BLUE ANGEL

The German Ecolabel

Mobile phones, smartphones and tablets

DE-UZ 106

Basic Award Criteria

Edition January 2022

Version 2

The Environmental Label is supported by the following four institutions:

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

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

Umwelt Bundesamt

The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labelling 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.

Jury Umweltzeichen

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.

RAL gGmbH

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, Nuclear Safety and Consumer Protection, 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

Mobile phones, smartphones and tablets have now become indispensable elements of information and communication technology. According to data collected by the German Federal Statistical Office, there were a total of 74.4 million mobile phones – including 58.5 million smartphones – in use in Germany in 2018. Data on the number of tablets was also collected for the first time and there were 25.2 million tablets in use across Germany.[1] This large number is especially important because a huge amount of resources are used in the production of the devices. Mobile phones, smartphones and tablets contain a variety of critical raw materials, which, on the one hand, cause environmental issues during mining and, on the other hand, often cannot be recycled in sufficient quantities. Just like many other ICT devices, they are manufactured under cost pressure and their supply chains are spread around the world. As a result, working conditions in the mining of the raw materials and the production of the devices are sometimes not up to international standards.
Those devices labelled with the Blue Angel environmental label face up to these challenges by having a particularly durable design – which reduces the consumption of resources. The devices can be easily recycled and repaired, while the manufacturers operate efficient take-back schemes to ensure that a large proportion of the raw materials in mobile phones can actually be fed back into the production cycle. The manufacturers of these mobile phones comply with the requirement for due diligence with respect to conflict materials and ensure that the devices are manufactured in a socially responsible manner.
Furthermore, devices certified with the ecolabel comply with the criteria for precautionary health protection. The results from the German Mobile Telecommunication Research Programme (DMF) – co-financed by the Federal Ministry for the Environment and the mobile network operators on the German market – do not give any reasons overall to doubt the protection offered by the limits placed on electromagnetic radiation and are consistent with the results of research

[1] https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Einkommen-Konsum-Lebensbedingungen/Ausstattung-Gebrauchsgueter/Tabellen/a-evs-infotechnik-d.html;jsessionid=062ED45D494568C74CF2FEA1BB809DB4.live721#fussnote-1-115502 (last accessed on 01/09/2021)

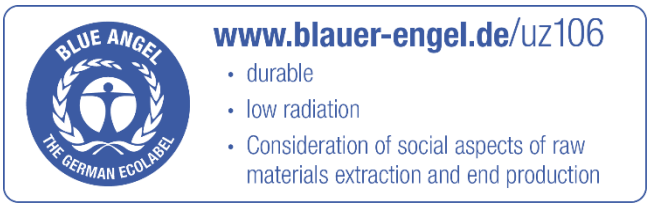
programmes in other countries. However, some studies[2] suggest that children may be affected differently than adults and could be more exposed to electromagnetic radiation. As questions about the health risks posed by long-term exposure to the radio waves emitted by mobile phones and smartphones have not yet been conclusively resolved, careful use of wireless communication technologies is still advisable for adults and especially for children. The International Agency for Research on Cancer (IARC) classified high-frequency electromagnetic fields as a possible carcinogen in 2011. For this reason and to provide fundamental protection against radiation by not fully exploiting the statutory exposure limits, these Basic Award Criteria include requirements in Paragraph 3.7 that go above and beyond the recommended limits for protecting against the known risks and are designed to minimise the exposure of the user as a precautionary measure. The aim of these precautionary measures is to avoid unnecessary exposure and minimise unavoidable exposure as far as possible.

1.3 Objectives 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 Blue Angel environmental label for mobile phones, smartphones and tablets may be awarded to devices featuring the following properties:

- Longevity
- Low user exposure to electromagnetic radiation
- Design that supports repair and recycling
- High-quality batteries
- Compliance with fundamental social standards
- In addition, the environmental label will also highlight those products whose manufacturers are actively working to improve take back and recycling systems

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 must be observed:

[2] German Mobile Telecommunication Research Programme (DMF), http://www.emf-forschungsprogramm.de/abschlussphase/DMF_AB.pdf

- The WEEE Directive (2012/19/EU)[3] implemented in German law in the Electrical and Electronic Equipment Act (ElektroG)[4] that regulates the disposal of products.
- The ROHS Directive (2011/65/EU)[5] implemented in German law in the German Material Ordinance for Electrical and Electronic Equipment (ElektroStoffV)[6] that regulates the pollutant content of products.
- The substance requirements defined by the EU Chemicals Regulation REACH (1907/2006/EC)[7] and the POP Regulation (850/2004/EC)[8].
- The External Power Supplies Directive (EC/278/2009)[9] that regulates the ecodesign requirements for external power supplies.
- The Battery Directive (2006/66/EC)[10] implemented in German law in the German Battery Act (BattG)[11].
- The RED Directive (2014/53/EU)[12] implemented in German law in the German Radio Equipment Act (FuAG)[13].
- The General Product Safety Directive (2001/95/EC)[14] implemented in German law in the German Product Safety Act (ProdSG)[15].

2 Scope

The Basic Award Criteria apply to mobile phones, smartphones and tablets.

Mobile phones are portable, cordless telephones that transmit telephone calls via mobile phone networks. The mobile phone is equipped with a module, e.g. a SIM card, eSIM or similar, which allows the identification of the individual subscriber. It is designed for battery operation and connection to the electricity grid via an external power supply is mainly for the purposes of recharging the battery. In addition to the telephony function, the mobile phone can provide several other functions, such as, for example, transmission of text messages, mobile use of

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3 Directive 2012/19/EU on waste electrical and electronic equipment (new version); WEEE Directive
4 Law for the sale, return and environmental disposal of electrical and electronic equipment, Electrical and Electronic Appliance Act from 20 October 2015; ElektroG
5 Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (new version); ROHS Directive
6 Ordinance to limit the use of hazardous substances in electrical and electronic equipment (Material Ordinance for Electrical and Electronic Equipment) from 19/04/2013; ElektroStoffV
7 Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorization, and Restriction of Chemicals; REACH Regulation
8 Regulation (EC) No. 850/2004 on persistent organic pollutants; POP Regulation
9 Regulation (EC) No. 278/2009 implementing directive 2009/125/EC (previously: 2005/32/EC) with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies; External Power Supplies Directive
10 Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators; Battery Directive
11 Law to revise the legal responsibility for waste batteries and accumulators; German Battery Act from 25/06/2009, BGBI. I S. 1582; BattG
12 Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment – Radio Equipment Directive– RED)
13 Law to revise the regulation on radio equipment and amend the German Telecommunications Act, as well as repeal the German Radio and Telecommunications Equipment Act, from 27 June 2017 (BGBI. I S. 1947); FuAG
14 Directive 2001/95/EC on general product safety.
15 Law for making products available on the market (Produktsicherheitsgesetz – ProdSG) from 8 November 2011.

Internet services, execution of programmes or recording and replaying video and audio signals. Mobile phones are also called cellular phones or cell phones.

Smartphones are mobile phones that are characterised by their WiFi connectivity, mobile use of Internet services (at least 4G) and the ability to run their own and third party software applications. A smartphone has an integrated touchscreen display with a diagonal screen size of between 4 and < 7 inches. Devices with more than one display and/or a foldable display are considered to be smartphones if at least one of the displays falls within this size range in an open or closed state. A smartphone is designed for battery operation and connection to the electricity grid via an external power supply is mainly for the purposes of recharging the battery.

A tablet is a type of notebook computer that is designed for mobile use, has an integrated touchscreen display with a screen diagonal of at least 7 inches but does not have an integrated or physically attachable keyboard in its supplied configuration. A tablet can connect to wireless networks at least via WiFi and optionally via support for mobile phone networks (at least 4G). It is designed for battery operation and connection to the electricity grid via an external power supply is mainly for the purposes of recharging the battery. Tablets are also characterised by their use of an operating system that enables mobile use of Internet services and the ability to run their own and third party software applications.

3 Requirements

3.1 State-of-charge indicator

The mobile phone, smartphone or tablet must have an integrated charge indicator that shows the current state of the battery charge during use and while charging. In addition, the device must clearly show when the charging process has been completed and indicate that the charging device should now be disconnected from the electricity grid.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the state-of-charge indicator is described and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.2 External power supply

The mobile phone, smartphone or tablet is offered for sale without an external power supply. An external power supply that does not have an integrated cable but rather a pluggable cable must be offered as an optional accessory. The external power supply must be equipped with the standard connections USB-A or USB-C.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1.

3.3 Charging interface

The charging interface on the device must be equipped for a standard USB-C connection.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1.

3.4 Rechargeable batteries

3.4.1 Replaceability of the battery

The mobile phone, smartphone or tablet must be designed so that it is possible for the user to replace the rechargeable battery under normal conditions either without the use of tools or using basic tools (class A according to EN 45554 §A.4.4, if it is not possible to use a supplied tool). The number of steps required to remove the battery must be fewer than 6, in accordance with the French Repairability Index[16]. All of fastening elements and connectors removed during this process must be reusable.

A rechargeable battery (hereinafter referred to as "battery") is a secondary cell designed to repeatedly restore its charge state using a special purpose power supply (charging electronics), i.e. it can be recharged. The battery contains one or more cells coupled together in a housing, plastic film or another suitable form. It can contain electronic control units and is equipped with connecting terminals or a connecting cable. Batteries are also called battery packs, electrochemical energy storage systems or rechargeable batteries. Definitions for the properties of the battery are defined in Appendix A.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the replacement of the battery is described and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.4.2 Battery capacity

The battery capacity must be measured in accordance with section 7.3.1 "Discharge performance at 20 °C (rated capacity)" of the currently valid version of the EN 61960 standard (currently: DIN EN 61960-3). The rated capacity (C) determined in this way must be at least as high as the nominal capacity (N) indicated on the battery and in the product documentation.

Compliance verification

The applicant shall state the measured rated capacity (C) in Annex 1 and submit a test report as Annex 3 to the contract verifying that at least three batteries have been analysed and all three comply with the requirement. The test report must be completed by a testing laboratory

[16] Document to calculate the repairability index. The document explains when an operation should be considered a separate step on page 5. https://www.indicereparabilite.fr/wp-content/uploads/2021/01/210107_Instructions-manual-repairability-index.pdf

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 or the battery manufacturer 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).

3.4.3 Battery marking

The battery (or battery pack) must be marked in accordance with EN 61960 in order to provide at least the following information:

- Nominal capacity (N)
- Nominal voltage
- Type designation
- Date of manufacture (may be coded)

This information (except for the date of manufacture) must also be given in the product documentation. If the date of manufacture is coded, the product documentation must include instructions for decoding this information.

In addition, the battery (or battery pack) must be marked with a recycling symbol according to ISO 7000 (graphical symbols for use on equipment) and specify the cell chemistry of the battery (e.g. Li-ion, Ni-MH). In accordance with the recommendations in the IEC 62902 standard (Secondary batteries: Marking symbols for identification of their chemistry), this symbol must be colour-coded as follows:

Colour: blue (Pantone 312)

Compliance verification

The applicant shall declare compliance with the requirements, state the nominal capacity (in mAh or Ah), nominal voltage, type designation and cell chemistry in Annex 1 to the contract, mark the corresponding sections of the product documentation in which this information is provided and submit the relevant pages of the product documentation as Annex 2 to the contract. In addition, the applicant shall submit a photo of the battery as Annex 6 to the contract that shows all of the information described above.

3.4.4 Durability of the battery

The battery must achieve a minimum of 800 full charge cycles:

$$\text{full charge cycles} \geq 800$$

A full charge cycle is understood to be the draining of a quantity of electricity (in ampere hours) from the battery that is equal to its nominal capacity (N), which was previously stored in the battery by one or more charging processes.
The minimum number of full charge cycles achievable by the battery must be specified in the product documentation.
In a fully charged state after 800 full charge cycles, the battery must also have a remaining capacity (Q_{Rem}) of at least 80% of the nominal capacity (N).

$$Q_{Rem} \geq 80\% * N$$

Calculation of the full charge cycles and measurement of the remaining capacity must be carried out in accordance with the requirements in Appendix A.

Compliance verification

The applicant shall submit the report on the durability test for a minimum of three batteries tested according to Appendix A as Annex 4. The test report must document the numbers of full charge cycles achieved by the batteries, as well as the remaining capacities recorded at the end of the tests.
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 or the battery manufacturer 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).
In addition, the applicant shall state in Annex 1 to the contract the minimum number of full charge cycles achievable by the battery, mark the corresponding sections of the product documentation and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.4.5 Battery safety

Batteries in mobile phones and smartphones must comply with the test requirements in the currently valid version of the EN 62133-2 standard.
Batteries in tablets must comply with the test requirements in the currently valid version of the IEC 62386-1 standard.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a test report in Annex 5 verifying that the battery and the cells used comply with the test requirements according to the currently valid version of EN 62133-2 (for mobile phones and smartphones) or IEC 62386-1 (for tablets). 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).

3.5 Longevity

3.5.1 Warranty

The applicant undertakes to offer a free warranty lasting at least 3 years for the mobile phone, smartphone or tablet (excluding the battery).
A free warranty lasting at least 1 year must be offered for the battery, which covers a remaining capacity of at least 80% of the nominal capacity, provided that the device is properly used and charged with the manufacturer's own or another suitable charging device.
The product documentation must contain information about the warranties.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the warranties are described and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.5.2 Availability of spare parts and repairs

The applicant undertakes to guarantee the provision of at least the spare parts listed in Table 1 for the repair of the devices from immediately after the device is placed on the market until at least 5 years after the last unit of the relevant model is sold on the market for the first time. The spare parts must also be made available individually at reasonable prices by the manufacturer themselves or a third party. All spare parts must have at least the same or better functionality and performance than the original parts.

Tabelle 1: Spare parts that must be made available for at least 5 years after the last unit of the relevant model is sold on the market for the first time

Device type	**Spare parts**	
	For consumers	**For professional repairers[17], [18], [19]**
Mobile phones	Battery, display module, SIM and memory card holder[20], back panel or back panel module, front camera module, main camera module, external connections	Microphone, buttons, speakers, hinge module, mechanical folding mechanism for other parts that are essential for the functionality of the device
Smartphones	Battery, display module, SIM and memory card holder[20], back panel or back panel module, front camera	Microphone, buttons, speakers, hinge module, mechanical folding mechanism for displays, mechanical mechanism for rolling up

[17] A person or a company which provides services for the professional repair and maintenance of mobile phones, smartphones or tablets.
[18] All of the spare parts accessible to consumers must also be made available to professional repairers.
[19] The manufacturer must provide information on his website on how professional repairers can receive access to information and spare parts. Manufacturers, importers or authorised representatives can request verification from professional repairers that:
- they have the required professional expertise to repair mobile phones, smartphones or tablets and comply with the rules and regulations for the repair of electrical devices. Reference to an official registration system for professional repairers (if such registration exists) must be accepted by the manufacturer, importer or authorised representative as verification of compliance with this requirement;
- the professional repairer has taken out insurance to cover their liability with respect to their work activities.

[20] Concerns SIM and memory card holders, which are integrated in the form of an external, removable tray.

	module, main camera module, external connections	displays, other parts that are essential for the functionality of the device
Tablets	Battery, display module, SIM and memory card holder[20], back panel or back panel module, front camera module, main camera module, external connections	Microphone, buttons, speakers, display unit, front panel, digitizer unit, folding mechanism for displays, mechanism for rolling up displays, other parts that are essential for the functionality of the device

Consumers and professional repairers must be given access to the required spare parts (according to Table 1) and repair information (e.g. instructions, illustrations or exploded view drawings). The mobile phones, smartphones or tablets must be designed in such a way that consumers are able to replace the relevant spare parts using basic tools (class A according to EN 45554 §A.4.4) and with a reasonable amount of effort so that the same functionality as before is achieved after the replacement of the spare part.
The mobile phones, smartphones or tablets must be designed in such a way that professional repairers are able to replace the relevant spare parts using product-specific tools (class B according to EN45554 §A.4.4) and with a reasonable amount of effort so that the same functionality as before is achieved after the replacement of the spare part.
The product documentation must include information on the provision of spare parts and about repair services. The distributor undertakes to provide all users with easily accessible descriptions of the repair options for the device online.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the provision of spare parts is indicated and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.5.3 Software updates[21]

The applicant undertakes to guarantee the provision of security updates for at least seven years and function updates for at least three years after the last unit of the relevant model is placed on the market. The updates must be provided free of charge. The updates must not result in a deterioration of the performance of the device.

Users must have the option of deinstalling the updates and reinstalling the version of the operating system that was running on the device before the update, unless the device offers at least the same level of performance when using the same functions after the update.

The security updates must be made available to users at least two months after the publication of the source code for an update to the underlying operating system or, if this source code is not published, after the release of an update to the same operating system by the supplier of the operating system or another product of the same brand.

[21] The requirement formulated here will become invalid when the final ecodesign requirements are published. An exception is made here for the provision of security updates. These must still be made available for seven years, even if the ecodesign requirements state a shorter period of time.

The function updates must be made available to users at least three months after the publication of the source code for an update to the underlying operating system or, if this source code is not published, after the publication of an update to the same operating system by the supplier of the operating system or for another product of the same brand.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the security and function updates are described and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.5.4 Data deletion

To enable the reuse of the device, it must be designed so that users can completely and securely delete all personal data themselves with the help of free software provided by the manufacturer and without the need for paid software. As an alternative to deleting the data, it is also possible to enable users to encrypt the personal data on the data medium using already supplied software that also enables the secure deletion of the decryption key.
In addition, the device must also have a software function that resets the device to its factory settings.
The product documentation must describe the process for securely deleting data and resetting the device to the factory settings.

Note: It must not be possible to restore the personal data using commercially available recovery software tools that are used on the intact mobile phone, smartphone or tablet, where relevant, with the help of another computer.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the data deletion and reset function to restore the factory settings are described and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.6 Take back and recycling

3.6.1 Take back

The applicant must operate their own take-back scheme for the type of device included in the application for the ecolabel (mobile phone, smartphone or tablet) that ensures that all collected devices are sent for reuse or professional recycling. The applicant must actively communicate this system to its customers. This take-back scheme can be based on collections at branches, return campaigns, deposit systems or similar schemes. A simple reference to the rules for the collection of devices according to the German Electrical and Electronic Equipment Act (ElektroG) is not sufficient. The collection system can be organised by the applicant themselves, by contracting partners and/or together with other manufacturers of mobile phones, smartphones or tablets.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit information or the type and organisation of the collection system in Annex 7. In addition, the applicant shall report the number of devices collected (number of mobile phones, smartphones or tablets collected by the applicant during the previous year) to RAL GmbH on an annual basis (printed form for Annex 8 to the contract).

3.6.2 Recyclable design

Notwithstanding Article 15 (1) of Directive 2012/19/EU (WEEE Directive), the applicant shall provide the dismantling information that is required to access one of the products or components stated in Annex VII (1) of Directive 2012/19/EU on a freely accessible website.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract.

3.7 Material requirements

3.7.1 Plastics used in the housing and housing parts

The plastics used in the housing and housing parts may not contain any substances with the following properties as a constituent component[22]:

a) Substances which are identified as particularly alarming under the European Chemicals Regulation REACH (1907/2006/EC) and which have been incorporated into the list drawn up in accordance with Article 59, Paragraph 1 of the REACH Regulation (so-called "list of candidates").[23]

b) Substances that according to the CLP Regulation[24] have been classified in the following hazard categories or which meet the criteria for such classification[25]:
   - carcinogenic in categories Carc. 1A or Carc. 1B
   - germ cell mutagenic in categories Muta. 1A or Muta. 1B
   - reprotoxic (teratogenic) in categories Repr. 1A or Repr. 1B

Halogenated polymers are not permitted in the housing and housing parts. Neither may halogenated organic compounds be added as flame retardants. In addition, no flame retardants classified according to the CLP Regulation as carcinogenic in category Carc. 2 or as hazardous to water in category Aquatic Chronic 1 may be added to the product.

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[22] Constituent components are substances added to the product as such or as part of a mixture and remain there unchanged in order to achieve or influence certain product properties. This does not apply to residual monomers that have been reduced to a minimum.

[23] The version of the list of candidates at the time of application is valid. The list of candidates in its relevant version can be found under the following link: REACH list of candidates.

[24] Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures, short: CLP (Classification, Labelling and Packing). It replaces the old directives 67/548/EEC (Dangerous Substances Directive) and 1999/45/EC (Dangerous Preparations Directive).

[25] The harmonized classifications and labellings of hazardous substances can be found in Annex VI, Part 3 of the CLP Regulation. Furthermore, a comprehensive classification and labelling inventory, which also includes all of the self-classifications of hazardous substances made by manufacturers, has been made available to the public on the website of the European Chemicals Agency: ECHA classification and labelling inventory.

The hazard statements (H Phrases) that correspond to the hazard categories can be found in Appendix B: "Assignment of hazard categories and H Phrases".
The following is exempt from this rule:

- fluoroorganic additives (e.g. anti-dripping agents) used to improve the physical properties of plastics, provided that they do not exceed a proportion of 0.5 percent by mass;
- plastic parts with a mass of less than or equal to 10 g, whereby in the case of housings with multiple parts, the total of the individual parts made of the same plastic is definitive for determining the mass.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and submit a list of the plastics used in the housing according to Annex P-L 10 for those housings made of plastic with a mass greater than 10 grams. For the listed parts, the applicant shall submit a written declaration from the plastics manufacturer or guarantee the provision of these documents to RAL gGmbH. The declaration shall confirm that the excluded substances have not been added to the plastics and provide a chemical description of the flame-retardant materials used including the CAS number and its rating (H Phrases) (Annex P-M to the contract). When first applying for the Blue Angel environmental label, the submitted declaration must not be older than 6 months. If one applicant submits additional applications for the labelling of products that contain the same plastics, the submitted declarations may be presented unchanged during the term of the Basic Award Criteria. Notwithstanding this, RAL shall be entitled to ask for an updated version of the declarations if the German Environment Agency (Umweltbundesamt) finds that product-relevant substances have been added to the list of candidates.

3.7.2 Use of biocidal silver

The use of biocidal silver on touchable surfaces is not permitted.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract.

3.8 Electromagnetic radiation

Devices to be labelled with the ecolabel must be designed so that the specific absorption rate (SAR) of the radio-frequency electromagnetic radiation emitted by the device – locally averaged over 10 grams of tissue – does not exceed the following values:
a) operated next to the ear 0.5 watts per kilogram (only mobile phones and smartphones)
b) operated in close proximity to the body 2.0 watts per kilogram

Compliance verification

The maximum SAR value for operation next to the ear shall be determined in accordance with DIN EN 62209-1 and the maximum SAR value for operation in close proximity to the body shall be determined in accordance with DIN EN 62209-2. In both cases, the maximum SAR shall be determined taking into account the conditions of use that can reasonably be anticipated, including the simultaneous operation of the radio interfaces provided by the device and without any distance between the device and body phantom.

The applicant shall declare compliance with the requirements in Annex 1 to the contract and submit the test report from an independent testing laboratory in Annex 9. 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 and is accredited for measurements according to DIN EN 62209-1 and DIN EN 62209-2. Testing laboratories commissioned by the applicant must be connected to a notified body[26] appointed by the Federal Network Agency in accordance with the RED Directive 2014/53/EU[27].

3.9 Additional functions

The mobile phone, smartphone or also tablet (using software to hold calls) must have the technical capabilities needed to make phone calls without holding the device close to the ear or mouth.
In addition, the mobile phone, smartphone or tablet must be equipped with:

a) a physical interface for connecting a headset (combination of headphones and microphone)
b) a hands-free function

The devices must also:

c) be equipped with an energy saving mode
d) and offer a "battery health" software

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract, mark the corresponding sections of the product documentation in which the headset interface and hands-free function are described and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.10 Social responsibility of companies

3.10.1 Due diligence of companies in the sourcing of raw materials

The manufacturer must carry out due diligence with respect to human rights for the conflict materials tin, tantalum, tungsten and their ores as well as gold and cobalt in the mobile phones, smartphones and tablets by implementing the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas"(in its currently valid version).

Compliance verification

The applicant shall verify compliance by submitting a report from the manufacturer of the devices in Annex 10. The report must cover the entire process for due diligence with respect to human rights in the supply chain for the conflict materials tin, tantalum, tungsten, gold and cobalt in accordance with the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas" (in its currently valid version) and be audited by an

[26] http://eur-lex.europa.eu/legal-content/DE/ALL/?uri=uriserv%3AOJ.L_.2014.153.01.0062.01.DEU
[27] See footnote 12.

independent, third party auditing body (Annex 11). The auditing body must meet the requirements for independence (Chapter VIII(A) of the Fair Labor Association (FLA) Charta), expertise and accountability (ISO 19011) of the independent, third party auditing body. Reports from the following auditing bodies will be recognised in all cases:

- *Reports from an RBA-approved auditor based on an audit according to the RBA VAP Standard in section D7 of the currently valid version of the Responsible Business Alliance Code Of Conduct,*
- *Auditing bodies accredited according to SA 8000,*
- *Reports from other auditing bodies may be approved upon application to the German Environment Agency.*

After successful auditing of the report by a third party auditing body, the applicant shall provide RAL gGmbH with a weblink to the published report from the manufacturer that covers all steps of the OECD due diligence process (Annex 1). The report must not be more than two years old at the time the application is submitted.

3.10.2 Support for local initiatives to promote responsible mining

The manufacturer must verify for the conflict materials tin, tantalum, tungsten and their ores as well as gold and cobalt in the mobile phones, smartphones and tablets that he actively supports local initiatives that promote the responsible mining and trade of these conflict materials in conflict-affected and high-risk areas. Initiatives in the region should follow a holistic approach and address both human rights issues as well as other relevant social and environmental issues.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and confirm that the manufacturer of the devices (or also the parent company) supports at least one of the following local initiatives to promote responsible mining:

- *ITSCI Programme for Responsible Mineral Supply Chains*
- *Fair Trade Gold*
- *Fairmined Gold*
- *Responsible Minerals Initiative*
- *The European Partnership for Responsible Minerals (EPRM)*
- *Fair Cobalt Alliance*
- *Cobalt Action Partnership*
- *Other initiatives may be approved upon application to the German Environment Agency.*

Membership or a partnership of the manufacturer of the devices in one of the above-mentioned initiatives will be accepted as verification. This membership can be verified, for example, by the presence of the manufacturer's name on the list of members on the website of the relevant initiative(s).

3.10.3 Social sustainability in the manufacturing process

The manufacturer must ensure compliance with the following fundamental working conditions during the manufacturing process for the mobile phones, smartphones and tablets.
The ILO fundamental labour standards:

- Freedom of association and collective bargaining (ILO C087 and C098),
- Non-discrimination (ILO C100 and C111),
- Prohibition of forced labour (ILO C29 and C105),
- Prohibition of the worst forms of child labour and minimum age (ILO C182 and C138)

Other ILO standards on relevant social risks:

- Occupational health and safety (ILO C155)
- Safety in the use of chemical substances (ILO C170)
- Payment of the statutory minimum wage (for a standard working week) (ILO C131)
- Hours of work (ILO C001)
- Social security (ILO C102)

The obligation to comply with the requirements also extends to levels 1 and 2 of the supply chain.
The individual levels of the supply chain are defined according to (BMI/Bitkom 2019)[28]:

- Level 1: the final production site and, if only product finishing is carried out at the final production site, also their direct suppliers;
- Level 2: all direct suppliers to the production sites in level 1;

The essence of the occupational and social standards covered by these requirements must also be met even if the national law in a particular country has not ratified one or more of the ILO standards or they have not yet been implemented in national law.

Compliance verification

The manufacturer shall state the name and location of the production sites in level 1 in Annex 12. The manufacturer shall declare compliance with the above-mentioned requirements for these production sites in Annex 1 by 01/01/2023 at the latest.
Certification (Annex 13) in accordance with the following standards will be accepted:

- *the audit standard SA 8000[29]. It is not necessary to submit certificates to verify that any compliance issues that were identified have now been resolved for this audit standard.*
- *The audit standard RBA VAP Recognition Program[30] platinum/gold. It is not necessary to submit certificates to verify that any compliance issues that were identified have now been resolved for this audit standard. The audit standard RBA VAP Recognition Program silver is recognised, insofar as the final audit confirms that there were no priority findings related to the ILO standards promoted in the DE-UZ 106 Basic Award Criteria. Verification of compliance with this requirement can, for example, be provided by disclosing the detailed evaluation in the audit results with respect to the ILO standards promoted in the DE-UZ 106 Basic Award Criteria.*

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[28] BMI/Bitkom (2019), Procurement Agency of the Federal Ministry of the Interior & the German Association for Information Technology, Telecommunications and New Media, Joint Declaration on social sustainability in IT procurement in the public sector, version: 2020
[29] SA8000® Standard, SA8000:2014, https://sa-intl.org/resources/sa8000-standard/, Version: 2020
[30] Responsible Business Alliance, Validated Assessment Program (VAP), http://www.responsiblebusiness.org/vap/about-vap/, Version: 2020

- *Certificates from other initiatives may be approved upon application to the German Environment Agency. The German Environment Agency bases its approval on the criteria in the declaration issued by BITKOM and the Procurement Agency of the BMI.*
- *Alternatively, the applicant can verify compliance by submitting an audit report for the manufacturer of the devices from an RBA-approved auditor or an auditor accredited in accordance with SA 8000 in Annex 13. Or the report must be created by an independent testing institution accredited*[31] *according to ISO/IEC 17065 that can verify compliance with the above-mentioned requirements. The audit on which the report is based must not be more than 3 years old when the application is submitted.*
  The manufacturer of the devices is obligated to submit revisions of the verifications at regular intervals if the contents of his declaration have changed. The frequency at which revisions of the verifications need to be submitted is determined based on the assignment of the production sites to levels 1 and 2 according to the country-specific risk categories in the currently valid ranking for the SA 8000 Country Risk Assessments Process, which is based on the World Governance Indicators (WGI)[32]. If the relevant production sites in levels 1 and 2 are in countries in risk category 1, a revision must be submitted on an annual basis. If the relevant production sites in levels 1 and 2 are in countries in risk category 2, a revision must be submitted every 24 months. If the production sites in levels 1 and 2 are in countries in risk category 3, a revision must be submitted every 36 months. If any deficiencies are identified in the relevant revision or audit, a corrective action plan will be implemented. This includes an obligation for the applicant and relevant suppliers to provide corresponding information to RAL gGmbH and a six-month grace period for the correction of the deficiencies and the provision of supplemental verifications.

3.11 Sales packaging

The plastics used for the sales packaging of the devices are not permitted to contain any halogenated polymers.
Paper and cardboard in the packaging must contain at least the following proportions of recycled fibres for the following packaging materials:

- Paperboard: 80%
- Corrugated cardboard: 25%
- Solid fibreboard: 40%
- Wound tubes: 90%

Alternative rules for sales packaging made out of paper and cardboard:
The packaging design must be as simple as possible and must take into account easy reusability and the environmental impact related to disposal of the packaging. The distributor must provide detailed information, including the exact proportion of recycled fibres used in the packaging. Insofar as some virgin fibres from wood are used in the manufacture of the packaging, it is imperative from an ecological viewpoint that the wood is sourced from sustainably managed forests and forestry companies with high ecological standards.
The following certificates will be accepted:

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[31] Accreditation must be issued by an accreditation body who is a signatory of the "IAF Multilateral Recognition Agreement (MLA)". https://www.iaf.nu/articles/IAF_MLA/14 Version: 2020
[32] https://sa-intl.org/resources/country-risk-assessment-process-for-sa8000/

- FSC 100% and FSC Recycled from the Forest Stewardship Council
- PEFC Recycled and PEFC Regional from the PEFC Council (Programme for the Endorsement of Forest Certification Schemes)
- Certification according to the Naturland standard.

Compliance verification

The distributor shall declare compliance with the requirements for plastic (Annex 1). For paper and cardboard, the distributor shall either declare that the packaging materials used for the products contain at least the stated proportions of recovered fibres (Annex 1) or provide detailed information on the packaging in Annex 14 and also submit corresponding certificates for the fibres.

3.12 Operating instructions

The documentation included with the devices must include both technical specifications and environmental and health-related consumer information. The documentation must be installed on the mobile phone, smartphone or tablet, be easily accessible on the Internet or supplied as a data medium or in printed form together with the device. The following important user information must be included in the documentation and also be accessible via the manufacturer's website:

a) Information on the significance and correct interpretation of the state-of-charge indicator (see Paragraph 3.1).
b) Instructions on disconnecting the charger from the electricity grid after the completion of the charging process in order to reduce no-load losses.
c) Instructions that charging on PCs that are not currently in use should be avoided in order to reduce power consumption during charging.
d) Information on the use of a suitable charging device.
e) Information on how to extend the battery life.
f) Instructions for replacing the battery (see Paragraph 3.3.1).
g) Information on the nominal capacity, nominal voltage and type designation of the battery, as well as information on the recycling process (see Paragraph 3.3.3).
h) Indication of the number of full charge cycles achievable by the battery (see Paragraph 3.3.4).
i) Information on the warranty periods for the mobile phone, smartphone or tablet and the battery, as well as on the warranty conditions (see Paragraph 3.4.1).
j) Information on the availability of spare parts and repair services (see Paragraph 3.4.2).
k) Information on software updates (see Paragraph 3.4.3).
l) Information on secure data deletion and the reset function to restore factory settings (see Paragraph 3.4.4).
m) Information on how important proper disposal of the product is for the environment and resources, as well as information on the take-back scheme (see Paragraph 3.5.1).
n) Information on environmentally-friendly disposal at the end of the product’s service life in accordance with the German Electrical and Electronic Equipment Act (Elektrogesetz), as well as instructions that the battery should not be disposed of as normal household waste but instead should be taken to a battery collection facility.
o) Specification and explanatory information on the SAR value (see Paragraph 3.8).

p) Information on how to reduce health effects of radio waves when using the mobile phone, at least by recommending the use of a headset or the hands-free function (see Paragraph 3.8).
q) Information that the device should be carried on a certain side of the body when operated in close proximity to the body, or when carried in close proximity to the body in a state ready for reception or use, in order to minimise the exposure to electromagnetic waves as a precautionary measure. (see Paragraph 3.8).
r) Information that activating the quick charging mode will have a negative impact on the durability of the battery.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1, mark the corresponding sections of the product documentation that refer to points a) – r) and submit the relevant pages of the product documentation as Annex 2 to the contract.

3.13 Outlook

Based on the ecodesign requirements, further discussions will be held in the future to decide whether devices with particularly durable batteries e.g. charge cycles of much > 1,000 should be subject to less strict requirements with respect to the removability of the battery than smartphones with less durable batteries.

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, 2025.
They shall be extended by periods of one year each, unless terminated in writing by March 31, 2025 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 Determining the durability of the battery

The following definitions are used for determining the durability of the battery:

Rated capacity (C): Quantity of electricity (in ampere hours) declared by the manufacturer of the cells that a single cell or composite cell can deliver during a 5-hour period when charged, stored and discharged according to the conditions specified in section 7.3.1 of EN 61960 (see Paragraph 3.4.2).

Nominal capacity (N): Quantity of electricity (in ampere hours) declared by the manufacturer of the battery or battery pack on the battery and in the product documentation that is stored in the battery and can be delivered by it at a discharge current specified by the manufacturer. The nominal capacity is normally the same as the rated capacity. The manufacturer may, however, give a value lower than the rated capacity.

Remaining capacity (Q_{Rem}): Quantity of electricity that can be withdrawn from the charged battery ("Full Charge Capacity" according to Battery System Specifications[33]) after performing the charge cycle test for determining the number of full charge cycles achievable by the battery (see below). The remaining capacity decreases due to cyclization of the battery.

Charge cycle: According to the EN 61960 standard, a charge cycle means the charging of a battery according to manufacturer's specifications and subsequent discharging of the battery to the end-of-discharge voltage.

Full charge cycle: A full charge cycle means the charging of a battery and the withdrawal of a quantity of electricity (in ampere hours) in the amount of its nominal capacity (N). The difference between a full charge cycle and the charge cycle according to EN 61960 is that a charge cycle is not defined by reaching the end-of-discharge voltage but by the quantity of energy withdrawn, which is specified by the nominal capacity (N). A full charge cycle can require more (or less) than one charge cycle.

Preparation for the test

a) Determination of the rated capacity (C) in accordance with EN 61960, section 7.3.1 "Discharge performance at 20 °C (rated capacity)"
b) Determination or specification of the nominal capacity (N)
c) Full discharge of the battery to the end-of-discharge voltage

Performance of the test

The tests must be carried out on a minimum of three batteries in accordance with the sample size specified in EN 61960. All three batteries must fulfil the specified requirements.
The tests must be carried out with charge and discharge currents, an ambient temperature and respective periods of rest according to EN 61960, section "7.6.2 Endurance in cycles at a rate of 0.2 I_t A".

[33] Smart Battery System Specifications, Smart Battery Data Specification, Revision 1.1, http://smartbattery.org/specs/sbdat110.pdf

- **Charge cycle test**

a) Charge the battery
b) Period of rest after charging
c) Discharge the battery
d) During discharge: Measure the quantity of electricity delivered (Q_i)
e) Period of rest after discharge

The charge and discharge processes must be repeated (starting at 1.) at least until the total of the quantities of electricity delivered (Q_i) reaches at least 800 times the amount of the nominal capacity (N):

$$\sum_{i=1}^{n} Q_i \geq 800 * N \; [Ah]$$

During the test cycle, the quantities of electricity delivered (Q_i) must not fall below 75% of the original nominal capacity (N). Otherwise, the test will have been failed.
This means that the following must apply for each cycle i:

$$Q_i \geq 75\% * N \; ; \; i = \{1, \ldots, n\}$$

- **Determining the remaining capacity**

Following performance of the cycle test described above, the battery's remaining capacity (Q_{Rem}) must be determined:

a) Charge the battery to its maximum level according to manufacturer's specifications
b) Period of rest after charging
c) Discharge the battery to the end-of-discharge voltage
d) During discharge: measure the quantity of electricity delivered.
e) This quantity of recovered charge is called the remaining capacity (Q_{Rem}).

For compliance with the requirements for the ecolabel, the remaining capacity (Q_{Rem}) must be at least 80% of the original nominal capacity (N):

$$Q_{Rem} \geq 80\% * N$$

Compliance with this requirement is also a prerequisite for determining the number of full charge cycles, as described in the following section.

- **Determining the number of full charge cycles**

In order to be able to determine the number of full charge cycles, the remaining capacity (Q_{Rem}) after performance of the cycle test described above must be at least 80% of the original nominal capacity (N) (see preceding condition). The number of full charge cycles must be calculated as the quotient of the total of the quantities of electricity delivered in the cycle test (Q_i) and the nominal capacity:

$$\text{Full charge cycles} = \frac{\sum_{i=1}^{n} Q_i}{N}$$

- **Simplified calculation rule**

If the number of charge cycles that can be achieved by the battery has been determined using a cycle test according to EN 61960 (section 7.6 Endurance in Cycles) or a comparable method that includes the cyclic maximum charging of the battery and the discharge of the battery to the end-of-discharge voltage, a simplified calculation method can be used to calculate the number of full charge cycles. This method can also only be used if, following performance of the cycle test, the remaining capacity (Q_{Rem}) is at least 80% of the original nominal capacity (N).
The number of full charge cycles can be calculated in a simplified way by multiplying the number of charge cycles achieved in the cycle test by the quotient of the average quantity of electricity delivered ($Q_{i\_average}$) and the nominal capacity (N):

$$\text{Full charge cycles} = \text{Charge cycles} * \frac{Q_{i\_average}}{N}$$

- **Documentation of the tests**

The test report must contain at least the following information:

- Name of the testing laboratory
- Confirmation of the testing laboratory's competence
- Name of the test method (e.g. EN 61960)
- For each of the three batteries tested:
  - Nominal capacity (N)
  - Remaining capacity (Q_{Rem}) after performance of the test
  - Number of full charge cycles achieved
  - If the simplified method of calculation is used: average quantity of electricity delivered ($Q_{i\_average}$).

Appendix B Assignment of hazard categories and H Phrases

The following table assigns the hazard categories for the general exclusion of substances to the corresponding hazard statements (H Phrases).

Tabelle 2: CLP Regulation (EC) No. 1272/2008

Hazard category	H Phrases	Hazard statement
Carcinogenic substances		
Carc. 1A Carc. 1B	H350	May cause cancer.
Carc. 1A Carc. 1B	H350i	May cause cancer if inhaled.
Carc. 2	H351	Suspected of causing cancer.
Germ cell mutagenic substances		
Muta. 1A Muta. 1B	H340	May cause genetic defects.
Reprotoxic substances		
Repr. 1A Repr. 1B	H360D	May damage the unborn child.
Repr. 1A Repr. 1B	H360F	May damage fertility.
Repr. 1A Repr. 1B	H360FD	May damage fertility. May damage the unborn child.
Repr. 1A Repr. 1B	H360Df	May damage the unborn child. Suspected of damaging fertility.
Repr. 1A Repr. 1B	H360Fd	May damage fertility. Suspected of damaging the unborn child.
Environmental hazards		
Aquatic Chronic 1	H410	Very toxic to aquatic life with long-lasting effects.