The German Ecolabel

BLUE ANGEL

Computers, keyboards and mice

DE-UZ 78

Basic Award Criteria

Edition July 2024

Version 1

The Environmental Label is supported by the following four institutions:

The Federal Ministry for the Environment is the owner of the label, defines the fundamental guidelines for the award of the Blue Angel ecolabel and appoints the Environmental Label Jury.

The German Environment Agency with its specialist department for "Ecodesign, Eco-Labelling and Environmentally friendly Procurement" acts as the office of the Blue Angel ecolabel. It develops the technical criteria including the required compliance verifications in cooperation with relevant interest groups.

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, churches, young people and the German federal states.

RAL gGmbH is the awarding body for the environmental label. It examines the applications submitted by companies for the use of the Blue Angel ecolabel and concludes the "Contracts on the Use of the Environmental Label". It also monitors correct use of the ecolabel.

Please use the following format when adding citations:
German Environment Agency (2024): Blue Angel ecolabel – Computers, keyboards and mice (DE-UZ 78). Edition July 2024, Version 1. RAL gGmbH (Publisher). Bonn. Available online at: www.blauer-engel.de/uz78 (accessed on x/y/20xy).

If you require further information please contact:
RAL gGmbH
RAL UMWELT
Fränkische Straße 7
53229 Bonn
Tel: +49 (0) 228 / 6 88 95 - 190
E-Mail: umweltzeichen@ral.de
www.blauer-engel.de

Edition July 2024 (New edition), Version 1 (07/2024): term of validity until 31/12/2028

Table of contents

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 Environment 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 these conditions.

1.2 Background

Computers have become an indispensable part of information and communication technology in today's society. According to Statista[1], around 11 million stationary and mobile computers (excluding tablets) were sold in 2022 in Germany. Around 96 percent of companies in Germany used computers in 2019 (Statista 2024[2]). It is estimated that there were around 53 million computers being used in private households in 2022, based on the number of stationary and mobile computers (excluding tablets) per 100 households and the total number of private households in Germany (Federal Statistical Office, 2022[3]).

The production of computers not only requires a lot of energy but also numerous raw materials and chemicals. Sourcing these materials sometimes has a serious impact on the environment. The raw materials used in computers include rare earth elements, gold, indium, cobalt and tantalum, which are especially important for modern technologies. The European Union is currently discussing a possible ban on the use of perfluorinated and polyfluoroalkyl substances (PFAS), which are frequently used in the semiconductor, electrical and electronics industries.

In order to develop a resource-efficient and circular economy, it is important to ensure that computers can be used for as long as possible so that they extract the maximum benefits from the raw materials and minimise the use of chemicals and energy in the production process. Computers certified with the ecolabel comply with these requirements by, for example, providing a long guarantee and due to their expandability, repairability, secure data deletion and high-quality rechargeable batteries. Furthermore, computers certified with the Blue Angel ecolabel must fulfil criteria for a recyclable design and requirements placed on the selection of materials so that they create good conditions for the efficient recovery of the materials used in them. They help to conserve natural resources in this way.
Furthermore, the products must contain a minimum level of recycled plastic (PCR plastic content). Last but not least, low pollutant materials must be used in the plastic parts of devices that

1 https://de.statista.com/themen/614/pc-markt/#topicOverview
2 https://de.statista.com/statistik/daten/studie/151762/umfrage/anteil-der-unternehmen-mit-nutzung-von-computern-in-deutschland/
3 https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Einkommen-Konsum-Lebensbedingungen/Ausstattung-Gebrauchsgueter/Tabellen/a-infotechnik-d-lwr.html

have been awarded the Blue Angel ecolabel to reduce the risks posed to the environment and human health.
Requirements for the due diligence of companies in the sourcing of raw materials and support for local initiatives to promote responsible mining have been included in the Basic Award Criteria for the first time. In addition, criteria for social sustainability in the manufacturing process have also been added. These criteria are designed to promote compliance with the 8 ILO fundamental labour standards and other ILO standards.

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 computers, keyboards and mice may be awarded to devices featuring the following properties:

- durability due to a long guarantee, expandability, repairability, secure data deletion and high-quality rechargeable batteries in portable computers,
- low energy consumption,
- low noise emissions,
- avoidance of materials hazardous to the environment,
- compliance with fundamental social standards.

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

For computers:

For keyboards and mice:

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:

- The WEEE Directive (2012/19/EU) implemented in German law in the Electrical and Electronic Equipment Act (ElektroG) that regulate the disposal of products;

- The ROHS Directive (2011/65/EU) implemented in German law in the German Material Ordinance for Electrical and Electronic Equipment (ElektroStoffV) that regulates the pollutant content of products;
- The substance requirements defined by the EU Chemicals Regulation REACH (1907/2006/EC) and the POP Regulation (850/2004/EC);
- The External Power Supplies Directive (EC 2019/1782) that regulates the ecodesign requirements for external power supplies;
- Regulation (EU) 2023/1542 of the European Parliament and of the Council concerning batteries and waste batteries (new Battery Regulation);
- The Battery Directive (BattG);
- EU Directive 2006/66/EC (Battery– until August 2025);
- The new RED Directive 2022 (2022/2380/EU);
- The General Product Safety Directive (2001/95/EC) implemented in German law in the German Product Safety Act (ProdSG).

1.5 Definitions

Computer: A device which performs logical operations and processes data, is capable of using input devices and outputting information to a display, and normally includes a central processing unit (CPU) to perform operations.
The term "computer" covers both stationary computers and portable computers.

Stationary computer: A computer whose main unit is set up in a fixed location. It is not designed for portable use. The term "stationary computer" covers desktop computers, integrated desktop computers/all-in-one computers, small-scale servers, desktop thin clients and desktop workstations (or workstations).

a) **Desktop computer**: A computer whose main unit is set up in a fixed location, is not designed for portable use and is operated with an external display as well as external peripheral devices such as a keyboard and mouse. Integrated desktop computers are a subcategory of desktop computers that are usually designed to provide similar functions to desktop systems.

   - **Integrated desktop computer**: A computer in which the computer and the display function as a single unit and which receives its AC power through a single cable. There are two types of integrated desktop computers:

     - A product where the computer and computer display are physically combined in a single unit (in this case also described as an **all-in-one computer**), or
     - A product where the display is separate but connected to the main housing of the computer by a power cord.

   An integrated desktop computer is set up in a fixed location and is not designed for portable use. Integrated desktop computers are not primarily designed for the display and reception of audiovisual signals.

b) **Small-scale server**: A type of computer that typically uses personal computer components in a desktop format, but is designed primarily to be a storage host for other computers and to perform functions such as providing network infrastructure services and hosting data/media. These products are not designed to process information for other systems or to act as web servers as their main function. A small-scale server has the following characteristics:

- designed in a pedestal, tower, or other form factor similar to those of desktop computers such that all data processing, storage, and network interface components are contained in one housing;
- designed to be operational 24 hours per day and 7 days per week;
- primarily designed to operate in a simultaneous multi-user environment serving several users through networked client units;
- designed for use with a commonly used operating system in the home or low-end server sector, such as Windows Home Server, Linux, UNIX, Solaris.

c) **Desktop thin client**: A computer that relies on a connection to remote computing resources (e.g. computer server, remote workstation) for its primary data processing functions and does not have an integrated rotating storage medium. The main unit of a desktop thin client must be set up in a fixed location (e.g. on a desk) and it is not designed for portable use. Desktop thin clients can output information to either an external or, where included with the product, an integrated display.

- **Integrated thin client**: A type of thin client in which the computer and the display are a single unit that receives its AC power through a single cable. There are two types of integrated thin client:
  - A product where the computer and computer display are physically combined into a single unit, or
  - A product where the display is separate but connected to the main housing of the computer by a power cord.

- **Ultra thin client**: A computer with fewer local resources than a standard thin client that transmits mouse and keyboard inputs to a remote computer resource and receives raw video from the remote computer resource. Ultra thin clients cannot interact with multiple devices simultaneously and cannot execute any window-based remote applications because they do not possess any recognisable client operating system for the user (i.e. below the firmware, not accessible for the user).

d) **Desktop workstation (or workstation)**: A high-performance computer primarily designed for use in professional workflows, such as in architecture, engineering, computer aided design, product development, finance, science and content creation. Desktop workstations are stationary computer systems.

A desktop workstation must also comply with all of the following criteria:

- is sold as a workstation
- does not support altering frequency or voltage beyond the operating specifications given by the CPU and GPU manufacturers
- has system hardware that supports error-correcting code (ECC) that detects and corrects errors with dedicated circuitry on and across the CPU, interconnect and system memory
- is certified by 4 or more certification systems from Independent Software Vendors (ISVs) for professional workflows. The certification processes may still be ongoing but the applicant must ensure that they are concluded within 6 months of the date on which the product is launched on the market

Portable computer: A computer that is specially designed as a portable device and for extended operation with or without a direct connection to an AC power source. Portable computers can be operated via an integrated rechargeable battery or another portable power source. The term "portable computer" covers notebook computers (incl. two-in-one computers, multi-screen notebooks), portable all-in-one computers, mobile thin clients and mobile workstations.

a) **Notebook computer**: A computer designed specifically for portability and to be operated for extended periods of time either with or without a direct connection to an AC power source. Notebook computers have an integrated display and a touchpad or keys. In the context of these Basic Award Criteria, notebook computers also includes models with touch-sensitive screens. Notebook computers are also called notebooks or laptops.

   - **Two-in-one notebook computer**: A computer that is similar to a traditional notebook computer but which has a removable display that can function as a stand-alone slate/tablet when separated. The keyboard and display parts of the product must be supplied as an integrated unit in its delivered state. These products are considered to be notebook computers for the purposes of these Basic Award Criteria.

   - **Multi-screen notebook computer**: A computer that is similar to a traditional notebook computer with a folding housing but which has a secondary screen with a touch and/or pen function that can be used as a touchscreen keyboard instead of a standard physical keyboard. These products are considered to be notebook computers for the purposes of these Basic Award Criteria.

b) **Portable all-in-one computer**: A portable computer that fulfils all of the following criteria:

   - has an integrated display with a diagonal size of 17.4 inches or greater
   - does not have a keyboard integrated into the physical housing of the product in its delivered state
   - primarily relies on touchscreen input (with an optional keyboard)
   - has a wireless network connection (e.g. Wi-Fi, 3G etc.)
   - has an internal rechargeable battery

c) **Portable thin client**: A type of notebook computer that relies on a connection to remote computing resources (e.g. computer server, remote workstation) for its primary data processing functions and does not have an integrated rotating storage medium. **Mobile thin**

client: A computer that fulfils the definition of a thin client but is specially designed as a portable device.

d) **Mobile workstation**: A high-performance computer primarily designed for use in professional workflows, such as architecture, engineering, computer aided design, product development, finance, science and content creation, but which is also specially designed as a portable device and for extended operation with or without a direct connection to an AC power source. A mobile workstation must also comply with all of the following criteria:

- has a mean time between failures (MTBF) of at least 13,000 hours
- is certified by 4 or more certification systems from Independent Software Vendors (ISVs) for professional workflows. The certification processes may still be ongoing but the applicant must ensure that they are concluded within 6 months of the date on which the product is launched on the market
- supports at least 32 GB of system memory
- supports either:
  - at least an integrated or separate GPU with a frame buffer bandwidth of 96 gigabytes per second or greater or
  - a total of 4 gigabytes or more of system memory with a bandwidth of 134 gigabytes per second or greater and an integrated GPU

Battery life in cycles: The number of charging and discharging cycles, expressed in cycles, that a battery can complete until its usable electrical power has reached 80% of its nominal capacity;

Firmware: A system, hardware, component, or peripheral software embedded in the product to provide basic instructions for hardware to function inclusive of all applicable programming and hardware updates.

Secure data deletion: The effective erasure of all traces of existing data from a data storage device in such a way that access to the original data, or parts of them, becomes infeasible for a given level of effort.

Spare part: An individual part that can replace a part in a product with the same or a similar function. The function of the product is restored or improved when the part is replaced by a spare part. Spare parts can also be used parts.

Rechargeable battery: A secondary battery that is designed to repeatedly restore its charge state using a special purpose power supply (charging electronics) i.e. it can be recharged. The rechargeable 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. Rechargeable batteries are also called battery packs, electrochemical energy storage systems or energy accumulator.

Primary battery or non-rechargeable battery: A battery that is not designed to be electrically recharged.

Keyboards: Input devices consisting of a series of keys that are assigned a particular character or a certain function. They are used to transmit user inputs to a computer or electronic device when the user presses the keys.

Computer mice: Input devices used to control a cursor on a screen. They typically comprise a handheld housing with buttons and sensors to record movements and clicks. By moving the mouse on a flat surface, the user can move the cursor on the screen and thus control programs, open files and carry out various actions.

Palm rest assembly: A term used to describe the area of a computer where the user's palms can rest during use, typically located near to the keyboard or trackpad. Also called a palm cover.

Parts pairing: A type of product design whereby a part or several parts have a unique serial number that is paired (usually by the manufacturer) with one particular product unit using software. If paired parts are replaced, they will not be completely accepted and their functionally will be (partially) lost, unless they are paired with the device again. This paring process is usually carried out using software that is only accessible to the manufacturer.

SME: Small and medium-sized enterprises. This term also covers micro enterprises. Micro enterprises are companies with less than 10 employees and with an annual turnover or balance sheet total of up to EUR 2 million. Small enterprises are companies with less than 50 employees and with an annual turnover or balance sheet total of up to EUR 10 million. Medium-sized enterprises are companies with less than 250 employees and with an annual turnover of up to EUR 50 million or a balance sheet total of up to EUR 43 million. [4]

MSRP: Manufacturer's suggested retail price. The price that the manufacturer recommends the product is sold for in the retail trade. The MSRP is often used as a guide for retailers and may vary depending on market conditions.

Constituent components: 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.

Universal tools: Basic tools in class A according to EN 45554.

Warranty: A legal obligation for the seller to ensure that the goods supplied to the buyer are free from defects. Warranty rights in civil law/purchasing law are rights that the buyer has when the seller has supplied defective goods. The seller must procure the goods for the buyer free from material defects and defects of title. (§ 433 (1) sentence 1 BGB: Bürgerliches Gesetzbuch/German Civil Code). In the case of new goods, the seller is liable for any defects for 2 years (§ 438 (1) No. 3 BGB). The warranty period for used goods is generally 1 year. Warranty rights are standardised by law, i.e. suppliers are obligated to provide a warranty by legal regulations (§§ 437 ff. BGB). Special rules apply to consumable materials.

[4] EU (2024) Small and medium-sized enterprises, EUR-Lex, https://eur-lex.europa.eu/DE/legal-content/glossary/small-and-medium-sized-enterprises.html (last accessed: 17/04/2024).

Guarantee: A voluntary service provided by a manufacturer that is subject to its own defined conditions. It runs in parallel to the warranty and, in contrast to the warranty, also protects the buyer against defects that arise after the goods are purchased.

2 Scope

a) These Basic Award Criteria apply to the following groups of computers (see definitions in Paragraph 1.5):

- Stationary computers
  - Desktop computers
  - Integrated desktop computers
  - Integrated / desktop thin clients
  - Desktop workstations (or workstations)

- Portable computers
  - Notebook computers (incl. two-in-one notebook computers; multi-screen notebook computers)
  - Portable all-in-one computers
  - Mobile thin clients
  - Mobile workstations

b) The Basic Award Criteria also apply to keyboards and mice that are sold individually or together with a computer.

c) The following products or product groups are not covered by the scope of these Basic Award Criteria:

- Small-scale servers
- Ultra thin clients
- Mobile thin clients, which do not comply with the definition for a portable computer
- Games consoles
- Mobile phones / smartphones / tablets (DE-UZ 106),
- e-books readers
- Television sets
- Computer screens / monitors

d) An overview of which requirements apply to the different devices coved by the scope of these Basic Award Criteria:

Table 1

Requirements	Paragraph #3	Paragraph #4	Paragraph #5	Paragraph #6	Paragraph #7
Product group	General requirements	Additional special requirements for computers	Additional special requirements for portable computers	Additional special requirements for separate keyboards	Additional special requirements for separate mice
Stationary computers	x	x	Not relevant	Not relevant	Not relevant
Portable computers	x	x	x	Not relevant	Not relevant
Separate keyboards	x	Not relevant	Not relevant	x	Not relevant
Separate mice	x	Not relevant	Not relevant	Not relevant	x

3 General requirements (computers, keyboards, mice)

3.1 Material requirements

3.1.1 Material requirements for the primary plastics used in the housing, housing parts and cables

The primary plastics in the housing, housing parts and cables (external and internal) of the keyboards, computers and PC mice may not contain any substances with the following properties as a constituent component[5]:

a) Substances which are identified as particularly alarming under the European Chemicals Regulation REACH (1907/2006/EC)[6] 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").[7]

b) Substances that according to the CLP Regulation[8] have been classified in the following hazard categories or which meet the criteria for such classification[7]:
- carcinogenic in categories Carc. 1A or Carc. 1B
- germ cell mutagenic in categories Muta. 1A or Muta. 1B

[5] 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.

[6] The list of candidates in its relevant version can be found under the following link: REACH list of candidates.

[7] The version of the regulation at the time of application is valid. The licence holder is obligated to take into account the latest developments of this regulation. If an ingredient is classified with one of the named hazard categories during the term of the Basic Award Criteria, the licence holder must submit an informal notification stating the name of the substance and its CAS or EC number and the new hazard category. The licence holder will then be given a deadline to substitute this ingredient.

[8] 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): ECHA classification and labelling inventory.

- reprotoxic (teratogenic) in categories Repr. 1A or Repr. 1B
- endocrine disruptors with a negative effect on human health, categories ED HH 1 and 2
- endocrine disruptors with a negative effect on the environment, categories ED ENV 1 and 2
- vPvB substances and
- PMT/vPvM substances 2[9].
- The requirement is also considered to be fulfilled if no substances have been given a benchmark score of 1 using the GreenScreen evaluation system.

Halogenated polymers (containing chlorine, bromine or fluorine) are not permitted in the housing, housing parts or external and internal cables. 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.

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 are 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. If the product contains such substances, they must be named (chemical designations and CAS numbers);

- Plastic parts with a mass of less than or equal to 25 g, whereby in the case of keyboards the total of all of the key caps 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 written declaration from the plastics manufacturer or guarantee the provision of these documents to RAL gGmbH. The manufacturer can also submit a corresponding declaration that substances with a GreenScreen benchmark score of 1 have been excluded. Both declarations must confirm that the prohibited substances have not been added to the plastics. The manufacturer shall name the chemical designations for the flame retardants and fluoroorganic additives added to the plastics including their CAS numbers and classifications (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.

[9] ED, PBT, vPvB, PMT, vPvM: New hazard categories in the CLP Regulation, legally binding for substances from 1 May 2025 at the latest and for existing substances on the market by 1 May 2026 at the latest.

3.1.2 Material requirements for recycled plastics used in the housing and housing parts

3.1.2.1 Origin of the recycled plastics

The post-consumer recycled materials (PCR materials) must come from certified sources that can clearly verify their origins. In particular, the origin of the waste must be stated. PCR materials sourced from another process other than recycling according to the type of material (e.g. chemical recycling of plastics) are not permitted.

Compliance verification

The origin and composition of the PCR plastics shall be verified by the applicant in the form of a certificate (including a report) in accordance with the EuCertPlast certification scheme, the RecyClass certification scheme (for "recycling purposes"), the Global Recycled Standard (GRS) or an equivalent certification scheme according to EN 15343:2007 or DIN EN 15343:20085 (Annex PCR-O).

3.1.2.2 Exclusion of certain PCR additives

No substances excluded in Paragraph 3.1.1 may be added to the PCR materials.

Compliance verification

The applicant shall declare compliance with this requirement in Annex 1 to the contract. In addition, the applicant shall list all of the substances added to the PCR materials in Annex PCR-S. The applicant shall state both the trade names and also the chemical designations (e.g. CAS number).

3.1.3 Limits on pollutants in plastic parts that come into contact with skin

In addition to the above-mentioned requirements, no substances classified with Skin Sens. 1, H317 "May cause an allergic skin reaction" may be added to the plastics used for housing parts that can come into repeated, direct physical contact with consumers during their intended use (mouse, keyboard, trackpad, palm rest assembly). This requirement encompasses both the harmonised classifications according to Annex VI of the CLP Regulation and also self-classifications made by the distributors of these substances.

Compliance verification

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

3.1.4 Declaration of the SVHC content of the product

The applicant must state whether the product (computer, keyboard, mouse) or its components contain SVHC (substances of very high concern) in concentrations of more than 0.1% by mass.

The applicant must provide a link to the data entered for the product (computer, keyboard, mouse) in the SCIP database (Substances of Concern in Products)[10] from the European Chemicals Agency (ECHA).

Compliance verification

The applicant shall submit a written declaration (Annex SC-IP) about any SVHC in the product (name, CAS number) and the link to the product-related information in the SCIP database.

3.2 Guarantee

The manufacturer must offer at least a 5-year guarantee from the data of purchase. At least 1 year of this guarantee must be free of charge. This requirement does not apply to rechargeable batteries, for which the manufacturer must offer a 3-year guarantee, of which at least 1 year must be free of charge.
It is important to note that the guarantee should not be confused with the statutory warranty (see Paragraph 1.5).

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 guarantees are described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where information on the guarantees is published.

3.3 Repairability

3.3.1 Availability of spare parts

The applicant undertakes to guarantee the provision of spare parts for the repair of the devices for at least 10 years from the time the relevant model is first placed on the market.

Table 2: Definition of priority spare parts for the relevant product groups:

Portable computers	Stationary computers	External keyboards	External mice
• Rechargeable batteries • Display components • External connections • Physical keys	• External connections • Fans • Hard drive: HDD or SSD • Internal or external power supply unit	• External connections • Switches (buttons) • Additional parts for cordless	• External connections • Casing parts • Scroll wheels • Switches (buttons)

[10] Companies that supply the EU market with products containing substances of very high concern (SVHC) in concentrations of more than 0.1% by mass have been obligated to enter information on the affected products in the SCIP database (SCIP - ECHA (europa.eu)) since 5 January 2021.

Portable computers	Stationary computers	External keyboards	External mice
• Complete key-board • Trackpad • Fans		products, if used: • Adapter • Rechargeable battery	• Additional parts for cordless products, if used: • Adapter • Rechargeable battery

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 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where the provision of spare parts is described.

3.3.2 The price of spare parts

The spare parts named in Paragraph 3.3.1 must be made available at reasonable prices by the manufacturer themselves or by third parties commissioned by the manufacturer.
"Reasonable prices"[11] are defined as follows:

- For computers: The price of the most expensive spare part listed in Paragraph 3.3.1 must not be more than 33% of the MSRP for the computer at the time of application. The individual prices of the other spare parts may not be more than 10% of the MSRP in each case.
- For keyboards and mice: The price of the most expensive spare part listed in Paragraph 3.3.1 must not be more than 20% of the MSRP for the keyboard or mouse at the time of application. The individual prices of the other spare parts may not be more than 10% of the MSRP in each case.

The net price of the product excluding taxes and delivery costs should be used for this calculation. The net prices (excluding taxes and delivery costs) in Euro of the spare parts stated in Paragraph 3.3.1 must also be published on a freely accessible website.
If fixing elements and tools are also supplied with the spare part, the net prices (excluding taxes and delivery costs) in Euro of these items must also be published on a freely accessible website.

[11] Both the MSRP and the prices of the spare parts may be adjusted for inflation in accordance with the consumer price index published by the Federal Statistical Office (DESTATIS). The year that the product was placed on the market should be used here as the base year (consumer price index P) and the price corrected based on the development in prices in the price index for the year in which the application for the ecolabel is submitted. Example: P(2020; year placed on the market) = 105.8; P(2022)=117.7). The price correction factor is calculated from the quotients for the relevant year and the base year. Example: P (Corr)= P (2022) / P (2020) = 117.7 / 105.8 = 1.1125 (or 11.25%). In this example, the spare part is permitted to be 11.25% more expensive in 2022 than it was in 2020. Also see: https://www.destatis.de/DE/Themen/Wirtschaft/Preise/Verbraucherpreisindex/Publikationen/Downloads-Verbraucherpreise/verbraucherpreisindex-lange-reihen-pdf-5611103.html (last accessed: 07/05/2024).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract. The applicant shall publish the guide prices (excluding taxes and delivery costs) in Euro for the spare parts stated in Paragraph 3.3.1 and for the product on a freely accessible website and state them in Annex CO-ST, including the prices (excluding taxes and delivery costs) for any fixing elements and tools supplied with the spare part (if applicable). The applicant shall submit the calculated percentages of the MSRP based on the procedure described in Annex CO-ST.

3.3.3 Maximum delivery times for spare parts

The applicant must ensure

- for the first five years that the spare parts named in Paragraph 3.3.1 can be delivered by the manufacturer within five working days of receipt of the order

- for the remaining five years that the spare parts named in Paragraph 3.3.1 can be delivered by the manufacturer within ten working days of receipt of the order

This requirement does not apply to unforeseeable delays to deliveries caused by force majeure (e.g. storms, pandemics, etc.).

Compliance verification

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

3.3.4 Disassembly requirements

The applicant must comply with the following requirements with respect to the disassembly of the device:

- Fixing elements must be removable. They must also be reusable or supplied with the spare part.

- The devices must be designed in such a way that they can be repaired using the spare parts named in Paragraph 3.3.1 either without tools, with a tool supplied with the product or spare part, with basic tools (class A according to EN 45554 §A.4.4) or with product-specific tools (class B according to EN45554 §A.4.4) and with a reasonable amount of effort so that the same functionality is achieved after the installation of the spare part as before.

A list of product-specific tools (class B) for computers can be found in Appendix C to these Basic Award Criteria.

In addition, the display assembly, physical keys, keyboard and trackpad may not be soldered or bonded in place (exception: double-sided adhesive strips that can removed using a pair of

tweezers without leaving a trace). This requirement is important so that these parts can also be replaced by users.

Compliance verification

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

3.3.5 Parts pairing

Part pairing should not be used on computers certified with the ecolabel.

If part pairing is unavoidable for security reasons, e.g. the detection of fingerprints or facial recognition sensors, the applicant must comply with the following requirements for at least 10 years after the launch of the last product model on the market:

- Professional repairers and end users must be given access to all of the required software tools, firmware and other auxiliary aids so that the parts and the device will function properly after parts are replaced. Before the manufacturer provides access to the software tools, firmware or similar auxiliary aids, he or she can require that the owner of the device notifies the manufacturer to receive authorisation for the intended replacement of the part. A professional repairer can also notify the manufacturer to receive this authorisation if they have the express written approval of the owner of the device.

- After receiving this notification, the manufacturer must provide access to the required software tools, firmware and other auxiliary aids within three working days.

If for certain technical reasons a newly installed display has to be e.g. calibrated to deliver the best image quality, the required software tools, firmware and other auxiliary aids must be made publicly available.

Compliance verification

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

3.3.6 Access to information on repair and maintenance

The applicant undertakes to publish the following information:

- Comprehensive information on repair and maintenance of the device must be made publicly available to private persons, professional repairers and contractual partners of the manufacturer. This includes error code tables, exploded view diagrams, circuit diagrams and repair instructions as well as the number of steps required to dismantle the priority components named in Paragraph 3.3.1.

- Contact details for one or more repairers must be published on the manufacturer's website.

- Information on parts that are paired as standard and the procedure for authorising the replacement of these parts that are paired as standard must be made publicly available. This procedure must be designed so that notification and authorisation of the repair can also be carried out remotely (if relevant).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract AND shall state in Annex R-I the Internet link (URL) to its own website where a) the error code tables, exploded view diagrams or comparable descriptions, circuit diagrams and repair instructions (including the required tools) as well as the number of steps required to dismantle the priority components named in Paragraph 3.3.1, b) contact details for end users to arrange a repair and c) publicly accessible information on parts that are paired as standard and the procedure for authorising the replacement of these parts that are paired as standard (if relevant) are published.

3.4 Recycling

3.4.1 Structure and connection technology

Devices to be labelled with the ecolabel must be designed so that they are easy to dismantle for recycling purposes in order to ensure that the housing parts, chassis, batteries (if present), screen parts (if present) and printed circuit boards can be separated as fractions from materials of other functional units and, if possible, recycled by material type.

It must be possible for the device to be dismantled manually by a waste disposal company with the aid of universal tools and for this process to be carried out by a single person.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract AND shall state in Annex 1 the Internet link (URL) to its own website where the dismantling information is published. In particular, special focus must be placed on the professional separation of the housing parts, chassis, batteries (if present), screen parts (if present) and printed circuit boards.

3.4.2 Selection of materials: Plastics

a) Only one type of plastic (ABS, PC, HIPS, PE and PP) may be used for individual plastic parts with a mass greater than 25 grams or for the key caps if their total mass is greater than 25 grams. The use of plastic compounds consisting of PC and ABS is still permitted if they are sourced from post-consumer recycled materials[12].

b) Galvanic coatings and other coatings (e.g. paint) of plastic housing parts are not permitted.

[12] Other types of plastic or plastic compounds may be accepted upon application to the German Environmental Agency.

c) Plastic parts with an individual mass greater than 25 grams and an even surface area of more than 200 square millimetres must be permanently marked in accordance with ISO 11469, while taking ISO 1043, Parts 1 to 4, into consideration. Transparent plastic parts whose function requires transparency (e.g. visible film on displays) are exempt from labelling according to ISO 11469.

d) If the following components are made of plastic, the proportion of post-consumer recycled materials must not be lower than the minimum limits stated below.

Table 3

Product group	Relevant components, if made of plastic	Minimum proportion of post-consumer recycled materials in % by mass
Portable computers	• Housing • Fans • Keyboards • Trackpad	10%
Stationary computers	• Housing • Fans	35%
External keyboards	• Housing • Keyboards	35%
External mice	• Housing • Keys • Scroll wheels	35%

The minimum proportion of post-consumer recycled materials refers here to the sum of the relevant components. In order to calculate this proportion, divide the mass of all the post-consumer recycled materials in the relevant components by the total mass of all the relevant components. The minimum proportion must be achieved in each of the relevant components in order to comply with this requirement. Plastic parts that are not named above, such as cable sheaths and printed circuit boards, should not be included in the calculation.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and state which plastics are used for plastic parts with a mass > 25 grams in Annex P-L 25 to the contract (see printed form). In addition, the applicant shall submit the data used to calculate the proportion of PCR materials in the relevant components for the respective product group in Annex PCR-R to the contract.

3.5 Social requirements for production and supply chains

3.5.1 Due diligence of companies in the sourcing of raw materials

The manufacturer must carry out due diligence with respect to human rights for the mineral raw materials in the devices 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)[13].

This requirement does not apply to applicants who are micro enterprises according to the definition issued by the European Union.[14]

Compliance verification

The applicant shall verify compliance by submitting a report from the manufacturer of the devices in Annex 10 by 01.01.2025 at the latest. The report must cover the entire process for due diligence with respect to human rights in the supply chain 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 independent, third party auditing body by 01.01.2027 (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 E3 of the currently valid version of the Responsible Business Alliance Code Of Conduct*
- *Auditing bodies accredited according to SA 8000*
- *Reports created according to the Dodd Frank Act (Section 1502) using the CMR template or the EU Conflict Minerals Regulation (2017/821) and submitted to the US Securities and Exchange Commission (SEC).*

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.

3.5.2 Support for local initiatives to promote responsible mining

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

- ITSCI Programme for Responsible Mineral Supply Chains[15]
- Fair Trade Gold[16]

[13] OECD (2016): OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, https://www.oecd-ilibrary.org/governance/oecd-leitfaden-fur-die-erfullung-der-sorgfaltspflicht-zur-forderung-verantwortungsvoller-lieferketten-fur-minerale-aus-konflikt-und-hochrisikogebieten_3d21faa0-de, version: 2024.

[14] Micro enterprises are companies with less than 10 employees and with an annual turnover or balance sheet total of less than EUR 2 million.

[15] https://www.itsci.org/

[16] https://www.fairtrade-deutschland.de/produkte/gold

- Fairmined Gold[17]
- Responsible Minerals Initiative[18]
- The European Partnership for Responsible Minerals (EPRM)[19]
- JATAM Project Indonesia (Mining Advocacy Network)[20]

Compliance verification

Membership 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).[21]

3.5.3 Social sustainability in the manufacturing process

The manufacturer must ensure compliance with the following fundamental working conditions during production of the devices:

- 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)
- Occupational health and safety (ILO C155)

And compliance with other ILO standards on relevant social risks:

- 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.

[17] https://www.fairever.gold/de/shop/category/fairmined-gold-56?gad_source=1&gclid=CjwKCAjwzN-vBhAkEiwAYiO7oFFedvf5avdEBPqz7MkzaqCrPEcuITEir7V3hRIbHE1hBnFMh7RR6hoCPG0QAvD_BwE

[18] https://www.responsiblemineralsinitiative.org/

[19] https://europeanpartnership-responsibleminerals.eu/

[20] https://www.jatam.org/en/

[21] It is possible that other initiatives will be accepted after they have been investigated by the German Environment Agency. For this purpose, the applicant should provide information to the German Environment Agency on the type of initiative (organisational structure, goal, country, materials covered, type of support) that describe how the project helps to improve human rights and the relevant social and environmental conditions in and around the mining town(s)).

The individual levels of the supply chain are defined (according to BMI/Bitkom 2019)[22] as follows:

- 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

For level 1 of the supply chain:
The manufacturer shall state the name and location of the production sites in level 1 in Annex 13. The manufacturer shall declare compliance with the above-mentioned requirements for these production sites in Annex 1 by 01.01.2027 at the latest. Certification (Annex 14)[23] in accordance with the following standards will be accepted:

- *The audit standard SA 8000[24]. 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[25] 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 or major findings related to the ILO standards promoted in the DE-UZ 78 Basic Award Criteria. Verification of compliance with this requirement can be provided, for example, by disclosing the detailed evaluation in the audit results with respect to the ILO standards promoted in the DE-UZ 78 Basic Award Criteria.*
- *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 YYY. Or the report must be created by an independent testing institution accredited[26] according to ISO/IEC 17021 that can verify*

[22] 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 speed for in IT procurement in the public sector, https://www.nachhaltige-beschaffung.info/DE/Themen/2_2_2_VE_2019/2_2_2_VE_2019_node.html, version: 2024

[23] 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.

[24] SA8000 Standard, SA8000:2014, https://sa-intl.org/resources/sa8000-standard/, Version: 2024

[25] Responsible Business Alliance, Validated Assessment Program (VAP), http://www.responsiblebusiness.org/vap/about-vap/, version: 2024

[26] 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 Stand: 2024.

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.[27]

- *Micro enterprises according to the definition issued by the European Union (<10 employees, < EUR 2 million balance sheet total) can also verify compliance by submitting their own audit of level 1 of the supply chain if they provide RAL gGmbH with contact details (addresses and contact person) for the audited factories and they also publish information on the factories included in audited and the year the audit was carried out. This audit is valid for a maximum of 3 years. The names and addresses of the suppliers in level 2 of the supply chain and an assessment of the working conditions must also be published.*

For level 2 of the supply chain:
The manufacturer shall confirm in Annex 1 that contractual obligations between a company in level 1 and a company in level 2 guarantees compliance with the requirements.
In the case of reasonable doubt, the awarding body RAL gGmbH may request the names and addresses of the production sites in level 2 of the supply chain and submission of corresponding verifications that confirm compliance with the above-mentioned requirements in production sites in level 2 of the supply chain.

4 Additional special requirements for computers

4.1 Energy and power consumption of computers

Computers must comply with the specific requirements for the relevant type of computer in the ENERGY STAR for Computers at the time of application.

Compliance verification

The applicant shall declare in Annex 1 to the contract that it complies with all of the relevant requirements in the ENERGY STAR for Computers using method a) or b).

a) In the case of computers that already have an ENERGY STAR certificate, compliance can be verified by publishing the ENERGY STAR Unique ID published on the ENERGY STAR website. The applicant shall state in Annex 1, a) the ENERGY STAR Unique ID and b) the Internet link (URL) to the ENERGY STAR website verifying certification with the ENERGY STAR; or

[27] The manufacturer of the devices is obligated to submit revisions of the verifications at regular intervals. 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). 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.

b) In the case of computers without an ENERGY STAR certificate, the applicant must fulfil the following ENERGY STAR requirements for the relevant type of computer:

- 3.2 General Requirements
- 3.3 Power Management Requirements
- 3.5 Requirements for Desktop, Integrated Desktop, and Notebook Computers
- 3.6 Requirements for Slates/Tablets (note: not covered by the scope of these Basic Award Criteria) and Portable All-In-One Computers
- 3.7 Requirements for Workstations
- 3.8 Requirements for Thin Clients
- as well as the requirements in "4 TESTING"

The applicant shall submit a corresponding test report from an independent testing laboratory, which is accredited for these types of measurements in accordance with DIN EN ISO/EC 17025 (Annex 2).

4.2 Noise emissions

The evaluation of the noise emissions is based on the provision of the declared A-weighted sound power level in decibels (dB) to one decimal place. If devices with an identical construction have different configuration variants, the variant with the loudest individual components must be used for measuring the sound power level.

Verification of compliance with this requirement is not required if a computer does not have any mechanical fans and/or mechanical hard drives.

Measurement of the A-weighted sound power level
The A-weighted sound power level must be determined in accordance with ISO 7779 in the following operating modes described in Annex C to ECMA 74:

- Computers: Idle mode (C.15.3.2) and office productivity (C.15.3.3.2)

Declared A-weighted sound power level
At least three devices of a model must be tested in each operating mode. The declared A-weighted sound power level, LWAd, must be determined in accordance with ISO 9296 and stated in decibels (dB), rounded up to one decimal place. If the noise emissions can only be measured on one device, the following formula can be used instead:

LWAd = LWA1 + 3.0 dB

(LWA1: measured A-weighted sound power level of a single device in decibels (dB) to one decimal place)

The declared A-weighted sound power level for computers must not exceed the following test values:

Table 4

Operating mode	**Test value for**	
	Stationary computers	Portable computers
Idle mode	35.0 dB	32.0 dB
Office	39.0 dB	37.0 dB

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 by stating the declared A-weighted sound power level in decibels (dB) to one decimal place in all operating modes and shall submit a measurement report from a testing laboratory accredited according to ISO/IEC 17025 or from a laboratory which has been recognised by an independent body as an SMT laboratory (supervised manufacturer's testing laboratory) as Annex 5a.

In addition, the applicant shall complete and submit 6a to the contract for the computer.

4.3 Replaceability and expandability

Computers to be labelled with the ecolabel must be designed so that the following components (if present) are not soldered or bonded (exception: double-sided adhesive strips that can removed using a pair of tweezers without leaving a trace) so that they can be replaced:

- SSD (exception: memory capacity ≥1 TB)
- Mother board

In addition, the computer must have the following interfaces:

- At least two USB ports of standard USB 3.1 or higher
- Connection port for an external monitor (does not apply to integrated desktop computers).

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 possibilities for expanding the performance of the device are described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where information on the replaceability and expandability of the above-mentioned components is published.

4.4 Software updates

The following requirements on software updates apply from the time at which the computer is launched on the market until at least 10 years after the last product model is offered on the market:

- Functional and security updates must be easy to carry out within a short period of time.
- In the case of pre-installed firmware (e.g. BIOS, SSD firmware, sensor firmware), the latest security update must be made available free of charge during this entire period.
- If an operating system is pre-installed, the latest security update for it must either be made available free of charge during this entire period or it must be possible to replace this operating system with an updated operating system.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and shall state in Annex 1 the Internet link (URL) to its own website where the software updates are made available.

4.5 Secure 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. This function can also be provided using an external software that is provided free of charge by the manufacturer from the time at which the product is launched on the market until at least 10 years after the last product model is offered on the market.

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 process and reset function to restore the factory settings are described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where the instructions for the secure deletion of data are described.

4.6 Product information for computers

The following information relevant to the environment and health must be made freely available to users. It must be published on the Internet from the time the first products are delivered until at least 10 years after the last product model is offered on the market.
The following information must be provided to users on the manufacturer’s website:

a) Information on the supply of spare parts and their availability and prices in accordance with Paragraphs 3.3.1 and 3.3.2
b) Information on repair and maintenance. This includes a) error code tables, exploded view diagrams or comparable descriptions, circuit diagrams and repair instructions (including the required tools) and the number of steps required to dismantle the priority components named in Paragraph 3.3.1, b) contact details for repairs and c) publicly accessible information on parts that are paired as standard and the procedure for authorising the replacement of these parts that are paired as standard, according to Paragraph 3.3.6.
c) Energy consumption (ETEC) in kilowatt hours per year (kWh/a) for computers (with the exception of workstations) and the power values (in watts) for workstations according to Paragraph 4.1
d) The declared A-weighted sound power level in idle mode and office productivity (if relevant) in accordance with Paragraph 4.2
e) Replaceability and expandability options according to Paragraph 4.3
f) Instructions about the operating system and firmware in accordance with Paragraph 4.4
g) Instructions on secure data deletion and the reset function to restore factory settings in accordance with Paragraph 4.5

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and shall state in Annex 1 the Internet link (URL) to its own website where this information is published.

5 Additional special requirements for portable computers

5.1 Rechargeable batteries

5.1.1 Replaceability of the rechargeable battery

The applicant must ensure that the procedure for replacing the rechargeable battery fulfils the following criteria:

- Fixing elements must be reusable or supplied with the replacement battery.
- The replacement of the rechargeable battery must be possible either without tools, with a tool (kit) supplied with the product or spare part or with simple tools.
- The computer must be designed so that the rechargeable battery can be replaced easily and without any specialist knowledge.

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 procedure for replacing the rechargeable battery is described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where the procedure for replacing the rechargeable battery is described.

5.1.2 Capacity and durability of the rechargeable battery

The battery capacity must be measured in accordance with section 7.3.1 "Discharge performance at 20 °C (rated capacity)" of the EN 61960-3 standard. 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.

The rechargeable battery must achieve a minimum of 1000 full charge cycles.

full charge cycles ≥ 1000

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 rechargeable battery must be in a fully charged state after 1000 full charge cycles and have a remaining capacity (QRem) of at least 80% of the nominal capacity (N).

QRem ≥ 80% * N

The battery life in cycles must be measured using the following test cycle according to IEC EN 61960-3:

1) One cycle at a discharge rate of 0.2 C and measurement of the capacity
2) Cycles 2 to 999 at a discharge rate of 0.5 C
3) Repeat step 1

The tests must be carried out using an external source of power that does not limit the rechargeable battery's power input and does not impair the specified standard charging algorithm for regulating the charging rate.

Compliance verification

The applicant shall state the measured rated capacity (C) in Annex 1 and submit a test report as Annex 7 to the contract verifying that at least three rechargeable batteries have been analysed and all three comply with the requirement. The test report can be produced by a testing laboratory according to DIN EN ISO/IEC 17025, a testing laboratory accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory) or by an in-house laboratory run by the manufacturer of the rechargeable battery.
In addition, the applicant shall submit in Annex 8 the measurement report on the durability test for a minimum of three rechargeable batteries. The test report must document the numbers of full charge cycles achieved by the rechargeable batteries, as well as the remaining capacities recorded at the end of the tests.

5.1.3 Software for determining the status of the rechargeable battery and protecting the rechargeable battery

The applicant must provide the following software tools for the computer:

- **Software for determining the status of the rechargeable battery:**
  The software must be able to read the rechargeable battery's state of health (defined as the ratio of "full charge capacity" to "design capacity" according to the Smart Battery System Specifications[28]), state of charge (according to the Smart Battery System Specifications) and the number of full charge cycles already performed by the rechargeable battery and to display this information for the user. If the rechargeable battery (or battery pack) does not have integrated electronics to record this information, the computer itself must be equipped with corresponding electronics. The software must be able to access the corresponding electronics and be capable of reading the status of the rechargeable battery. The electronics must be able to detect if a rechargeable battery has been replaced and take this into account when giving the number of full charge cycles.

- **Software for protecting the rechargeable battery:**
  The software must be able to limit the charging of the rechargeable battery to a value smaller than the maximum amount of usable electricity (e.g. 80% of the full charge capacity). This will extend the service life of the rechargeable battery.

The applicant must make these software tools available to download free of charge on its website from the time at which the computer is launched on the market until at least 10 years after the last product model is offered on the market and provide information on these tools in the product documentation for the computer. If the computer has a pre-installed operating system, the above-mentioned software tools must also be pre-installed on the 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 software tools are described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where a guide on using the software tools to read the status of the rechargeable battery and protect the rechargeable battery.

5.2 External power supply unit

The portable computer must be offered on the market without an external power supply unit. A power supply unit must be offered as an optional accessory. This power supply unit must not have an integrated cable. Instead, it must be possible to plug the cable into the power supply unit. The external power supply unit must be equipped with the standard connection USB-C.

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

In addition, the packaging must contain a corresponding note on the packaging for users, such as: "This package does not contain an external power supply unit for environmental reasons. This device can be charged using most USB external power supply units and a cable with a USB Type C plug."

The manufacturer must include a precise description of a suitable USB power supply unit in the operating instructions for the computer, including information on a suitable power input.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1. In addition, the applicant shall submit a photo of the note in Annex 7 to the contract that shows all of the information described above. The applicant shall also state in Annex 1 to the contract the Internet link (URL) to its own website where the precise description of a suitable USB power supply unit is published, including information on a suitable power input.

5.3 Additional requirements for the product information for portable computers

The following information relevant to the environment and health must be made freely available to users. It must be published on the Internet from the time the first products are delivered until at least 10 years after the last product model is offered on the market.

At least the following information must be provided to users in the product documentation or on the manufacturer's website:

a) Instructions on dismantling and replacing the rechargeable battery with the corresponding tools according to Paragraph 5.1.1
b) Information on the nominal capacity and the number of full charge cycles achievable by the rechargeable battery according to Paragraph 5.1.2
c) Instructions on how to use the software tools for reading the battery charge and protecting the battery in accordance with Paragraph 5.1.3
d) Information on the nominal voltage and type designation of the rechargeable battery
e) Provision of information for users on the correct use of lithium rechargeable batteries.
f) Information that the rechargeable batteries should not be treated as normal household waste but instead should be taken to a battery collection facility.
g) A precise description of a suitable USB external power unit according to Paragraph 5.2

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and shall state in Annex 1 the Internet link (URL) to its own website where this information is published.

6 Additional special requirements for separate keyboards

6.1 Noise emissions

The evaluation of the noise emissions is based on the provision of the declared A-weighted sound power level in decibels (dB) to one decimal place. If devices with an identical construction have different configuration variants, the variant with the loudest individual components must be used for measuring the sound power level.

Measurement of the A-weighted sound power level
The A-weighted sound power level must be determined in accordance with ISO 7779 in the following operating modes described in Annex C to ECMA 74:

- Keyboard: C.5 Equipment category: Keyboards

Declared A-weighted sound power level
At least three devices of a model must be tested in each operating mode. The declared A-weighted sound power level, LWAd, must be determined in accordance with ISO 9296 and stated in decibels (dB), rounded up to one decimal place. If the noise emissions can only be measured on one device, the following formula can be used instead:

LWAd = LWA1 + 3.0 dB

(LWA1: measured A-weighted sound power level of a single device in decibels (dB) to one decimal place)

There are no test values/limits for this requirement.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 by stating the declared A-weighted sound power level in decibels (dB) to one decimal place in all operating modes and shall submit a measurement report from a testing laboratory accredited according to ISO/IEC 17025 or from a laboratory which has been recognised by an independent body as an SMT laboratory (supervised manufacturer's testing laboratory) as Annex 5b.
In addition, the applicant shall complete and submit Annex 6b to the contract for the computer.

6.2 Batteries

a) Primary batteries
If primary batteries are required to operate the keyboard,

- it must be possible to replace them without the aid of tools,
- the keyboard must have an energy saving mode that automatically switches off the keyboard after a certain period of inactivity,

- the manufacturer must state in the product documentation the service life of the primary batteries under typical usage conditions after which the user should replace the batteries,
- only those primary batteries that are available in standard form from the retail trade may be used (e.g. AAA, AA, button cell). In the case of AAA and AA batteries, it must also be possible to use rechargeable versions (e.g. NiMH).

b) Rechargeable batteries

If rechargeable batteries are used, they should be considered to be typical spare parts that are subject to the requirement in Paragraph 3.3. The applicant must ensure that the repair requirements in Paragraph 3.3 are fulfilled.

Replaceability of the rechargeable battery:

If the device contains a rechargeable battery, it must be possible for it to be replaced by the user without damaging the device and without the aid of special tools.

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 procedure for replacing the batteries is described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where the instructions for dismantling and replacing the battery or rechargeable battery is described. If primary batteries are used, the applicant shall state their typical service life in Annex 1 to the contract.

6.3 Product information for keyboards

The following information relevant to the environment and health must be made freely available to users. It must be published on the Internet from the time the first products are delivered until at least 10 years after the last product model is offered on the market.

At least the following information must be provided to users in the product documentation or on the manufacturer's website:

a) Information on the supply of spare parts and their availability and prices in accordance with Paragraphs 3.3.1 and 3.3.2
b) Information on repair and maintenance. This includes a) error code tables, exploded view diagrams or comparable descriptions, circuit diagrams and repair instructions (including the required tools) and the number of steps required to dismantle the priority components named in Paragraph 3.3.1, b) contact details for repairs and c) publicly accessible information on parts that are paired as standard and the procedure for authorising the replacement of these parts that are paired as standard, according to Paragraph 3.3.6
c) Declared A-weighted sound power level in operation according to Paragraph 6.1
d) Instructions on dismantling and replacing the rechargeable battery with the corresponding tool according to Paragraph 6.2 (if relevant)

e) Information on the nominal capacity, nominal voltage and type designation of the rechargeable battery according to Paragraph 6.2 (if relevant)
f) Provision of information for users on the correct use of rechargeable batteries/primary batteries (if relevant)
g) Information that the rechargeable batteries should not be treated as normal household waste but instead should be taken to a battery collection facility (if relevant)

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and shall state in Annex 1 the Internet link (URL) to its own website where this information is published.

7 Additional special requirements for separate mice

7.1 Batteries

a) Primary batteries

If primary batteries are required to operate the mouse,

- it must be possible to replace them without the aid of tools,
- the mouse must have an energy saving mode that automatically switches off the mouse after a certain period of inactivity,
- the manufacturer must state in the product documentation the service life of the primary batteries under typical usage conditions after which the user should replace the batteries,
- only those primary batteries that are available in standard form from the retail trade may be used (e.g. AAA, AA, button cell). In the case of AAA and AA batteries, it must also be possible to use rechargeable versions (e.g. NiMH).

b) Rechargeable batteries

If rechargeable batteries are used, they should be considered to be typical spare parts that are subject to the requirement in Paragraph 3.3. The applicant must ensure that the repair requirements in Paragraph 3.3 are fulfilled.

Replaceability of the rechargeable battery:

If the device contains a rechargeable battery, it must be possible for it to be replaced by the user without damaging the device and without the aid of special tools.

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 procedure for replacing

the batteries is described and submit the relevant pages of the product documentation as Annex 3 to the contract OR alternatively shall state in Annex 1 the Internet link (URL) to its own website where the instructions for dismantling and replacing the battery or rechargeable battery is described. If primary batteries are used, the applicant shall state their typical service life in Annex 1 to the contract.

7.2 Product information for mice

The following information relevant to the environment and health must be made freely available to users. It must be published on the Internet from the time the first products are delivered until at least 10 years after the last product model is offered on the market.

At least the following information must be provided to users in the product documentation or on the manufacturer's website:

a) Information on the supply of spare parts and their availability and prices in accordance with Paragraphs 3.3.1 and 3.3.2
b) Information on repair and maintenance. This includes a) error code tables, exploded view diagrams or comparable descriptions, circuit diagrams and repair instructions (including the required tools) and the number of steps required to dismantle the priority components named in Paragraph 3.3.1, b) contact details for repairs and c) publicly accessible information on parts that are paired as standard and the procedure for authorising the replacement of these parts that are paired as standard, according to Paragraph 3.3.6
c) Instructions on dismantling and replacing the rechargeable battery with the corresponding tool according to Paragraph 7.1 (if relevant)
d) Information on the nominal capacity, nominal voltage and type designation of the rechargeable battery according to Paragraph 7.1 (if relevant)
e) Provision of information for users on the correct use of rechargeable batteries/primary batteries (if relevant)
f) Information that the rechargeable batteries should not be treated as normal household waste but instead should be taken to a battery collection facility (if relevant)

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and shall state in Annex 1 the Internet link (URL) to its own website where this information is published.

8 Overview of possible future requirements

The following requirements could be taken into account or added in the future:

- Extension and supplementation of the computer-specific tools (class B according to EN45554 §A.4.4)
- Work is currently being carried out to introduce an EU energy label for computers, whereby the "active mode" of the device in its usage phase and a "repair index" will be taken into account. At the same time, the ecodesign regulation for computers is being revised. In the next revision of these Basic Award Criteria, the implementation of the

energy label on devices placed on the market will be analysed as soon as they are available.

- In addition, the dismantling steps and the complexity of the spare parts will be examined with high priority.
- TCO Generation 10 for computers is currently being developed. In draft version 2, there was a proposal to add a sentence on a maximum percentage share of 15% of the MSRP of the product for every year of the guarantee that is not provided free of charge. This percentage share could be different for rechargeable batteries. Whether such an approach is applicable for the product or also the rechargeable battery will be examined during the next revision.
- Examining the specific implementation measures for a QR code according to the EU Battery Regulation (2023/1542).

9 Applicants and parties involved

Manufacturers or distributors of 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 Environment Agency) which after the signing of the contract receives all data and documents submitted in application for the Blue Angel in order to be able to further develop the Basic Award Criteria.

10 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 31 December 2028.
They shall be extended by periods of one year each, unless terminated in writing by 31 March 2028 or 31 March 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 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 organizations.

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

- Applicant (licence holder)({manufacturer/distributor})
- Brand/trade name, product description
- Distributor (Label User), i.e. the marketing organization.

Appendix A Quoted laws, standards and literature

The following list is in alphabetic order. The citation method will be reviewed once again before publication.

German Battery Act (BattG) for the implementation of EU 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

EN 61960-3:2017 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications - Part 3: Prismatic and cylindrical lithium secondary cells, and batteries made from them

DIN EN 62133-2:2022-12/VDE 0510-82:2022-12: Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems

The German Material Ordinance for Electrical and Electronic Equipment (ElektroStoffV) for the implementation of EU Directive 2012/19/EU (WEEE Directive) and 2011/65/EU (ROHS Directive)

EN 45554:2020 General methods for the assessment of the ability to repair, reuse and upgrade energy-related products

ENERGY STAR® Program Requirements Product Specification for Computers Eligibility Criteria Draft 1, Version 9.0

Ergonomics of human-system interaction - Part 400: Principles and requirements for physical input devices (ISO 9241-400:2007); German version EN ISO 9241-400:2007

Ergonomics of human-system interaction - Part 410: Design criteria for physical input devices (ISO 9241-410:2008 + Amd.1:2012); German version EN ISO 9241-410:2008 + A1:2012

German law for the sale, return and environmental disposal of electrical and electronic (Electrical and Electronic Appliance Act – Elektro- und Elektronikgerätegesetz – ElektroG); date of issue: 20/10/2015; Federal Ministry of Justice (BMJ) and Federal Office of Justice (BfA)

IEC EN 61960-3 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications

ISO 7779 Acoustics – Measurement of airborne noise emitted by information technology and telecommunications equipment (ISO 7779:2018); German version EN ISO 7779:2018

ISO 9296 Acoustics - Declared noise emission values of information technology and telecommunications equipment, 2017-08

OECD (2019) OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, Version 3, https://www.oecd-

ilibrary.org/governance/oecd-leitfaden-fur-die-erfullung-der-sorgfaltspflicht-zur-forderung-verantwortungsvoller-lieferketten-fur-minerale-aus-konflikt-und-hochrisikogebieten_3d21faa0-de, last checked on 17/04/2024

RBA (2020): RBA Website. RBA (Publisher). Available online at http://www.responsiblebusiness.org/vap/about-vap/, last checked on 17/04/2024

DIRECTIVE 2011/65/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (revised version); ROHS Directive

DIRECTIVE (EU) 2022/2380 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 November 2022 amending 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

Directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety (Text with EEA relevance)

Social Accountability International (2020): SAI Website - Social Accountability International (Publisher). Available online at http://www.sa-intl.org/, last checked on 17/04/2020

REGULATION (EC) NO. 850/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 on persistent organic pollutants; POP Regulation

Commission regulation (EU) No. 1103/2010 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

Regulation (EC) no 1907/2006 of the European Parliament and of the Council of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme and for the dissemination of research results (2007-2013) (Text with EEA relevance)

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

Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 concerning the classification, labelling and packaging of substances and mixtures, in short CLP (Classification, Labelling and Packing). It replaces the old directives 67/548/EEC (Dangerous Substances Directive) and 1999/45/EC (Dangerous Preparations Directive)

COMMISSION REGULATION (EU) 2019/424 of 15 March 2019 laying down ecodesign requirements for servers and data storage products pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 617/2013

COMMISSION REGULATION (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) No 278/2009

REGULATION (EU) 2023/1542 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC

COMMISSION REGULATION (EU) 2023/1670 of 16 June 2023 laying down ecodesign requirements for smartphones, mobile phones other than smartphones, cordless phones and slate tablets pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) 2023/826

German ordinance to limit the use of hazardous substances in electrical and electronic equipment (Material Ordinance for Electrical and Electronic Equipment – Elektro- und Elektronikgeräte-Stoff-Verordnung – ElektroStoffV); date of issue: 19/04/2013; Federal Ministry of Justice (BMJ) and Federal Office of Justice (BfA)

WEEE Directive 2012/19/EU on waste electrical and electronic equipment; 4 July 2012; European Union.

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).

CLP Regulation (EC) No. 1272/2008		
Hazard categories	**Hazard statements**	
	H Phrases	**Wording**
Carcinogenic substances		
Carc. 1A Carc. 1B	H350	May cause cancer.
Carc. 1A Carc. 1B	H350i	May cause cancer if inhaled.
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.
Sensitizing substances for the skin		
Sens Skin 1	H317	May cause an allergic skin reaction
Endocrine substances with a negative effect on human health		
ED HH 1	EUH380	May cause endocrine disruption in humans
ED HH 2	EUH381	Suspected of causing endocrine disruption in humans
Endocrine substances with a negative effect on the environment		
ED ENV 1	EUH430	May cause endocrine disruption in the environment
ED ENV 2	EUH431	Suspected of causing endocrine disruption in the environment
PBT and vPvB substances ((very) persistent, (very) bioaccumulative, toxic)		
PBT	H440	Accumulates in the environment and living organisms including in humans
vPvB	H441	Strongly accumulates in the environment and living organisms including in humans
PMT and vPvM substances ((very) persistent, (very) mobile, toxic)		

PMT	EUH450	Can cause long-lasting and diffuse contamination of water resources
vPvM	EUH451	Can cause very long-lasting and diffuse contamination of water resources

Appendix C List of product-specific tools (class B) according to Paragraph 3.3.4

The product-specific tools (class B) for computers/keyboards/mice include the following:

- Microscope
- Micro soldering station with a heat gun and desoldering tweezers
- Precision tweezers
- Desoldering pump
- Plex (plastic lifting tool)
- Heating system / heating pad
- Other screwdrivers:
- Torx pin screwdriver
  - Triangle screwdriver
  - Tri-wing screwdriver
  - Y-shaped screwdriver
  - Torque screwdriver
  - Pentalobe screwdriver
  - Precision tool/watchmaker’s screwdriver