU. The organisation aims at raising awareness and promoting the European LEV-sector vis-à-vis the European Institutions for the benefit of sustainable mobility. LEVA-EU has over 80 members in outside the EU, the majority of which are SMEs.

Jan-Baptist Guinardstraat 32, 9000 Gent, Belgium • leva-eu@telenet.be • T +32(0)9 278 45 46 • www.leva-eu.com • Transparency Register 328705327518-72

This brochure only reflects Small Business Standards' and LEVA-EU's views. The European Union and EFTA are not responsible for any use that may be made of the information it contains.

Introduction

Standards are of particular importance for the group of light, electric vehicles that are excluded from [Regulation \(EU\) No 168/2013](#). This specifically concerns electric (cargo) cycles up to 25 km/h and 250W, e-scooters and self-balancing vehicles.

Standards serve as an essential tool for LEV manufacturers and their component suppliers to meet legal technical obligations. Standards aim to reflect state-of-the-art, providing a degree of legal certainty.

Many companies in the LEV sector are Small and Medium-sized Enterprises (SMEs). While some SMEs are already involved in the development of the standards, many are not. Navigating the world of standardisation can be particularly challenging for SMEs.

Access to information about standards at the earliest possible stage is exceptionally important. It can help bring innovations to market, reduce production costs and enhance efficiency. Additionally, standards can enable SMEs to compete on a level playing field with larger companies.

LEVA-EU and SBS aim to encourage SME involvement in standardisation by providing comprehensive information on all aspects of the standardisation process.

This practical guide is designed to answer all questions that SMEs may have about standardisation, whether they are actively involved or currently on the sidelines. We recommend reading the guide from start to finish, but you can also find answers to specific questions by clicking on the questions in the table of contents. This will take you directly to the relevant page.

This guide will be updated regularly. If you cannot find the answer to your question in our reference work, please let us know: leva-eu@telenet.be or info@sbs-sme.eu

Table of contents

1. Which Light Electric Vehicles qualify for standardisation?	4
2. What is a standard?	7
3. What is a harmonised standard?	8
4. What is presumption of conformity.....	9
5. What is the relation between standards and LEV-legislation.....	10
6. What is the status of harmonisation in the LEV-sector?.....	11
Introduction	11
Formal objections	11
Changeover from Machinery Directive to Machinery Regulation	14
How about Brexit?	14
7. How is a standard made?	10
The standardisation institutes.....	16
Technical Committees and Working Groups.....	17
The development of a European standard step by step	19
Drafting of LEV-standards	20
Harmonised Standards and HAS Consultants	21
Standard Lifespan	22
8. Why and how to participate in standardisation?	23
Why participate?.....	23
Improved competitiveness and access to market.....	23
Reduced cost and increased efficiency.....	23
Support for innovation.....	23
How to participate?.....	24
9. How to find and use a standard?....	26
How to find the most recent version of the standard?.....	26
How to declare conformity and mark your LEV?	27
10. What are the relevant published LEV standards?	29
International Standards	29
European Standards.....	30
Technical Specification	31
National Standards	32
11. Which standards relevant for LEVs are currently in the making?	33

International Standards33

European Standards.....33

12. Who’s who in standardisation?37

 European standardisation37

 International standardisation.....38

 National standardisation.....38

13. How is a standard structured?39

 Components of a standard39

 Example of the structure of a standard42

1. Which Light Electric Vehicles qualify for standardisation?

This guide is limited to product standards for the following light, electric vehicles (LEVs), which fall outside Regulation (EU) No 168/2013.

This guide focuses on product standards for the following light, electric vehicles (LEVs):

- electric (carrier) cycles with pedal assistance up to 25 km/h and a maximum continuous rated power of 250W
- e-scooters
- self-balancing vehicles



[Regulation \(EU\) No 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles](#), along with three technical and one administrative Commission Delegated Regulations sets out the requirements, characteristics and tests that the concerned LEVs must comply with. Manufacturers must build a vehicle type in conformity with these legal requirements and have it tested and approved by accredited technical services.

Upon that, manufacturers must ensure that the production of the vehicle remains in conformity with the type. Once a vehicle type is approved in one EU member state, the vehicles in conformity with the type may be marketed throughout the Single Market.

Regulation (EU) No 168/2013 stipulates which vehicles come under the Regulation dividing them into 7 categories from L1e to L7e. A range of vehicles, listed in Article 2.2, is excluded from the Regulation (EU) No 168/2013 and are therefore not subject to type-approval to be allowed on the market. These vehicles are listed in Article 2.2 of the Regulation (EU) No 168/2013 as follows:

- (a) vehicles with a maximum design speed not exceeding 6 km/h;
- (b) vehicles exclusively intended for use by the physically handicapped;
- (c) vehicles exclusively intended for pedestrian control;
- (d) vehicles exclusively intended for use in competition;
- (e) vehicles designed and constructed for use by the armed services, civil defence, fire services, forces responsible for maintaining public order and emergency medical services;
- (f) agricultural or forestry vehicles (...)
- (g) vehicles primarily intended for off-road use and designed to travel on unpaved surfaces;
- (h) pedal cycles with pedal assistance which are equipped with an auxiliary electric motor having a maximum continuous rated power of less than or equal to 250 W, where the output of the motor is cut off when the cyclist stops pedalling and is otherwise progressively reduced and finally cut off before the vehicle speed reaches 25 km/h;
- (i) self-balancing vehicles;
- (j) vehicles not equipped with at least one seating position;
- (k) vehicles equipped with any seating position of the driver or rider having an R-point height ≤ 540 mm in case of categories L1e, L3e and L4e or ≤ 400 mm in case of categories L2e, L5e, L6e and L7e.

As a result, the following LEVs are excluded from Regulation (EU) No 168/2013 and its type-approval requirements:

- e-cycles with pedal assistance up to 25 km/h and a maximum continuous rated power of 250W, also called EPACs
- electric mountain bikes with pedal assistance up to 25 km/h and a maximum continuous rated power of 250W, also called EPAC Mountain Bikes
- electric cargocycles with pedal assistance up to 25 km/h and a maximum continuous rated power of 250W, also called Electric Carrier Cycles
- e-scooters, also called Personal Light Electric Vehicles (PLEV)
- self-balancing vehicles, also called Personal Light Electric Vehicles (PLEV)

Vehicles excluded from Regulation (EU) No 168/2013 fall under [Directive 2006/42/EC on Machinery](#) (Machinery Directive). This Directive applies to vehicles not subject to type-approval under Regulation (EU) No 168/2013.

The [Regulation \(EU\) 2023/1230 on Machinery](#) (Machinery Regulation) will replace the Machinery Directive from 14 January 2027. This Regulation stipulates in Article 2.2 the exclusion of means of transport by air, on water and on rail networks (under (e)) and of motor vehicles subject to Regulation (EU) No 168/2013 (under (g)). Consequently, means of transport by road not subject to Regulation (EU) No 168/2013 will come under the Machinery Regulation. However, only risks resulting from their machinery function are subject to the Regulation, while risks resulting from circulation on public roads are excluded.

LEVs that fall under the Machinery Directive or the upcoming Machinery Regulation must demonstrate compliance with the essential health and safety requirements outlined in the legislation. This compliance must be achieved by adhering to state-of-the-art practices, which can be self-certified by the manufacturer. One recognised approach is to apply the requirements and test methods detailed in relevant standards for their vehicles. However, manufacturers are not restricted to these standards; they are free to adopt alternative state-of-the-art methods, provided these also ensure compliance with the regulatory requirements

2. What is a standard?

A standard is a document providing requirements, specifications, guidelines or characteristics that can be used to ensure that materials, products, processes and services are fit for purpose. Standards help to ensure that products and services are safe, reliable and of good quality.

Standards cover a wide range of subjects, from construction to artificial intelligence, and from electric bicycles and e-scooters to agricultural machinery. They can apply to specific products, or be general, such as standards for quality or environmental management systems. Standards are established by consensus and drafted for voluntary use. In some cases,

standards may become mandatory, but this is only when regulators decide to adopt them as legal requirements or when they become part of a contractual agreement between parties.

Two examples of national legislation that refer to European LEV-standards and make them fully or partially mandatory in the Member State concerned are:

- in France, electric cycles are legally required to comply with EN 15194;
- Spain has mandatory certification for e-scooters and self-balancing vehicles. Many requirements in the certification scheme stem from EN 17128:2020.

“Standards are best practices. They describe the best way to do something, such as making a product, providing a service or managing a process.”

A standard summarised:

- A standard is an agreement on characteristics and requirements for a product, service, process or method.
- Standards are developed in standard committees by industry representatives, officially called experts.
- The development of the standard is an open, transparent and consensus-based process.
- Standards must reflect state of the art in the industry.
- Standards are regularly reviewed and updated.
- Standards are developed to be applied voluntarily.
- A standard is a copyrighted protected document.

3. What is a harmonised standard?

A harmonised standard is a European standard developed following a standardisation request from the European Commission. This is a request to the European Standards Organisations, e.g. CEN or CENELEC, to develop European standards or other deliverables in support of EU legislation and policies.

Such standards support the implementation of EU legislation, including directives and regulations, by providing detailed requirements that products, services, or processes should meet to comply with the essential requirements of the relevant EU legislation.

The references to harmonised standards are published in [the Official Journal of the EU](#). Each harmonised standard includes an Annex ZA, which outlines the relationship between its requirements and the requirements of the related EU legislation. Compliance with harmonised standards provides presumption of conformity with the essential requirements of the corresponding European legislation (regulation or directive).

Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of EU Directive 2006/42/EC aimed to be covered

This European Standard has been prepared under Commission's standardization request "M/396" to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC Machinery Directive.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2006/42/EC Machinery Directive

Essential Requirements of Directive 2006/42/EC	Clause(s)/subclause(s) of this EN	Remarks/Notes
1 - Essential health and safety requirements	/	
1.1. General remarks	/	
1.1.1 - Definitions	/	
1.1.2 (a), (b), (d), (e) - Principles of safety integration	4.1; 4.3.22;	
1.1.2 (c)	4.1	
1.1.3 - Materials and products	4.3.10; 4.3.17;	
1.1.4 - Lighting	4.3.19	
1.1.5 - Design of the machinery to facilitate its handling	Annex E	

While manufacturers are free to choose another form of proof to show that they meet the legal requirements, using harmonised standards is often the easiest way for SMEs to satisfy the requirements of EU legislation.

A standard is never a law. However, legislators can refer to specific standards making their use mandatory. In Chapter 2, we have mentioned two examples of this in France and Spain.

4. What is presumption of conformity?

Presumption of conformity means that products, services, or processes complying with harmonised standards cited in the Official Journal are presumed to meet the corresponding essential requirements of relevant EU legislation. This presumption offers several significant benefits:

1. Simplified Compliance Process: manufacturers can demonstrate compliance with legal requirements more easily by adhering to harmonised standards. This may reduce the need for extensive testing and conformity assessment processes.
2. Easier Market Access: products that meet harmonised standards can freely circulate within the European Single Market, as they are presumed to comply with EU regulations. This facilitates trade and reduces market entry barriers.
3. Legal Certainty: in the event of a dispute or incident, products complying with harmonised standards are assumed to meet legal requirements. This shifts the burden of proof to the opposing party, who must then demonstrate that the product does not meet the legal requirements. Without this presumption of conformity, the party that placed the product on the market must prove it complies with the law.

In the LEV-sector, currently only one harmonised standard exists, i.e. EN 15194:2017+A1:2023 for Electrically Power Assisted Cycles (EPACs). This standard is harmonised under the [Machinery Directive](#). All other standards for the LEV-sector are not harmonised.



The European Commission has issued a standardisation request in relation to the [Battery Regulation 2023/1542](#), which will result in the development of new standards in the coming years. The request includes the development of a standard for the performance and durability requirements for Light Means of Transport Batteries. These are batteries that are sealed, weigh 25 kg or less and are specifically designed to provide electric power for the traction of wheeled

vehicles that can be powered by an electric motor alone or by a combination of motor and human power, including type-approved vehicles of category L.

5. What is the relation between standards and LEV-legislation?

Standards are voluntary tools that help manufacturers comply with legal requirements. They are not laws themselves but may simplify the process of meeting the requirements set by legislation. In some cases, Member States may make compliance with certain standards mandatory. (see page 7).

Light electric vehicles, excluded from Regulation (EU) No 168/2013, must comply with several European laws, all transposed into the national law of Member States, including:

- [Machinery Directive/Machinery Regulation](#)
- [Electro Magnetic Compatibility \(EMC\) Directive](#)
- [Restriction on the use of certain Hazardous Substances \(RoHS\) Directive](#)
- [Battery Regulation](#)
- [Low Voltage Directive \(LVD\)](#)
- [Radio Equipment Directive \(RED\)](#)

The Machinery Directive is the only law for which, CEN/TC 333 – Cycles and CEN/TC 354/WG 4 - Light electric vehicles and self-balancing vehicles, have developed specific standards to facilitate compliance.

Of these standards, the EN 15194:2017+A1:2023 for Electrically Power Assisted Cycles (EPACs) is the only one to be harmonised under the Machinery Directive. This means that if an EPAC follows this standard, the vehicle is presumed to comply with the legal requirements of this Directive. The standards for electric (carrier) cycles, the EPAC Mountain Bicycle standard and the PLEV standard have been developed in view of compliance with the Machinery Directive but are not harmonised. Nevertheless, they may still be useful to the sector.

In all above-mentioned standards there are requirements pertaining to the other laws listed above, but not specifically written to ensure compliance with those laws.

Furthermore, there is national technical legislation:

- rules regulating traffic, that may result in national technical legislation, relating for instance to vehicle dimensions, vehicle visibility and audibility (light, reflectors, bells, ...)
- which includes national legal technical requirements in addition to the above European legislation. The Netherlands are for instance preparing a so-called LEV-framework for e-scooters and e-cargocycles, which includes such national technical legal requirements.

Harmonisation of a standard is established through the publication of a reference in the Official Journal (see Chapter 3). The text of the Machinery Directive itself does not contain any specific references to harmonised standard such as the EN 15194:2017+A1:2023. Nevertheless, EU legislation may contain requirements that refer to specific standards to meet those requirements. This is, for example, the case for the Battery Regulation. In this Regulation, certain requirements must be fulfilled by meeting standards to be developed by CENELEC. The Commission has issued a standardisation request in this regard. This is for instance the case for the performance, safety and sustainability requirements imposed by the Battery Regulation.

Furthermore, in the current LEV-standards there are already technical battery requirements based on existing battery standards. According to the EN 15194:2017+A1:2023 as well as to the e-carrier cycles standards, the batteries must comply with the EN 50604-1:2016+A1:2021.

6. What is the status of harmonisation in the LEV-sector?

Introduction

For the LEV-sector, there is currently only one harmonised standard, i.e. EN 15194:2017+A1:2023 - Cycles - Electrically power assisted cycles - EPAC Bicycles. This standard is harmonised under the Machinery Directive. All other standards in the LEV-sector are not harmonised.

Two issues have an important effect on the harmonisation of EN 15194:2017+A1:2023: formal objections and the changeover from the Machinery Directive to the Machinery Regulation.

Formal objections

EU Member States or the European Parliament may formally object against the harmonisation of a standard if they consider that:

- standard requirements are insufficient to cover the requirements of the Machinery Directive/Regulation;
- there are requirements missing to cover the relevant Directive/Regulation requirements.

In the recent past, there have been two formal objections against the harmonisation of EN 15194:2017:

1. The Netherlands objected against the battery requirements which were deemed insufficient to guarantee safe batteries.
2. Germany's objection was based on the absence of requirements to cover the vibration risks set out in the Machinery Directive.

10.1.2023

EN

Official Journal of the European Union

L 7/27

COMMISSION IMPLEMENTING DECISION (EU) 2023/69

of 9 January 2023

amending Implementing Decision (EU) 2019/436 as regards the harmonised standard for electrically power assisted cycles

As a result, the European Commission has lifted the harmonisation of EN 15194:2017 under the Machinery Directive, but only for the two points raised by the Netherlands and by Germany. All other points in the standard remained harmonised.

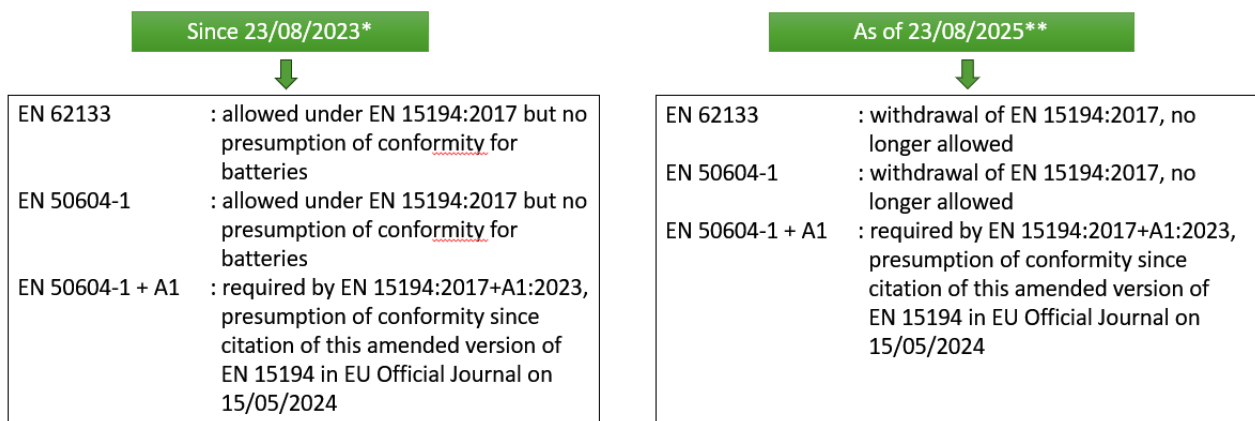
To overcome the objection against the battery requirements, CEN/TC 333 on cycles has decided to introduce an amendment (A1) into the EN 15194:2017, which stipulates that batteries shall comply with EN 50604-1+ A1.

This standard appears not to be optimally adapted to electric (cargo) cycles and e-scooters. Some requirements seem particularly demanding. IEC TC 125 wants certainty about the most relevant and adequate battery requirements in the standards for e-Transporters. Therefore, an Ad Hoc Group in IEC TC 125 is investigating the different battery standards available. The conclusions of this Ad Hoc Group will also be of great importance in the revision of the battery requirements in EN 15194:2017+A1:2023.

The text of the revised standard EN 15194:2017+A1:2023 has become available on 23 August 2023 with a transition period of 2 years. On 15 May 2024, the Commission has published a [reference to EN 15194:2017+A1:2023 in the Official Journal](#), therewith confirming the harmonisation under the Machinery Directive of the new battery requirements, which consist of the introduction of EN 50604-1+A1 into EN 15194.

This means that:

- until 23 August 2025, manufacturers have a choice between using the battery requirements of EN 15194:2017 or the requirements of EN 15194:2017+A1:2023. However, the use of the battery requirements of EN 15194:2017 does not provide harmonisation for these requirements under the Machinery Directive
- the use of battery requirements of 15194:2017+A1:2023 does provide harmonisation for these requirements under the Machinery Directive
- as of 23 August 2025, EN 15194:2017 will be withdrawn and only the battery requirements, as set out in EN 50604-1 + A1 will be allowed.



* 23 August 2023 = date of available text revised standard

** 23 August 2025 = deadline for withdrawal of EN 15194-2017 and definitive application of EN 15194:2017+A1:2023

EPAC models first put on the market before 23 August 2025, may still refer to EN 15194:2017 after that date

EPAC models first put on the market after 23 August 2025, may no longer refer to EN 15194:2017, the reference must be to EN 15194:2017+A1:2023

As for the vibration test, CEN/TC 333 has developed a second amendment to EN15194:2017 including such a test, which has been submitted to the Formal Vote. So far, the amendment has not been published yet. Once published, the amendment will only become harmonised under the Machinery Directive if it is cited in the Official Journal.



Changeover from Machinery Directive to Machinery Regulation

The Machinery Regulation will become effective on 20 January 2027. On the same date, the Machinery Directive will be repealed. Until that date, it's not allowed to put vehicles on the market in accordance with the Regulation, they still must be in accordance with the Directive. LEVs produced in accordance with the Machinery Directive will still be allowed on the market after 20 January 2027. However, it will not be allowed to declare new products in conformity with the Machinery Directive from that date onwards. Instead, the products will have to comply with the Machinery Regulation and the Declaration of Conformity will have to refer to that Regulation.

In anticipation of the Machinery Regulation, EN 15194:2017+A1:2023 will be reviewed with the aim to harmonise the standard under the new Regulation. CEN/TC 333 must carry out a gap analysis by October 2024 to determine whether there are new essential health and safety requirements in the Machinery Regulation not yet covered by the standard. The European Commission will assess this gap analysis. Should there be no new requirements, EN 15194:2017+A1:2023 will be cited as harmonised standard in the Official Journal. If there are new requirements not yet covered by the standard, the citation will be with restrictions until a new version covering the missing requirements becomes available.



How about Brexit?

Despite Brexit, the UK has remained active in CEN and CENELEC and has continued to contribute to the development of standards. The corresponding legislation, among which the Machinery Directive, other technical legislation pertaining to LEVs and CE-marking, has been implemented in the UK national legislation.

Nevertheless, the harmonisation of standards will become redundant in the following cases:

- when EU legislation under which a standard is harmonised changes in the EU and not in the UK. This is for instance the case with the changeover from Machinery Directive to Machinery Regulation. The same effect results from potential changes to the Machinery Directive in UK legislation, which are not followed by the EU.
- when harmonisation is related to a standardisation request issued by the Commission for the implementation of EU legislation that has taken effect after Brexit. An example of such a case is the Battery Regulation.

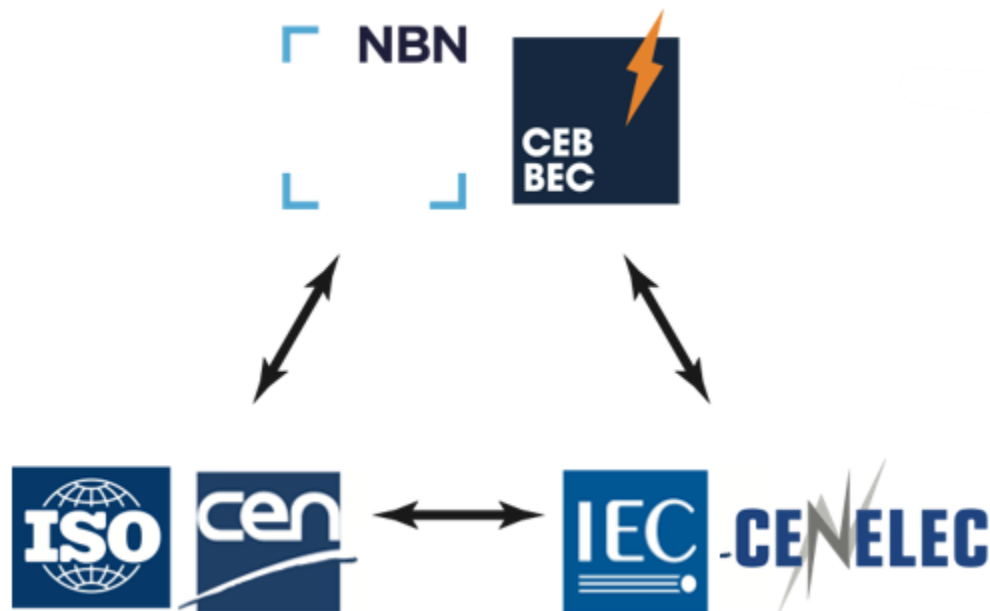
The fact that harmonisation may become redundant does not mean that the standard itself becomes redundant. However, the redundancy could jeopardise the state of the art laid down in the standard.

7. How is a standard made?



The standardisation institutes

CEN, CENELEC, ISO and IEC are organisations made up of National Standards Bodies (NSB). The development of standards in these European and international organisations is based on the national delegation principle. Standards are developed in technical committees, to which each NSB sends a delegation of experts to represent their national standpoint. This standpoint is discussed and defined in “national mirror committees” gathering all interested parties (businesses, consumers, public authorities, NGOs, etc.) at national level. This gives stakeholders the opportunity to deliberate and work together in their national language, which is an advantage for SMEs.





Technical Committees and Working Groups

The standardisation work takes place in Technical Committees (TC) and in Working Groups (WG), which are part of the Technical Committees.

In the standardisation process there are two types of meetings:

1. Plenary meetings deal with the management of the Technical Committee (TC) and take the formal decisions. The participants are national experts representing their country. These experts should report the national position that has resulted from the consensus building process in the national mirror committee
2. In the Working Group (WG) meetings, experts effectively write the future standards and build consensus. In these meetings, experts act in a personal capacity and not as official representatives of their country.

Pivotal roles in the TCs and WGs are those of Chair, Secretary and Convenor:

- The Chair builds the consensus among the experts in the TC about the standardisation work. In the effective development of the standard, the Chair supports the members in the decision-making process. The Chair also teams with the Secretary in driving the standardisation work.
- The Secretary is responsible for the day-to-day management of the TC. The Secretary prepares all the documents to be circulated to the TC-members. The Secretary also prepares the plenary meetings and the meeting reports.
- The Convenor manages the development of project assigned to a Working Group. The Convenor organises and chairs the meetings. Finally, the Convenor reports to the Chair and Secretary on the WG activities.
- The Chair, Secretary and Convenor must act in a purely supranational capacity and must refrain from any national positions.

The TCs and related WGs relevant for LEVs are:

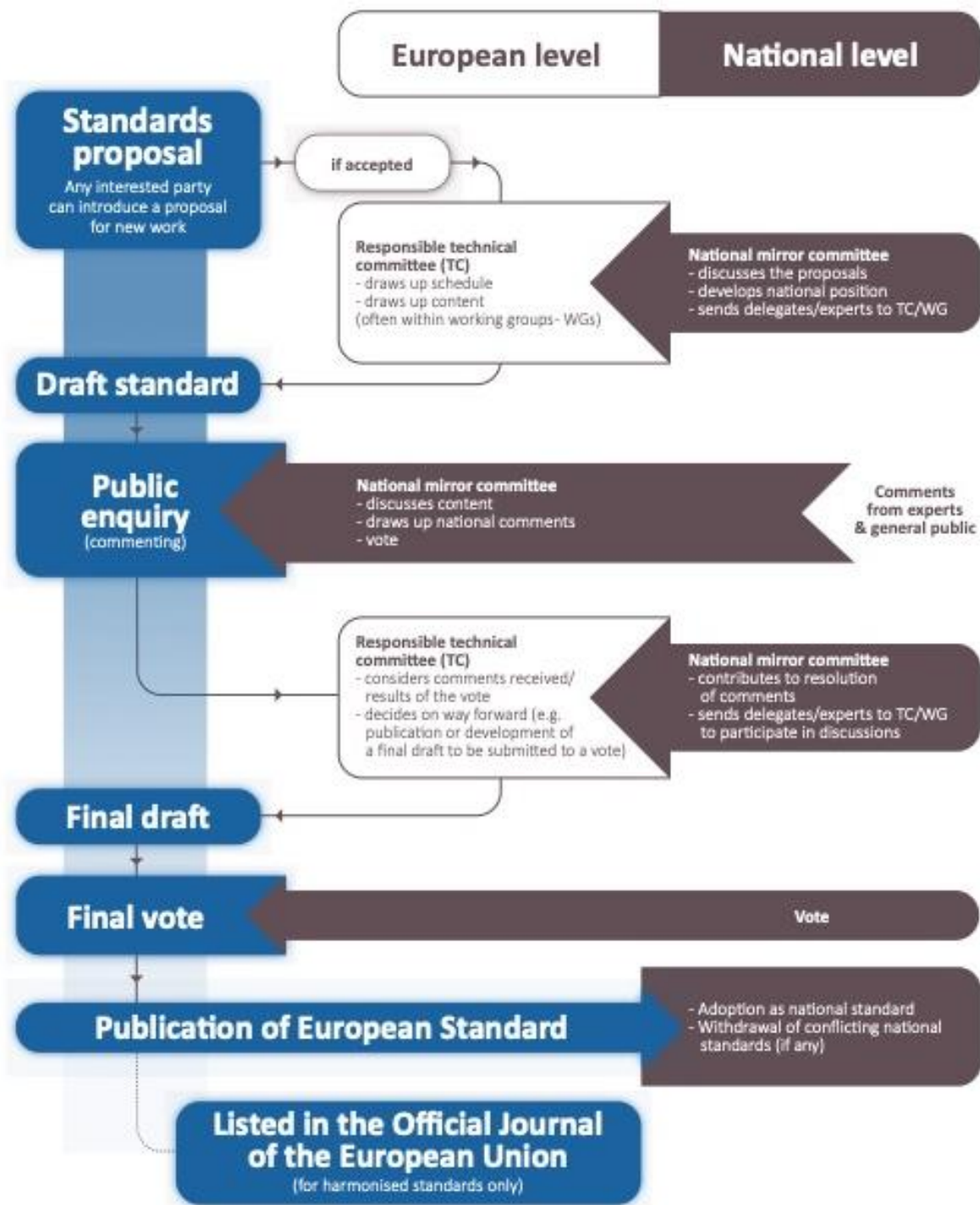
- CEN/TC 333 - Cycles:
 - WG5 – Electrically Power Assisted Cycles (EPACs)
 - WG9 - (Electric) Carrier Cycles
- CEN/TC 354 - Light motorized vehicles for the transportation of persons and goods and related facilities and not subject to type-approval for on-road use:
 - WG 4 - Light electric vehicles and self-balancing vehicles

- IEC/TC 125 – e-Transporters:
 - WG1 – General requirements, terminology and classification
 - WG4 – Performance test method for e-Transporters
 - WG6 – General requirements for autonomous cargo e-transporters
 - ahG7¹ – EMC for e-Transporters
 - ahG8 – “International – European” collaboration items for e-Transporters

¹ ahG stands for “ad hoc Group”, which is a temporary group established to resolve a specific issue. In general, the ahG is responsible for providing the navigational direction needed to resolve a specific issue. When the issue is resolved, the ahG is dissolved.



The development of a European standard step by step



Source SBS: A practical guide for SMEs - Why standards matter and how to get involved

Drafting of LEV-standards

The actual drafting of the LEV-standard very often starts from an exhaustive risk analysis. Through this analysis, the experts in the WG determine which essential safety risks must be covered by the standard. They then assess and compare relevant existing requirements and test methods. They also assess potential new test methods, or they develop new tests.

Extract from risk analysis used in CEN/TC 333:

Nr.	Type of hazards	Hazards		Columns to be deleted		Relevant paragraphs in existing standards						Machinery directive	Reverse driving / manouvering relevant?	Remarks		
		Origin	Potential consequence	Risk	Sub categories	Risk reduction measures type	Existing test methods	DIN 79010	EN 15194	ISO 4210	EN 15198				Other	
1	Mechanical	Wheel blockage due to obstruction between wheel and mudguard	Loss off control and falling	Loss off control	(Wheel) Blockage	Inherently safe design-measures	Mudguard obstruction test	5.12: Mudguard/steering covers		ISO 4200-3 [A2]		ISO/TR 14100 (2013) 091 Cycle – Components and assemblies specific to bicycles – Innovative requirements and test methods	13.7 – Plisk related to moving parts	yes		
2	Mechanical	Wheel blockage due to clothed entanglement between crankset and chain Finger entangment between crankset and chain	Loss off control and falling Cutting	Loss off control		Safeguarding and complementary protective measures	Chain guard		4.3.14	4200-2 & 8.3			13.7 – Plisk related to moving parts		For multitrack, childrens fingers between spokes?	
3	Mechanical	Wheel blockage due to deratment of the chain	Loss off control and falling	Loss off control		Safeguarding and complementary protective measures	Sprocket protector	5.18 Sprocket protector (prevention against contact)	4.3.16	4.17				13.7 – Plisk related to moving parts		
4	Mechanical	Wheel blockage due to obstruction between wheel and frame or fork	Loss off control and falling	Loss off control		Inherently safe design-measures	Clearance test		4.3.8.7, 4.3.9.2	ISO 4200-6 [51]				13.7 – Plisk related to moving parts		Larger than 5mm? Visk larger and wider than, more variation in width. To be checked for a variety of angles and materials!
5	Mechanical	Braking distance not sufficient	Loss off control and falling	Loss off control	Insufficient stopping power	Inherently safe design-measures	Brake power test	5.5.2 (Brake test: minimum deceleration by and wet test conditions) 5.5.11 (downhill brake curve)	4.2.5	ISO 4200-4 [A6]			12.4 – Stopping 3.3.3: Trampling function	yes	Brake durability and wear – How often and how long does the brake meet the requirement EPAC and CE? Add up to the same braking distance. Difference between EPAC and CE? Do you don't need to test with each brake separately. Can we incorporate?	
6				Loss off control			Weather condition							13.8 – Plisk related to vehicles in operating conditions		
7	Mechanical	Overheating failure of the braking system	Loss off control and falling	Loss off control		Inherently safe design-measures	Heat dissipation test	5.5.2 (Brake test level stability, 0-95 Vh)	4.3.5.10	ISO 4200-4 [A7]				12.4 – Stopping		
8	Mechanical	Failure of the braking system	Loss off control and falling	Loss off control	Inherently safe design-measures	Brake failure	5.5.11 (minimum 2 independently activated braking systems)	4.3.5.10 (braking systems)	4200-4 A.11 (Braking systems)				12.4.3 – Emergency stop			
9	Mechanical	Failure of the braking system due to overcharge of the lever	Loss off control and falling	Loss off control	Inherently safe design-measures	(E) test) Strength test brake components	5.5.2 (Brake test)	4.3.5.7, 4.3.5.8	ISO 4200-4 [A4]				12.4 – Stopping	yes	Add Mechanical interface between brakes and frame. Add brake power shall exceed (as per power and power density) $\rho_{brake} \geq 1000 \text{ W/kg}$	

If the objective is to develop a harmonised standard, such as for instance the EN 15194:2017+A1:2023 for EPACs, there is an additional dimension to the drafting. In a so-called Annex ZA to the standard, the experts must list all the requirements from the Directive or Regulation, that are relevant for the product concerned and, the corresponding clauses in the standard that are covering those requirements and if necessary, also tests.

For EPACs, this Annex ZA in EN 15194:2017+A1:2023 currently lists the relevant requirements in the Machinery Directive. In the review of EN 15194:2017+A1:2023, aimed at obtaining harmonisation under the Machinery Regulation, the Annex ZA will list the relevant requirements in the Machinery Regulation. However, vehicles for transport by road are only subject to the Machinery Regulation in respect of risks that might arise from their machine functions, not in respect of risks that might arise from circulation on public roads. As a result, in preparing Annex ZA of the new EN 15194, the experts in the WG should determine what is a machine function risk and what is a road circulation risk.



Harmonised Standards and HAS Consultants

The process to develop a harmonised standard is the same as for non-harmonised standards. The only difference is the involvement of HAS consultants.

Since 2018, the European Commission has outsourced the assessment of draft harmonised standards to Harmonised Standards (HAS) Consultants. They are checking that the standard fulfils the requirements of the standardisation request and therefore also the requirements of the relevant legislation. If the standard fulfils these, it is presented to the European Commission, which takes the final decision on whether the standard can be cited and provide presumption of conformity with the legal requirements.

New contract for HAS consultants

2022-06-10

Harmonized standards consultants (HAS consultants) have the task of assessing whether the standards developed by CEN, CENELEC and ETSI satisfy the requirements laid down by the European Commission in its standardization mandates. For some years, the Commission has tasked a company with managing the budget for the consultants' work and appointing consultants to the roles. The contract governing this arrangement expired at the end of March 2022.



©Denismagilov - Fotolia.com

Typically, these consultants do not assist with determining the relevant requirements before the drafting of the standard. Instead, once the draft standard is completed, they assess whether all relevant Machinery Directive requirements have been addressed and whether the standard's requirements and tests are sufficient.

The outcome of a HAS Consultant evaluation may be as follows:

- the standard satisfies the requirements of the Machinery Directive/Regulation (compliant):
 - the harmonisation may go ahead
- the standard satisfies the requirements of the Machinery Directive/Regulation only subject to certain conditions (conditional compliance):
 - the standard will be amended for full compliance and harmonisation
 - the lack of compliance is accepted, and the standard published without harmonisation
- the standard fails to satisfy the requirements of the Machinery Directive/Regulation (lack of compliance), this was for instance the case with EN 17128:2020 – Personal Light Electric Vehicles (PLEVs) and EN 17404:2022 (Mountain EPACs):
 - the lack of compliance is accepted, and the standard published without harmonisation
 - the draft standard is reworked to try to achieve harmonisation
 - the work on the draft standard is stopped and the work item withdrawn

Standard lifespan

Four years after the publication of a CEN standard, no further amendments to the standard may be initiated.

No later than five years after the publication of a CEN standard, it must be systematically reviewed. This may result in:

- confirmation of the existing standard
- revision of the standard
- withdrawal of the standard

In 2024, the systematic review of EN15194:2017+A1:2023 is to be initiated.

8. Why and how to participate in standardisation?

Why participate?



Participating in standardisation enables you to contribute your knowhow to the development of future standards. It also allows you to acquire knowledge of state-of-the-art advancements at a very early stage, giving you the opportunity to tailor your products accordingly. Moreover, it provides an excellent opportunity to enlarge your international network, connecting you with professionals and experts from around the world. Additionally, it helps

you gain better insights into standards, enhancing your understanding and expertise in the field.

Improved competitiveness and access to market

Compared to larger companies, SMEs have less financial and other resources available to show the conformity and performance of their products and gain the trust of the market. Standards can help SMEs to compete on a level playing field with bigger companies, by objectively and simply demonstrating the quality, safety and performance of their products and services. Standards can also help to demonstrate compliance with legal requirements (see the section on harmonised standards) and technical requirements, enabling SMEs to gain customer trust, reduce trade barriers and access new markets.

Reduced costs and increased efficiency

Standards simplify component specifications, allow economies of scale and facilitate maintenance. They also help to ensure uniformity so that final products and services are consistent. They can even enable SMEs to be more efficient by improving performance, quality and reliability, and by reducing waste.

Support for innovation

Standardisation can help to bring innovative solutions to the market by defining interfaces, establishing compatibility requirements and creating trust in new technologies. Innovative companies use standardisation as a strategic tool for increasing the market acceptance of their products.



How to participate?

SMEs and other stakeholders can participate in standardisation in different ways and at different levels, depending on the available resources in terms of staff and time.

A first way to participate in standardisation is to get in touch with the national standards institute in your country and ask to get involved in the national mirror group of the Technical Committee that you're interested in: for instance, CEN/TC 333 – Cycles, CEN/TC 354 – WG4 PLEVS and/or for IEC/TC 125 – e-Transporters. In some cases, this may require you to pay a fee to participate. Do ask whether the institute has a special rate for SMEs. In some countries, such as Austria, participation is for free. The activities of such a national mirror group are determined by its members. Some mirror groups are very active and organise meetings to prepare common positions for the meetings at European/international level. In other countries, the mirror groups do not meet up, but members can nevertheless comment on draft standards and vote in the ballots.

The list of national standards institutes, which are members of CEN and CENELEC may be found here: <https://standards.cencenelec.eu/dyn/www/f?p=CEN:5>

If you're involved in a national mirror committee, you can work as an expert in a technical committee (TC) at European or international level. You will be required to have relevant knowledge and expertise with respect to the product concerned. You will also be required to actively contribute to the standardisation work and to participate in the meetings. Since COVID, the majority of the WG meetings are online, while some General Assemblies of the TCs may be in-person. However, most of these meetings are hybrid to allow companies that cannot attend in-person to participate and contribute. In the WG meetings, experts participate in a personal capacity. In the plenary of the Technical Committee, the common position of the national mirror committee must be put forward and voting takes place in line with this position by a so-called Head of Delegation (HoD).

Another way to participate is via Small Business Standards (SBS). SBS launches an open call for experts every year over the summer to choose experts to represent the interests of SMEs in different European and International Technical Committees. Currently, Eddie Eccleston is working as an SBS-expert in CEN/TC 333 and has in that capacity also an SBS mirror group to agree on the SME position that he will defend in this committee. If you are an SME, you can currently register to follow the activities in WG5 and WG9 via this mirror group free of charge by sending an email to eddie@leva-eu.com with ineke@leva-eu.com in copy. Via this group you can also send your

comments on draft standards subject to a ballot that will then be examined from the SME perspective and formally submitted as SBS comments if considered relevant/adequate.

You can also follow up on and have input into standardisation through membership of LEVA-EU. The organisation is active in several European and international technical committees and can keep you informed on the activities in those committees.

The last way to participate is by individually commenting on Enquiry Drafts (CEN) or Committee Drafts for Vote (CDV - IEC) when they become subject to a ballot. In that case the draft standard text should be available, free of charge, on the websites of all participating national standardisation institutes. Unfortunately, not all national standardisation institutes appear to make the drafts available. You need to closely monitor the development of the standard that you are interested in, to know when the Enquiry or CDV ballot will take place. National Standards bodies have 8 weeks time to study the draft and to formulate comments. The timeframe for national stakeholders to submit their comments to the National Standards Body may be a bit less than 8 weeks, since the National Standards Body need to collect these comments and examine them before submitting them to CEN, CENELEC, ISO or IEC .

Webpage of the Belgian Standards Body, NBN, where Enquiry Drafts and Committee Drafts for Vote are published to allow anybody interested to comment:

The screenshot shows the NBN website's 'Public Enquiry' section. It features a search bar with the text 'Zoeken: Alle tekstkolom' and a 'Uitvoeren' button. Below the search bar is a table with the following data:

Referentie	Titel	Normcommissie	Startdatum ↓	Einddatum	Opmerking..	PDF
prEN 17860-6:2024	Carrier Cycles - Part 6: Passenger transport	CEN/TC 333	18/01/2024	18/03/2024		

At the bottom right of the table, there is a pagination indicator: '|< < 1 > >| 1 - 1 van 1'.

9. How to find and use a standard?

How to find the most recent version of the standard?

It is important to ensure the use of the most recent standard version to determine requirements and tests prescribed by that standard for your product. You can retrieve the reference to that most recent version on the CEN-CENELEC website, here:


<https://standards.cencenelec.eu/dyn/www/f?p=CEN:105::RESET:::>


SEARCH IN CEN CENELEC

Keywords

Committee


Deliverable Type Standard Reference

Standards: 

Committee	Reference, Title	Status	Sales Points
CEN/TC 333	EN 15194:2017+A1:2023 (WI=00333071) Cycles - Electrically power assisted cycles - EPAC Bicycles	Published	
CEN/TC 333	EN 15194:2017/FprA2 (WI=00333070) Cycles - Electrically power assisted cycles - EPAC Bicycles	Under Approval	

The above search results for EN 15194 must be read as follows:

- EN 15194:2017+A1:2023 is the most recent version of the published standard. The first year, 2017, refers to the year in which the standard was first published.
 - A1 refers to the first amendment to that standard, in this case an update of the battery requirements, published in 2023.
- EN 15194:2017/FprA2
 - A2 refers to the second amendment to the standard, in this case introduction of vibration requirements. Fpr indicates that the amendment is not formally adopted yet. The “Status” column mentions that the amendment is still under approval.
- The website only mentions “Sales Points” for EN 15194:2017+A1:2023, because this is the only published standard.

- A click on the logo  leads to the list of all standardization institutes where you can buy the standard. It really pays off to shop around!

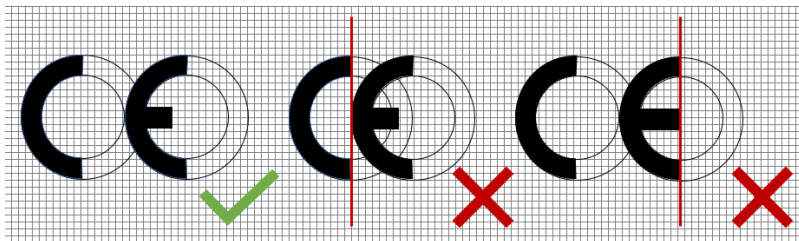
✔ How to declare conformity and mark your LEV?

For all LEVs under the Machinery, it is allowed to self-declare that your product complies with the relevant standard requirements. **However**, all the tests a company has performed as well as the test results, must be documented. This information must be added to the technical file, which is legally required by the Machinery Directive/Regulation. Tests may also be carried out by component suppliers. Those test reports must be added to the technical file.

Certain tests require equipment, which not every company may have in house. Those tests may be carried out by a test house of the company's choice. There is no obligation to work with a Notified Body or accredited test house.

LEVs excluded from Regulation (EU) No 168/2013 must also comply with the [Electro Magnetic Compatibility \(EMC\) Directive](#). Since the tests involved in this law require specialist equipment, most companies will have to outsource these to a specialist test house.

Once manufacturers have ensured that the product complies with all relevant legislation, they must certify this compliance by affixing the CE-marking to the product. The reproduction of the CE is legally determined. The CE mark in GIF, PNG, JPG, AI and EPS formats may be downloaded here: <https://shorturl.at/rDXey>



Compliance with standard(s) is insufficient for CE-marking in the case of LEVs. For instance, compliance with EN 15194:2017+A1:2023 only certifies compliance with the Machinery Directive, not with EMC, RoHS, LVD, RED, ... Directives and not with any other applicable legislation. To legally affix the CE-mark, proof/documentation of compliance with all legislation is required.

Furthermore, manufacturers must issue a Declaration of Conformity to confirm compliance with all legislation. In that Declaration of Conformity, all standards used to comply with all legislation must be listed.

For LEVs imported into the EU, the non-European manufacturers must mandate an authorised representative. This may be any natural or legal person established in the Community who has received a written mandate from the non-EU manufacturer to perform on his behalf all or part of the obligations and formalities connected with the relevant legislation.

10. What are the relevant published LEV standards?



International standards

IEC 63281-1:2023

Title	E-Transporters - Part 1: Terminology and classification
Scope	Terminology and classification of e-Transporters. This document is applicable to "e-Transporters": electrically powered transport devices for use on public roads or in public spaces. These e-Transporters provide solutions for transporting either passengers or goods, or both. These devices can be manually controlled, have automated functions or be autonomous.

IEC 63281-2-1:2024

Title	E-Transporters - Part 2-1: Safety requirements and test methods for personal e-Transporters
Scope	Safety requirements and test methods for personal e-Transporters. This document is applicable to electrically powered personal e-Transporters (PeTs) which are used in private and public areas, where the speed control and/or the steering control is electric/electronic. The PeT can have provisions for transport of cargo and can be for private or commercial (including sharing service) use. This document is not applicable for electric vehicles (EVs), such as electrically power assisted cycles (EPACs), e-bikes, mopeds, motorcycles and passenger cars. This document does not apply to: <ul style="list-style-type: none"> • PeTs that are considered as toys; • PeTs that are intended for competition; • PeTs that are intended for medical care; • PeTs that have a rated voltage of more than 100 V DC or 240 V AC; • PeTs without an on-board driving operator

IEC 63281-3-1:2024

Title	E-Transporters - Part 3-1: Performance test method for the total run time of an e-scooter with consideration of temperature conditions of actual use
Scope	This document specifies the test method for the total run time of an e-scooter for single-person transportation with consideration of the temperature conditions of actual use when the e-scooter is

operated by the user in various temperatures for use on the road or in public spaces.
 This document does not cover e-scooters for persons with disabilities or elderly persons. Also, this document excludes cargo e-scooters.

IEC 63281-3-2:2024

Title	E-Transporters - Part 3-2: Performance test methods for mobility of cargo e-Transporters
Scope	This document is applicable to electrically powered transport devices for use on public roads or in public spaces and which are primarily designed for transporting cargo ("cargo e-Transporters"). The typical application environment of cargo e-Transporters includes the following: for the purposes of hotels, restaurants, office buildings, hospitals, industrial/recreational parks, public roads, etc. This document specifies performance criteria and evaluation methods for the mobility of cargo e-Transporters. This document does not include safety and performance requirements.

 **European Standards**

EN 15194:2017+A1:2023

Title	Cycles - Electrically power assisted cycles - EPAC Bicycles
Scope	EPAC bicycles for private and commercial use with exception of EPAC intended for hire from unattended station
Harmonisation	Harmonised under Machinery Directive
Notes	EPAC bicycle is a two-wheeled vehicle, so this standard is not applicable to EPACs with more than two wheels

EN 17128:2020

Title	Personal Light Electric Vehicles (PLEV)
Scope	PLEVs totally or partially electrically powered from self-contained power sources with or without self-balancing vehicles, with exception of vehicles intended for hire from unattended stations
Harmonisation	Not Harmonised

EN 17404:2022

Title	Cycles - Electrically power assisted cycles - EPAC Mountain bikes
Scope	Same scope as EN 15194:2017 plus specific requirements for EPAC Mountain Bikes
Harmonisation	Not Harmonised

EN 17406:202+A1:2021

Title	Classification for bicycles usage
Scope	Defines a classification of bicycle usage conditions and it provides a method of identifying bicycles and components for use within this system.

EN 15496:2008

Title	Requirements and test methods for cycle locks
--------------	---

EN ISO 11243:2023

Title	Luggage carriers for bicycles
--------------	-------------------------------

EN 15918:2011+A2:2017

Title	Cycle trailers
Scope	

EN 1078:2012+A1:2012

Title	Helmets for pedal cyclists and for users of skateboards and roller skates
--------------	---

**Technical Specification****TS 17831:2023**

Title	EPAC Anti-tampering measures
Scope	Requirements and reproducible test methods recognized by the market aiming at protecting safety and fighting tampering of EPACs
Note	Technical specification (TS) ≠ standard



National Standards

DIN 79010

Title	Cargobikes
Scope	Single-track transportation bikes & cargo bikes, max. width 1 m, max. permissible total weight 250 kg for transporting goods and passengers. Multi-track transportation bikes & cargo bikes, max. width 2 m, max. permissible total weight 300 kg, with or without electric pedal assistance

NF R30-050-1

Title	Utility Cycles
Scope	Requirements for design, assembly & testing of utility cycles, with or without electrical assistance, intended for transport of goods or persons and their sub-assemblies and guidelines for manufacturer's instructions for use and maintenance.

NF R30-050-3

Title	Electric Trailers for Utility Cycles
Scope	Electric trailers for cycles with or without electric pedal assistance for transport of goods or people

These three national standards are voluntary standards and only valid in Germany and France respectively. Once the EN 17860 standards are published, these national standards will have to be retracted.

EU standards typically do not include requirements on aspects related to terms of use, such as dimensions, lights, bells, etc., as these fall under the competence of individual Member States. In instances where an EU standard does include such requirements, these are always overridden by any applicable national legal regulations.

11. Which standards relevant for LEVs are currently in the making?



International Standards

Project: IEC 63281-2-2 ED1

Title	E-Transporters – Part 2-2: Safety requirements and test methods for autonomous cargo e-Transporters
Scope	electrically powered autonomous driving cargo e-transporters
Next Stages	Enquiry: 30/09/2024 Approval: 31/03/2025 Publication: 30/06/2025



European Standards

EN 15194:2017/FprA2

Title	Cycles - Electrically power assisted cycles - EPAC Bicycles
Scope	EPAC bicycles for private and commercial use with exception of EPAC intended for hire from unattended station
Harmonisation Planned	Yes
Current Stage	Acceptance of Formal Vote Draft – 18/01/2024
Next Stage	Submission to 2nd Formal Vote – est. date not available
Definitive Text Available	Est. date not available
Notes	This second amendment to EN 15194:2017 is aimed at resolving the formal objection due to the absence of vibration requirements

FprEN 17860-1

Title	Carrier cycles - Part 1: Terms and definitions
Scope	Terms and definitions related to safety and performance requirements for the design, assembly, and testing of carrier cycles.
Harmonisation Planned	No
Current Stage	Closure Formal Vote – 13/06/2024
Next Stage	Ratification – est. 14/07/2024
Definitive Text Available	Est. 12/08/2024

FprEN 17860-2

Title	Carrier cycles - Part 2: Lightweight single track carrier cycles - Mechanical aspects
Scope	Single track carrier cycles with or without electric assistance and a maximum gross vehicle weight of • 300 kg in case the manufacturer defines the carrier cycle to be intended for both private and commercial use or; • 250 kg in case the manufacturer defines the carrier cycle to be intended for solely private use.
Harmonisation Planned	No
Current Stage	Closure Formal Vote – 13/06/2024
Next Stage	Ratification – est. 14/07/2024
Definitive Text Available	Est. 12/08/2024

FprEN 17860-3

Title	Carrier cycles - Part 3: Lightweight multi track carrier cycles - Mechanical aspects
Scope	mechanical aspects of lightweight multi track carrier cycles
Harmonisation Planned	No
Current Stage	Closure Formal Vote – 13/06/2024
Next Stage	Ratification – est. 14/07/2024
Definitive Text Available	Est. 12/08/2024

FprEN 17860-4

Title	Carrier cycles – Part 4: Heavy weight carrier cycles - Mechanical and functional aspects
Scope	multi track carrier cycles with a maximum gross vehicle weight of 550 kg*, with or without electric assistance. NOTE Electric assistance will be covered in a separate part of this standard series. (*: value maximum gross vehicle weight for this part is still under discussion, but will be around 550 kg)
Harmonisation Planned	No
Current Stage	Submission to Enquiry – 18/07/2024
Next Stage	Closure of Enquiry – est. 10/10/2024
Definitive Text Available	Est. 25/08/2025

FprEN 17860-5

Title	Carrier cycles - Part 5: Electrical aspects
Scope	- functional and electrical safety aspects of carrier cycles covered in all parts of EN 17860; - electrical aspects of electrically power assisted cycle trailers (EPACT) covered in prEN 17860-7; - electrical aspects of batteries used for carrier cycles; - electrical aspects of chargers used for carrier cycles. This document does not apply to charging stations. This document specifies requirements and test methods for motor power management systems, electrical circuits including the charger for the assessment of the design and assembly of carrier cycles and subassemblies for systems having a Safety Extra Low Voltage (SELV) maximum working voltage ≤ 60 V d.c. disregarding transients.
Harmonisation Planned	No
Current Stage	Submission to Formal Vote – 08/08/2024
Next Stage	Closure of Formal Vote – est. 03/10/2024
Definitive Text Available	Est. 28/11/2024

FprEN 17860-6

Title	Carrier cycles - Part 6: Passenger transport
Scope	Transportation of passengers on carrier cycles as defined in the other parts of this standard series
Harmonisation Planned	No
Current Stage	Acceptance of Formal Vote Draft – 22/02/2025
Next Stage	Submission to Formal Vote – est. 05/05/2025
Definitive Text Available	Est. 25/08/2025

FprEN 17860-7

Title	Carrier cycles - Part 7: Cargo trailers
Scope	Safety requirements and test methods for single and multi-axle cargo trailers and their connecting devices. This document applies to cargo trailers with a maximum gross vehicle weight of 600 kg. This document is not applicable to trailer for transportation of passengers, usually children and for type of trailers which use fifth wheel for connecting to the front cycles as listed in the Table 1 in this document. Table 1 - Types of cycle trailers Type of trailer Applicability of this document Multi track single axle Applicable Multi track multi axle Applicable Single track with single axle or multi axle Not applicable Fifth wheel trailer with single axle or multi axle Not applicable Usage Cargo Applicable People/children/pet Not applicable NOTE Requirements and test methods for electrical

Harmonisation Planned
Current Stage
Next Stage
Definitive Text Available

assistance for electrically assisted cargo trailers are covered by prEN 17860-5:2023.
No
Submission to Formal Vote – 08/08/2024
Closure of Formal Vote – est. 03/10/2024
Est. 28/11/2024

12. Who's who in standardisation?

European standardisation

The two European Standards organisations relevant for the LEV sector are CEN and CENELEC. CEN (www.cencenelec.eu), the European Committee for Standardization, supports standardisation activities in relation to a wide range of fields and sectors, including light electric vehicles. CENELEC (www.cencenelec.eu), the European Committee for Electrotechnical Standardisation, is responsible for standardisation in the electrotechnical field. There is a third European Standards Organisation, ETSI (www.etsi.org), active in the area of telecommunications and information and communication technologies

In the LEV-sector, standards for vehicles are usually developed within CEN. However, the standards include references to standards developed within CENELEC relating to electrotechnical aspects such as the batteries.

In CEN, two Technical Committees (TC) are working on standards for LEVs. [TC 333 – Cycles](#), is developing standards for electric (cargo) cycles. [TC 354 - Light motorized vehicles for the transportation of persons and goods and related facilities and not subject to type-approval for on-road use](#) is developing standards for Personal Light Electric Vehicles (PLEVs), more specifically e-scooters and self-balancing vehicles.

In CENELEC, [TC 21X - Secondary cells and batteries](#), is developing battery standards for LEVs.

CEN and CENELEC are European standardisation organisations, which are officially recognised by the European Union as being responsible for developing and defining voluntary standards at the European level. A European Standard (EN) is implemented at national level by being given the status of a national standard and by the withdrawal of any conflicting national standard.² European Standards are therefore a key foundation of the European Single Market because they ensure easier access to the markets of all European countries based on the same standard. Between the publication of a European standard and the withdrawal of national standards, there is usually a transition period of 2 years. The same transition period applies to the publication of a new European standard and the withdrawal of an old European standard. Nevertheless, member states may still impose national technical requirements through national legislation.³

² For instance, when the EN 17860 standards for carrier cycles will be published, France and Germany will have to retract their national standards for these vehicles.

³ As an example, despite the existence of the PLEV-standard, EN 17128:2020, many member states have introduced national technical requirements for e-scooters.



International standardisation

International standards are developed considering the global perspective, by the international standardisation organisations. The two relevant International Standards Organisations for the LEV sector are ISO and IEC. ISO (www.iso.org), the International Standardisation Organisation for Standardization, is the international multisectoral standardisation organisation equivalent to CEN. It is active in all fields except the electrotechnical and telecommunication fields. So far, ISO has not yet developed standards for LEVs.

IEC (www.iec.ch), the International Electrotechnical Commission, is the counterpart of CENELEC at international level. It is active in the electrotechnical domain. In IEC, [TC 125](#) is developing standards for e-Transporters.

The European standardisation organisations have cooperation agreements with their international counterparts, to avoid duplication of work and to align European and international standards as much as possible. For example, these agreements allow CEN and CENELEC to jointly develop shared European and international standards with ISO and IEC respectively. There is no obligation to adopt international standards as national standards unless they are also adopted as European standards.

There are currently no international standards for LEVs which are also adopted as European standards.

ISO (www.iso.org), the International Standardisation Organisation for Standardization, is the international multisectoral standardisation organisation equivalent to CEN. It is active in all fields except the electrotechnical and telecommunication fields. So far, ISO has not yet developed standards for LEVs.

IEC (www.iec.ch), the International Electrotechnical Commission, is the counterpart of CENELEC at international level. It is active in the electrotechnical domain. In IEC, [TC 125](#) is developing standards for e-Transporters.



National standardisation

The development of national standards is the responsibility of national standards bodies (NSBs). The most recent list of recognised NSB(s) by country, as published in the Official Journal of the EU is [here](#).

13. How is a standard structured?

Components of a standard

Standards consist of the following components

- Title (mandatory): a clear, concise description of the subject matter covered by the document. It is drafted to distinguish the subject matter from that of other documents, without going into unnecessary detail. Any necessary additional details are given in the Scope.
- Foreword (mandatory): provides information on:
 - the organization responsible for publishing the document;
 - the committee that developed the document;
 - the procedures and rules under which the document was developed;
 - the voting process;
 - legal disclaimers;
 - relationships between the present document and other documents.

- Introduction (optional): provides specific information or commentary about the technical content of the document, and about the reasons prompting its preparation.
- Scope (mandatory): clearly defines the subject of the document and outlines the specific aspects covered, thus indicating the boundaries of the document's applicability. For enhanced clarity, the Scope may also specify subjects that are excluded from the document, especially when such exclusions can be inferred from the wording of the Scope or the title.

The Scope shall be succinct so that it can be used as a summary for bibliographic purposes, for example, as an abstract. If further details and background information are necessary, these shall be included in either the Introduction or in an annex.

- Normative references (mandatory): lists, for information, those documents which are cited in the text in such a way that some or all their content constitutes requirements of the document. Information on how these references apply is found where they are cited in the document, and not in the normative references clause.

- Terms and definitions (mandatory): provides definitions necessary for the understanding of certain terms used in the document.

Terminology may take the form of an independent terminology standard (a vocabulary, nomenclature, or list of equivalent terms in different languages) or be included in a Terms and definitions clause in a document that also deals with other aspects.

To avoid the unnecessary proliferation of terminological variants, it is recommended to use existing terminological entries from International Standards. Search for suitable terms existing in the terminology databases of ISO and IEC:

- <https://www.iso.org/obp>
- <https://www.electropedia.org>
- Symbols and abbreviated terms (optional): provide a list of the symbols and abbreviated terms used in the document, along with their definitions.
- Technical content (mandatory or optional): measurement and test methods specify the procedure for determining the values of characteristics or for checking conformity to stated requirements. Using a standardized test method ensures comparability of the results.
- Measurement and test methods may be presented as separate clauses, or be incorporated in the requirements, or be presented as annexes or as separate parts. A measurement and test method shall be prepared as a separate document if it is likely to be referred to in several other documents.
- Annexes (optional): are used to provide additional information to the main body of the document and are developed for several reasons, for example:
 - when the information or table is very long and including it in the main body of the document would distract the user;
 - to set apart special types of information (e.g. software, example forms, results of interlaboratory tests, alternative test methods, tables, lists, data);
 - to present information regarding a particular application of the document.
 - An Annex may be normative or informative.
- Bibliography (conditional): lists, for information, those documents which are cited informatively in the document, as well as other information resources.



Example of the structure of a standard

CONTENTS	
FOREWORD	3
INTRODUCTION	5
1 Scope	6
2 Normative references	6
Standard boilerplate text:	6
Boilerplate text if no references are listed:	6
3 Terms and definitions	6
Standard boilerplate text:	6
Terms and definitions listed in a different document:	6
Terms and definitions listed in a different document and in this document:	7
No terms and definitions listed:	7
4 Title of next clause (heading level 1)	8
4.1 Title of subclause (heading level 2)	8
4.1.1 Title of next subclause (heading level 3)	8
Annex A (informative/normative) Annex title	12
A.1 First annex heading (optional)	12
Bibliography	14

Source: ISO/IEC Directives, Part 2



Rue Jacques de Lalaing 4
B-1040 Brussels
+32 (0)2 285 07 27
info@sbs-sme.eu
Transparency Register 653009713663-08

www.sbs-sme.eu



www.leva-eu.com

Co-financed by the European Union and the EFTA

