

BLUE ANGEL

The German Ecolabel



Electric Cycles

DE-UZ 197

Basic Award Criteria

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Version 3

The Environmental Label is supported by the following four institutions:



The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.



The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.



The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.



The RAL gGmbH is the awarding body for the Environmental Label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.

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This document is a translation of a German original. In case of dispute, the original document should be taken as authoritative.

1 Introduction

1.1 Preface

In cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the German Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.

Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the Environmental Label may be granted to all products, provided that they comply with the requirements as specified hereinafter.

The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets this requirement.

1.2 Background

"Pedelects" (Pedal Electric Cycles) are the most common form of electric vehicle and represent an environmentally friendly form of mobility for covering long distances. A Dutch study has shown that, especially when commuting to and from work, the average distance travelled on an electric cycle is 9.8 km. In contrast, the average distance travelled on a traditional cycle is 6.3 km. According to the "Schweriner Versuch", a study conducted as part of the National Cycling Plan, cycles and pedelecs are the most sensible vehicles for commuting in traffic in cities and the surrounding region – compared to passenger cars and motorcycles.

Sales of electric cycles more than doubled between 2010 and 2014. There are currently around 2.1 million electrically powered bicycles on German streets.

Despite their positive contribution to changing mobility behaviour, electric cycles also have an impact on the environment during their manufacture, use and disposal. In particular, there is a not inconsiderable amount of energy, greenhouse gas emissions and resources used in the manufacture of the rechargeable batteries. In addition, there has not been any uniform standard up to now for defining the quality of rechargeable batteries. The lifespan of the batteries and the availability of replacement batteries are crucially important for the useful life of a pedelec.

Furthermore, electric cycles have often been criticised in the past due to their safety defects.

The sector has not yet been able to agree on a uniform standard for charging devices and interfaces for the rechargeable batteries that would make it possible to charge every rechargeable battery with every charging device.¹

¹ There is currently only a mandate from the EU from 2010 that set the standardisation of charging interfaces for electric vehicles including pedelec 25s as its target. This mandate is currently being worked on in the standardisation project IEC/ISO/TC69/JPT61851-3. German mirror committee: DKE/GAK 353.0.9 (supported by the German federal government with funding from the area of electromobility).

Electric cycles that are issued with the Blue Angel ecolabel should provide guidance to consumers when they are selecting environmentally friendly, durable and also safe electric cycles on the market. For the first time, requirements will be placed here on rechargeable batteries and charging devices, which have not previously been subject to statutory regulations. In particular, these requirements focus on the durability of the rechargeable batteries and also the no load power consumption of the charging devices².

The Blue Angel for electric cycles is not designed to promote cycles that require vehicle type approval according to the German Road Vehicle Registration Ordinance (StVZO) or motor vehicles in the sense of the German Road Traffic Act (StVG). Therefore, the requirements have been designed for electric cycles with power assistance (in the form of an electric motor) that achieve speeds of up to 25 km/h. These pedelecs 25s have the same legal status as normal cycles. They can be carried on public transport and represent a sensible addition to other environmentally friendly modes of transport.

The Blue Angel ecolabel will not be issued to faster pedelecs with power assistance (in the form of an electric motor) up to 45 km/h. These pedelecs are vehicles that require registration, insurance and a driver's licence.

1.3 Objective of the environmental label

Climate protection, a reduction in power consumption, increased resource efficiency and the avoidance of pollutants and waste are key objectives of environmental protection.

The environmental label for electric cycles can be awarded to cycles with power assistance (in the form of an electric motor) that provide riders with a continuous rated power up to 250 W and a speed of up to 25 km/h. They stand out due to the following environmental characteristics:

- Long battery life and availability of replacement batteries
- Mechanical and electrical safety
- Warrant terms for the consumer
- Reducing harmful substances in the rechargeable batteries, handlebar grips and saddle
- Durable, easy to repair and recyclable design

Therefore, following benefits for the environment and health are stated in the explanatory box:



1.4 Compliance with legal requirements

The observance of relevant existing laws and legal requirements is a prerequisite for those products awarded with the environmental label. In particular, the following legal requirements are observed:

² Battery charging devices are not covered by the scope of the so-called External Power Supplies Directive (EC) No. 278/2009. The no load power consumption of these charging devices is thus not subject to any statutory limits.

- The German Road Traffic Act (StVG)
- The German Road Vehicle Registration Ordinance (StVZO)
- The Machinery Directive 2006/42/EC
- The German Product Safety Act (ProdSG)
- The German Battery Act (BattG)³ (implementation of the EU Directive 2006/66/EG⁴).
- Commission regulation (EU) No. 1103/2010⁵ for defining the rules for labelling the capacity of rechargeable batteries.
- The German Electrical and Electronic Equipment Act (ElektroG) (implementation of the Waste Electronic and Electrical Equipment Directive (WEEE Directive)).
- The substance requirements defined by the EU Chemicals Regulation REACH (1907/2006/EC)⁶ and Regulation EC No. 1272/2008⁷.
- The directive on the electromagnetic compatibility of electrical and electronic equipment (EMC Directive 2004/108/EC)
- The UN-T Test (United Nations Transportation Test) for ensuring the safety of batteries during transport.
- The Low Voltage Directive 2006/95/EC (if applicable)
- The German Material Ordinance for Electrical and Electronic Equipment (ElektroStoffV) (implementation of EU Directive 2011/65/EC that regulates the disposal and pollutant content of products).

1.5 Definitions

Electric cycles: Umbrella term for cycles with an auxiliary electric motor, which includes pedelec 25s, pedelec 45s and e-bikes.

An electric cycle is described as an electrically power assisted cycle (EPAC) according to the EN 15194 standard. According to this definition, it is a cycle equipped with pedals and an auxiliary electric motor that cannot be exclusively driven by this auxiliary electric motor.

Pedelec 25: According to the scope of EN 15194, these are "electrically power assisted cycles which have a maximum continuous rated power of 0.25 kW, of which the output is progressively reduced and finally cut off as the vehicle reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling".

³ German Battery Act from 25 June 2009, BGBl. I S. 1582

⁴ Directive 2006/66/EC of the European parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators, Official Journal of the European Union L339, P. 39, 2007, No. L139 P.40.

⁵ Commission regulation (EU) No. 1103/2010 of 29 November 2010 establishing, pursuant to Directive 2006/66/EC of the European Parliament and of the Council, rules as regards capacity labelling of portable secondary (rechargeable) and automotive batteries and accumulators

⁶ Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

⁷ Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, as well as amending Regulation (EC) No. 1907/2006

Pedelec 45/S-Pedelec: These cycles are classified as EU vehicle category L1e according to the EU Directive 2002/24/EC and are thus considered to be motor vehicles. They are defined as "small two-wheel mopeds with a maximum design speed of not more than 45 km/h and a maximum continuous rated power of no more than 4 kW in the case of an electric motor".

E-bikes: These vehicles do not require any movement of the pedals to drive them. Instead, they can be driven with the assistance of an electric drive using a rotary handle and a control button. Their motors provide power up to a speed of 20 km/h. In Germany, they are considered to be small mopeds requiring vehicle registration and are classified as a light moped according to the German Light Moped Exemption Regulation.

Single-track electric cargo bikes: According to DIN 79010-1:2014-11, these are transportation and cargo bikes for the transport of goods and persons which have the wheels arranged one behind the other. They have a maximum permissible total weight of 250 kg and are assisted by an electric motor with a maximum continuous rated power of 250 W and a speed of up to 25 km/h.

Rechargeable battery: Also known as an accumulator. These batteries are rechargeable. In general, lithium-ion-batteries are used in electric cycles.

Charging cycle: A charging cycle is defined as the process of discharging the entire stored capacity of the rechargeable battery and the subsequent complete charging of the battery. In practice, a charging cycle can consist of multiple partial cycles.

2 Scope

These Basic Award Criteria are valid for electric cycles equipped with an auxiliary electric motor with a maximum nominal power rating of 0.25 kW (see pedelec 25, Paragraph 1.5) that do not require motor vehicle registration according to the German Road Vehicle Registration Ordinance (StVZO) (incl. single-track cargo bikes).

The following do not fall under the scope of these Basic Award Criteria: cycles without motor assistance and electric cycles that require motor vehicle registration according to the German Road Vehicle Registration Ordinance (StVZO), such as pedelec 45s and e-bikes (see Paragraph 1.5).

3 Requirements

3.1 Rechargeable batteries

3.1.1 Testing the capacity of the rechargeable battery (rated capacity)

The capacity of the rechargeable batteries must be measured in accordance with the currently valid version of the EN 61960 standard based on the first discharging/charging cycle (discharged at 0.2 It A) in accordance with Section 7.3.1 "Discharge performance at 20 °C (rated capacity)" for three rechargeable batteries (according to EN 61960 Table 4 "Sample size"). The required steps may be repeated up to four times to fulfil the requirements. In the case of all of the three rechargeable batteries tested, the measured capacity (according to

Section 7.3.1, Step 3, of the standard, in Ah) must not be less than 100% of the rated capacity stated by the manufacturer in at least one of the measurement cycles.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a test report as Annex 2 verifying that three rechargeable batteries have been analysed and all three comply with the requirements. The test report must be completed by a testing laboratory that fulfils the requirements for the competence of testing and calibration laboratories according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory) for these measurements.

3.1.2 Labelling of the capacity of the rechargeable battery

The rated capacity in ampere hours (Ah) and the energy content in watt hours (Wh), in accordance with the rules contained in Regulation (EU) No. 1103/2010⁸ for labelling the capacity of secondary batteries, must be clearly, legibly and permanently labelled on the rechargeable battery. In addition, the capacity of the rechargeable battery must be stated in the product documentation (see Paragraph 3.7).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit corresponding images of the rechargeable battery and/or the relevant pages of the product documentation in Annex 3.

3.1.3 Low level of self-discharge (charge retention)

The rechargeable batteries must display a low level of self-discharge. Three different rechargeable batteries (according to EN 61960 Table 4 "Sample size") must be tested in accordance with the test conditions stated below. Following these tests, the batteries must still have at least 80% of the rated capacity that was determined after the conditioning cycles. All three of the rechargeable batteries tested must comply with the requirements for the test process.

Test conditions: The self-discharge of the sample batteries must be tested in accordance with the conditions specified in Section 7.3 of the EN 61960 standard. However, a higher ambient temperature of 40°C +/-2°C should be used for the tests.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a test report in accordance with EN 61960 (Annex 4) verifying that three batteries have been analysed and all three comply with the requirements. The test report must be completed by a testing laboratory that fulfils the requirements for the competence of testing and calibration laboratories according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the

⁸ Commission regulation (EU) No. 1103/2010 of 29 November 2010 establishing, pursuant to Directive 2006/66/EC of the European Parliament and of the Council, rules as regards capacity labelling of portable secondary (rechargeable) and automotive batteries and accumulators

measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.1.4 Lifespan of the rechargeable battery

3.1.4.1 Warranty cover

The applicant obligates themselves to provide a 24 month warranty for the battery from the date of purchase, subject to the proper use of the battery. The residual capacity of the rechargeable battery must still be at least 70% of the rated capacity after 24 months or 500 charging cycles.

The product documentation must contain corresponding information on the terms and conditions for the warranty.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the relevant product documentation (Annex 3).

3.1.4.2 Laboratory test of the charging cycles

Charging and discharging (cycling) has the greatest influence on the ageing of the li-ion battery. For this reason, the rechargeable batteries should achieve a high number of charging cycles. The test process described in **Fehler! Verweisquelle konnte nicht gefunden werden.** A of these Basic Award Criteria, which is based on the DIN EN 61960 standard, must be carried out on three different rechargeable batteries. All three of the rechargeable batteries tested must comply with the requirements for the test process. The recovery capacity determined in the last charging cycle of the test must be at least 80% of the rated capacity.

Due to the long measurement times expected for these tests, calendar ageing (ageing irrespective of cycling and ageing taking cycling into account) should not be tested. However, the 800 charging cycles (see **Fehler! Verweisquelle konnte nicht gefunden werden.** A) defined for the tests already take this ageing process into account.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a test report as Annex 5 verifying that at least three rechargeable batteries have been analysed and all three comply with the requirements. The test report must be completed by a testing laboratory that fulfils the requirements for the competence of testing and calibration laboratories according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.1.4.3 Extending the warranty cover

Alternatively to the charging cycle test specified under Paragraph 3.1.4.2, the applicant can extend the warranty cover for the battery as required under Paragraph 3.1.4.1 to 48 months.

In this case, the applicant guarantees 500 charging cycles within a maximum of 48 months from the date of purchase. The residual capacity of the rechargeable battery must still be at least 60% of the rated capacity after 500 charging cycles or 48 months.

Note: The lifecycle test in the testing laboratory does not fully take into account those factors that would be expected to reduce the lifespan of the rechargeable battery in the field (temperatures below 20°C, longer storage in an unsuitable charging state, calendar ageing). These factors can, however, decisively accelerate the ageing of the rechargeable battery. Therefore, it is expected that 800 cycles and 80% of the rated capacity in the testing laboratory are comparable with 500 cycles and 60% of the rated capacity in the field.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the corresponding pages of the product documentation in Annex 3.

3.1.4.4 Rental system for rechargeable batteries

If the electric cycle is exclusively powered using a rechargeable battery that is offered as part of a rental system, the warranty requirements for those rechargeable batteries sold (as a component of the electric cycle) that are stated in the previous Paragraphs 3.1.4.1 and 3.1.4.3 no longer apply.

The applicant must guarantee that the rental system is maintained for at least 8 years from the purchase date of the electric cycle. Furthermore, the applicant must also guarantee in the rental agreement that if the capacity of the rechargeable battery falls below a stated value then the lessee has the right to receive a replacement.

The rental agreement must define the term of the contract and the costs that may arise during the term of the contract.

Disclaimers that do not permit the typical use of an electric cycle are not permitted as part of the rental contract.

It must be possible to extend the term of the contract to at least 60 months. The rental charge must not increase during the term of the contract.

Only those batteries that fulfil the charging cycle requirements in the laboratory tests according to Paragraph 3.1.4.2 may be placed into circulation within the rental system.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit information on the battery rental system including the rental contract for leasing the rechargeable batteries (Annex 6).

In order to verify compliance with the charging cycle requirements in the laboratory test according to Paragraph 3.1.4.2, the applicant shall submit a test report in Annex 7 verifying that at least three batteries were analysed and all three fulfil the requirement. The test report must be completed by a testing laboratory that fulfils the requirements for the competence of testing and calibration laboratories according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.1.5 Heavy metal content

The heavy metal content of the rechargeable batteries must not exceed the stated limits in Table 1:

Table 1: Limits for the concentrations of heavy metals in the rechargeable batteries

Metal	Concentration
Mercury	≤ 0.1 ppm
Cadmium	≤ 1.0 ppm
Lead	≤ 5 ppm
Arsenic	≤ 10 ppm

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a test report verifying that at least four rechargeable batteries have been analysed and all four comply with the requirements (Annex 8). The metal contents will be determined based on the methods in: "Überprüfung der Quecksilber-, Cadmium- und Blei-Gehalte in Batterien. Analyse von Proben handelsüblicher Batterien und in Geräten verkaufter Batterien. Erstellung eines Probenahmeplans, Probenbeschaffung und Analytik" (Testing the content of mercury, cadmium and lead in batteries. Analysis of samples of standard batteries and batteries sold in devices. Devising a sampling plan, sample procurement and analysis) from the Federal Institute for Materials Research and Testing (BAM), November 2011, or the "Battery Industry Standard Analytical Method - for the determination of Mercury, Cadmium and Lead in Alkaline Manganese Cells Using AAS, ICP-AES and Cold Vapour". Publishers: The European Portable Battery Association (EPBA), the Battery Association of Japan (BAJ), the National Electrical Manufacturers Association (NEMA; USA). April 1998", or using a corresponding method. The test report must be completed by a testing laboratory that fulfils the requirements for the competence of testing and calibration laboratories according to DIN EN ISO/IEC 17025 or is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory). The testing laboratory shall declare compliance with the above requirement.

3.1.6 Guaranteeing the take back of old batteries

The applicant must verify compliance with the manufacturer's take back and notification obligations in accordance with Articles 4 and 5 of the German Battery Act (BattG) (publication of the design of the old battery take back scheme in the BattG register maintained by the UBA).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the corresponding documentation (confirmation from the UBA about the corresponding entry in the BattG register) in Annex 9.

3.2 Safety requirements

3.2.1 General safety requirements

The rechargeable battery, as well as the cells used, must fulfil all of the applicable test requirements according to the latest version of EN 62133 for the relevant battery system or alternatively those in the draft standard CEN PrEN 50604-1 developed by the Technical Committee CENELEC TC 21X (or the resulting standard EN 50604-1).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a corresponding test report (Annex 10). The testing laboratory must be accredited according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.2.2 Mechanical safety

In terms of its mechanical stability and mechanical functions, the electric cycle must fulfil the requirements in the European draft standard PrEN 15194:2015 for pedelec 25s (or the resulting standard EN 15194, due to be published in 2016).

The following requirements apply to cargo bikes:

- Dynamic test of the complete electric cycle on a roller drum test rig, with at least the total permissible weight and the pedal drive.
- The electric cycle must have a parking brake if the permissible total weight exceeds 250 kg.

The following must be tested on the roller drum test rig:

- a) Seatpost: max. 75 kg
- b) Handlebars: 2 x 10 kg
- c) Pedals: 2 x 20kg
- d) Cargo area: (permissible overall weight) – (a+b+c)

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a corresponding test report (Annex 11). The testing laboratory must be accredited according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.2.3 Electrical safety

In terms of its electrical safety (including its battery and charging device), the electric cycle must fulfil the requirements in the European draft standard PrEN 15194:2015 for pedelec 25s (or the resulting standard EN 15194, due to be published in 2016).

In addition, the following requirements must be fulfilled:

- An additional test of the electrical safety according to EN 60335-1 where relevant, the charging process is understood to be carried out unattended.
- Additional test of the external or, if relevant, integrated charging device in accordance with EN 60335-2-29.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a corresponding test report (Annex 12). The testing laboratory must be accredited according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.3 Charging electronics

3.3.1 No load power consumption

The no load⁹ power consumption of the charging device must demonstrate the following values:

- Charging device without a status indicator: ≤ 1.0 watts
- Charging device with a status indicator: ≤ 2.0 watts

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and submit a test report according to the External Power Supplies Directive (EC) No. 278/2009 (Annex 13). The testing laboratory must be accredited according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory). The no load power consumption is to be measured over a time period of 10 minutes. The measurements are to be carried out with a mains supply voltage of $230V \pm 1\%$.

3.3.2 Protection against over-discharging and deep discharging of the rechargeable battery

The charging device or the charging electronics contained within the electric cycle must protect the rechargeable battery against over-discharging and deep discharging. The test must be carried out in accordance with EN 60335-2-29 on the relevant combination of charging device and rechargeable battery.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a corresponding test report (Annex 14). The testing laboratory must be accredited according to DIN EN ISO/IEC 17025. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.3.3 Charging status indicator

During the charging process, there must be an indicator showing the charging status of the rechargeable battery. This indicator must be readable on the charging device or the rechargeable battery.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and mark the corresponding sections of the product documentation (Annex 3).

⁹ In accordance with the External Power Supplies Directive (EC) No. 278/2009, "no load" describes a condition in which the input of an external power supply is connected to the mains power source, but the output is not connected to any primary load.

3.4 Exclusion of harmful substances

Polycyclic aromatic hydrocarbons (PAHs)

The use of polycyclic aromatic hydrocarbons (PAHs) in the materials used on the handlebar grips and the saddle. It must be verified that following maximum contents are not exceeded in the handlebar grips, gear levers and saddle:

- 0.5 mg/kg Benzo(a)pyrene
- 10 mg/kg sum of 18 PAH (EPA)¹⁰

In accordance with AfPS GS 2014:01, the sum of 18 PAHS (extended list of substances from the AtAv (the predecessor committee of the AfPS) based on the findings of the United States Environmental Protection Agency (EPA) (according to the list in ZEK Document 04-11) only considers PAH components whose level in the material is found to exceed 0.2 mg/kg.

Phthalates

The handlebar grips and saddle must not contain any phthalates that are named on the list of candidates (<http://echa.europa.eu/web/guest/candidate-list-table#download>) according to REACH.

Dimethyl fumarate (DMF)

If leather is used in the materials for the handlebar grips or the saddle, it must be verified that the concentration of dimethyl fumarate in the leather is not higher than 0.1 mg/kg in each case.

Chromium VI

If leather is used in the materials for the handlebar grips or the saddle, it must be verified that the maximum concentration of chromium VI does not exceed 0.2 mg/kg.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1, create a list of all of the leather and plastic materials used as Annex 15 and submit a written declaration from the manufacturer of the plastic or leather (Annex 16). The declaration shall verify that the maximum contents of PAHs, DMF and chromium VI (when using leather) are not exceeded and the prohibited phthalates are not added to the plastics. When applying for the Blue Angel ecolabel, the submitted declaration must not be older than 6 months.

3.5 Replacement and repair

3.5.1 Rechargeable batteries

It must be possible for the consumer to remove the rechargeable battery with standard tools. It must also be possible to reorder replacement batteries up to 5 years following the termination of production.

¹⁰ In accordance with AfPS GS 2014:01, the sum of 18 PAHS (extended list of substances from the AtAv (the predecessor committee of the AfPS) based on the findings of the United States Environmental Protection Agency (EPA) (according to the list in ZEK Document 04-11) only considers PAH components whose level in the material is found to exceed 0.2 mg/kg.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the corresponding pages of the product documentation in Annex 3.

3.5.2 Electric drive system (motor, electronics)

It must be possible to reorder the components for the electric drive system up to 5 years following the termination of production.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the corresponding pages of the product documentation in Annex 3.

3.5.3 Repairability

The applicant undertakes to make sure that the provision of spare parts for the repair of the electric cycles is guaranteed for at least 5 years following the termination of production.

Spare parts are those parts which, typically, may break down within the scope of the ordinary use of a product. Whereas those parts which normally exceed the life of the product are not to be considered as spare parts.

Spare parts also include compatible components that display at least the same product characteristics and thus the same or even an extended range of functions to the original part. The requirement is also considered to be fulfilled if the components can be connected via interfaces that are based on harmonised standards so that it can be assumed that components of the same or better quality are available on the market to replace a defect component.

The product documentation must contain information on the stated requirements.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the corresponding pages of the product documentation in Annex 3.

3.6 Recyclable design

All assemblies that contain electronic components (e.g. battery, cells, battery holder with charging electronics, display, lights, motor) must be designed so that they can be completely removed as one unit in just a few manual steps.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit the corresponding pages of the product documentation in Annex 3.

3.7 Consumer information

The documentation included with the electric cycle shall include both the technical specifications and also environmentally-relevant consumer information.

This must be supplied in printed form with the electric cycle and also be available on the Internet. The documentation must contain the following important user information:

- a) Information on suitable handling of the rechargeable batteries to promote a long lifespan with a high level of capacity:
 - ♦ Adequate charging (in a dry, optimal temperature, partial charging extends the lifespan, use of the associated charging device, etc.)
 - ♦ Adequate storage (in dry state, optimal temperature and charging status)
 - ♦ Optimal working temperature (avoid high temperatures, avoid cold-related loss of capacity in winter, better to park in the shade)
 - ♦ Safety information for minimising the risk of e.g. short circuits (cover the poles with tape for storage or disposal), fire, explosion, etc.
 - ♦ Information on the capacity in Ah and the energy content in Wh, as well as the guaranteed number of charging cycles
- b) Information on the disposal of rechargeable batteries:
 - ♦ Not in household waste
 - ♦ Take back scheme with dealers or recycling centres
- c) Information on adequate care of the electric cycle (e.g. not cleaning the electric cycle with a high pressure cleaner)
- d) Weight of the electric cycle in kg and permissible overall weight of the electric cycle in kg

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and submit the relevant product documentation in Annex 3.

3.8 Outlook

The following requirements will be examined again or supplemented in future revisions of these Basic Award Criteria:

Extending the scope to include multi-track electric cargo bikes

As soon as appropriate standards relating to multi-track electric cargo bikes have been formulated, it will be possible to extend the scope of the Basic Award Criteria. At the time these Basic Award Criteria were defined, the standard only covered single-track electric cargo bikes.

Requirements for the no-load operation of the charging device

The limit for the no load power consumption of the charging device (1.0 or 2.0 W) should be adapted to the requirements in the External Power Supplies Directive (EC) No. 278/2009 (EC) No. 278/2009 (to at least 0.5 or 1.0 W). Battery charging devices have not been covered up to now by the scope of the External Power Supplies Directive. Therefore, market data has been used as a starting point.

Compatibility of the charging interfaces

There is no standard for developing uniform interfaces between rechargeable batteries and charging devices that would enable every rechargeable battery to be charged with every charging device. It has not yet been possible for the only existing standard – the EnergyBus standard – to establish itself on the market.

As soon as a standard is available and usable, requirements for the compatibility of charging interfaces should be added.

Diagnosis interface

It should be examined whether a diagnosis interface for reading the technical parameters could be added.

Energy efficiency of the drive system

Suitable requirements for the efficiency of the drive motor should be added as soon as standard testing methods and test data for evaluating the efficiency of the motors are available.

4 Applicants and Parties Involved

Manufacturers or distributors of final products according to Paragraph 2 shall be eligible for application.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

5 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

Within the scope of such contract, the applicant undertakes to comply with the requirements under Paragraph 3 while using the Environmental Label.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2022. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2022 or March 31 of the respective year of extension.

After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant (manufacturer) shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organisations.

The Contract on the Use of the Environmental Label shall specify:

- Applicant (manufacturer/distributor)
- Brand/trade name, product description
- Distributor (label user), i.e. the above-mentioned marketing organisations.

Appendix A Test process for the laboratory test of the charging cycles according to Paragraph 3.1.4.2

The test begins (cycle no. 0) with discharging the battery: The rechargeable batteries are discharged at a constant current of 0.2 It A until their cut-off voltage. The cut-off voltage is here the discharge voltage (according to DIN EN 61960, the defined voltage at which it is no longer possible to discharge a cell or battery/rechargeable battery). The subsequent repeated process of charging and discharging (cycles 1-799 and cycle 800) should be completed in accordance with the specifications stated in the following table:

Test specifications for rechargeable lithium batteries/accumulators:

Cycle no.	Charging	Rest period in charged state	Discharging	Rest period in discharged state
1-799	Manufacturer's specifications or associated charging device	30 minutes	1.0 It A until cut-off voltage	30 minutes
800	Manufacturer's specifications or associated charging device	1 hour	0.2 It A until cut-off voltage	

The recovery capacity of the rechargeable battery determined in charging cycle 800 at 20°C must be at least 80% of the rated capacity. The discharging time for cycle 800 must last at least 4.0 hours.