BLUE ANGEL

The German Ecolabel

Servers and Data Storage Products

DE-UZ 213

Basic Award Criteria

Edition January 2025

Version 1

The environmental label is supported by the following institutions:

Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit) is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.

Umwelt Bundesamt

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

Jury Umweltzeichen

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

RAL gGmbH

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

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Version 1 (01/2025): New edition, term of validity until 31/12/2028

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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

Servers and data storage products are primarily used in data centers. These product groups are used to process and store data and make it available in a central location. The demand for the central processing and storing of data has increased continuously for many years and has been strengthened by new business processes dealing with digitalisation and the increasing networking of products. This trend is also reflected in the sales figures. According to calculations by the Borderstep Institute, there were around 85.6 million servers in operation in Germany in 2021 (Hintemann et al. 2022). Sales of servers have been increasing for many years, although the number of servers delivered in 2023 fell by around 20% (Knobloch 2023). An important reason for this increase in sales is the demand for AI-optimised hardware. The largest global manufacturer of AI chips, NVIDIA, increased its sales from $27 billion to $61 billion in 2024 (Statista 2024). There has also been strong growth in the number of data storage products used in data centers. The market research institute IDC forecasts an annual increase in the storage capacity at cloud data centers of 29 percent between 2018 and 2023 for the economic region of Western Europe.[1] It is anticipated that the importance of servers and data storage devices for the information technology infrastructure will continue to increase substantially over the next few years.

The potential for easing the burden on the environment by developing suitable and ambitious criteria for the server and data storage product group is huge. Two factors will play an important role in this context. The growing sales figures and the fact that this product group is used intensively. Servers and data centers are operated around the clock, every day of the year. Increasing the energy efficiency of servers and data storage products has a huge influence on the performance of data centers. The more efficient the hardware is, the less energy it needs to deliver the same digital services.

[1] Hülskötter, Michael (2019): Multi-Cloud-Bewegung wird den Storage-Markt verändern (The multi-cloud movement will change the storage market). Published by the magazine "speicherguide". Available online at https://www.speicherguide.de/cloud/multi-cloud-bewegung-wird-den-storage-markt-veraendern-24337.aspx

1.3 Objectives of the environmental label

Climate protection, a reduction in power consumption, the preservation of resources and the avoidance of pollutants are key objectives of environmental protection. The Blue Angel environmental label for Servers and Data Storage Products will contribute to these goals by setting high minimum requirements for the energy efficiency of servers, data storage products and power supply units, as well as for the elimination of pollutants in the plastic materials. In addition, the label will require the early adoption of the ecodesign requirements for servers and data storage products including the guidelines for energy and material efficiency, as well as compliance with the energy efficiency criteria and documentation obligations in the Energy Star label.

The Blue Angel environmental label may be awarded to products featuring the following environmental properties:

- high energy efficiency and its documentation,
- durability due to repairability,
- avoidance of environmentally damaging materials.

The following benefits are stated in the explanatory box:

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- low energy consumption
- durable
- low level of harmful materials

1.4 Definitions

Server: A data processing device that provides services and manages networked resources for client devices. Access to a server is primarily achieved via network connections, and not through direct user input devices, such as a keyboard or a mouse.

Model: Servers and data storage products in the same series can sometimes vary considerably with respect to their IT components, performance and energy efficiency. These differences are indicated in the product catalogues using different product models. Manufacturers have configurators on their websites so that customers can add additional components to the basic model. The **basic model (low performance configuration)** describes a server or storage model in a series with low energy efficiency and usually an inexpensive configuration (except for hard disks).

Server types: Server types differ in their design, system architecture and performance capabilities. Some of the server types and server casings named in the Basic Award Criteria are defined below:

- **One-node server:** A server in which precisely one independent computing system (node) is installed.
- **Blade server**: A server that is designed for use in a blade chassis. A blade server is a high-density device that functions as an independent server and includes at least one

processor and system memory but is dependent upon shared blade chassis resources (e.g. power supply units, cooling) for operation.

- **Blade chassis**: An enclosure that contains shared resources for the operation of blade servers, blade storage and other blade form-factor devices. Shared resources provided by a blade chassis may include power supply units, data storage and hardware for direct current power distribution, thermal management, system management, and network services.
- **Multi-node server**: A server with two or more independent server nodes that share a single enclosure and one or more power supply units. In a multi-node server, power is distributed to all nodes through shared power supply units.
- **Resilient server**: A server designed with extensive reliability, availability, serviceability and scalability features integrated in the micro architecture of the system, central processing unit (CPU) and chipset.
- **High performance computing (HPC) system**: A computing system which is designed and optimized to execute highly parallel applications for high performance, deep learning or artificial intelligence applications. HPC systems feature clustered nodes often featuring high speed inter-processing interconnects as well as high memory capability and bandwidth.

Data storage product: A fully functional storage system that supplies data storage services to clients and devices attached directly or through a network. Components and subsystems that are an integral part of the data storage product architecture (e.g. to provide internal communications between controllers and hard disks) are considered to be part of the data storage product. In contrast, components that are normally associated with a storage environment at the data center level (e.g. devices required for operation of an external storage area network (SAN)) are not considered to be part of the data storage product. A data storage product may be composed of integrated storage controllers, data storage devices, embedded network elements, software and other devices.

2 Scope

The Basic Award Criteria for the Blue Angel apply to servers and data storage products that are designed for use in server rooms or data centers (see Paragraph 1.4 Definitions).
HPC systems and servers with more than 4 CPU sockets are excluded from the scope of these Basic Award Criteria because their efficiency cannot be plausibly determined with SERT and no efficiency criteria have been developed up to now.

Products that fall under the scope of the Blue Angel ecolabel for Computers, Keyboards and Mice (DE-UZ 78) are excluded from the scope of these Basic Award Criteria.

All configurations that are certified with the Blue Angel must comply with all requirements. It is possible to apply for the ecolabel for a specific configuration or for multiple configurations in a product series but not for the entire product series.
When applying for the Blue Angel ecolabel, the following rules apply to verifications:

- In the case of applications for specific configurations:
  - All verifications must be for this specific configuration.

- In the case of applications for several configurations in a product series but not for the entire product series:
  - All verifications must be submitted for at least the model in this selection of configurations with the lowest performance.
  - The product names used for this selection of configurations must differ unambiguously from other configurations that are not certified with the Blue Angel.
- In the case of applications for a product series:
  - All verifications must be submitted for at least the basic model in this series.

3 Requirements

3.1 Energy efficiency

3.1.1 Energy Star requirements

The server and data storage products must comply with the requirements of the energy efficiency label "Energy Star"[2] for the relevant product group, in the current version valid at the time of application.

For **servers**, the Energy Star *Program Requirements for Computer Servers* **[2]** are valid.
In the **Energy Star for computer servers**, minimum requirements are set for, amongst other things, the following areas:

- Energy efficiency of the power supply unit
- Energy management
- Energy efficiency in an active operating state
- Power consumption in an idle state
- Reporting

For **data storage products**, the *Program Requirements for Data Center Storage* **[3]** are valid.
In the **Energy Star for data storage products**, minimum requirements are set for, amongst other things, the following areas:

- Energy efficiency of the power supply unit
- Energy efficiency in an active operating state
- Energy efficiency features
- Performance data measurement and output requirements
- Reporting

Compliance verification

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

In the case of products that are already ENERGY STAR certified, compliance can be verified by publishing the ENERGY STAR Unique ID published on the ENERGY STAR website.

[2] U.S. Environmental Protection Agency: Energy Star®. Available online at: https://www.energystar.gov/products/data_center_equipment.

The applicant shall state in Annex 1

- *the ENERGY STAR Unique ID and*
- *the Internet link (URL) to the ENERGY STAR website verifying certification with the ENERGY STAR.*

If this is not the case, the applicant shall submit a test report from an independent testing laboratory, which is accredited for these types of measurements in accordance with DIN EN ISO/EC 17025, as Annex 2 to the contract. The test report must verify compliance with all of the Energy Star requirements. Test reports completed by the applicant are recognised as being of an equivalent standard when the testing laboratory used for the measurements is accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory).

3.1.2 Operating conditions

It must be possible to operate the server or data storage product in operating condition class A2 or higher at the classification given in Table 6 "Operating condition classes" from the ecodesign regulation for servers and data storage products (Regulation (EU) 2019/424 **[1]**).
At least the following operating conditions must be allowable:

Table 1: Operating conditions for servers and data storage products

Operating condition classes	**A2**
Dry bulb temperature	
Allowable range	10 – 35 °C
Recommended range	18 – 27 °C
Humidity range, non-condensing	
Allowable range	– 12 °C Dew Point (DP) and 8% relative humidity (RH) to 21 °C DP and 80% RH
Recommended range	– 9 °C DP to 15 °C DP and 60% RH
Maximum dew point	21 °C
Maximum rate of temperature change	5 °C in 15 minutes and 20 °C in 1 hour

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and state the allowable and recommended values for the operating conditions.

3.1.3 Server in an active state

The energy efficiency of the server in an active state (Eff_{ACTIVE}) must be determined according to the *Server Efficiency Rating Tool (SERT)* **[4]** method in the current version valid at the time of application (currently SPEC SERT 2.0.8).
The energy efficiency of the server in an active state (Eff_{ACTIVE}) must comply with the relevant requirements of the current Energy Star.

The energy efficiency must be clearly visible or clearly linked on the product website for the server together with the technical data for the external power unit used for the measurement.

Compliance verification

The applicant

- *shall declare compliance with the requirement in Annex 1 to the contract and*
- *state*
    - *the energy efficiency in an active state (Eff_{ACTIVE}) and*
    - *the selected configurations for the server*

  on the product website and in Annex 3. The applicant shall use the supplied template in Annex 3 or an identical list of parameters to document and submit the configuration characteristics.

3.1.4 Server in an idle state

The power consumption in an idle state (SERT Idle State Power, (watts)) and under load[3] (SERT Active State Power) must be measured using the method described in the latest version of the Energy Star **[2]**. The same configuration that was documented according to Paragraph 3.1.3 in Annex 3 must be used.
For the power consumption of the basic configuration of the server in an idle state, the following requirement must be fulfilled:

- SERT Idle State Power ≤ 250 W

For the ratio of the power consumption under load to the power consumption in an idle state of the basic configuration of the server, the following value must also be stated:

- Idle to Active Ratio = SERT Idle State Power / SERT Active State Power

Note:

According to the latest version of SERT **[2]**, SERT Active Power can be calculated as follows. As of October 2024, GPUs are not included in the calculation but it is expected that future versions will take GPUs into account.
The power consumption measured by SERT is the power consumption for each worklet at each load level i measured across n load levels and divided by the duration of the measurement T. The power consumption for the worklet is the geometric mean for load levels i:

$$P_{worklet} = \exp\left(\frac{1}{n} \cdot \sum_{i=1}^{n} \ln\left(\frac{E_{load\ i}}{T}\right)\right)$$

The power consumption for each workload is the geometric mean of the power consumption for all worklets j=1..m

[3] The load for all of the server components (denominator) used to calculate the efficiency of the configuration in an active state. This figure must be reported to the Energy Star and is the sum of all the workload scores as a geometric mean according to the calculation guidelines in https://www.spec.org/sert2/SERT-metric.pdf.

$$P_{Workload} = \exp(\frac{1}{m} \cdot \sum_{i=1}^{n} \ln(P_{worklet}))$$

Accordingly, the power consumption under load is the weighted geometric mean for the workloads.

$$P_{Active} = \exp\left(0{,}65 \cdot \ln(P_{CPU}) + 0{,}3 \cdot \ln\left(P_{Memory}\right) + 0{,}05 \cdot \ln\left(P_{Storage}\right)\right)$$

In other words, the power consumption under load is already included in the denominator for SERT Eff_{ACTIVE} and is easy to determine using the measurement results from SERT:

$$Eff_{Active} = \frac{Performance_{Active} \cdot 1000}{P_{Active} \cdot T}$$

Compliance verification:

The applicant

- *shall declare compliance with the requirement in Annex 1 to the contract and*
- *shall state the power consumption in idle mode, under load and the ratio between these values (Idle to Active Ratio) on the product website and in Annex 1.*

3.1.5 Data storage products

The energy efficiency of the data storage products must be determined in accordance with the SNIA Emerald™ Power Efficiency Measurement Specification **[5]** in the current version valid at the time of application (currently V4.0.0) and stated on the website.

In the case of **block access systems**, the following values must be determined (original descriptions from the SNIA Emerald Measurement Specification):

- Ready Idle Test
  - Average power consumption (W);
  - Raw capacity of product under test (GB);
  - EP_{RI} for Ready Idle (GB/W).
- Active Tests[4]
  - Hot Band: EP_{HB} (IO/s/W) (≥28 IOPS/W);
  - Random Read: EP_{RR} (IO/s/W);
  - Random Write: EP_{RW} (IO/s/W);
  - Sequential Read: EP_{SR} (MiB/s/W) (≥2.3 MiB/s/W);
  - Sequential Write: EP_{SW} (MiB/s/W) (≥1.5 MiB/s/W).

In the case of **file access systems**, the following values must be determined:

- Ready Idle Test
  - Average power consumption (W);

[4] The Energy Star gives minimum values for the datapoints EP_{HB}, EP_{SR} and EP_{SW}, that must be complied with according to Paragraph 3.1.1. The values are stated here for information purposes.

- Raw capacity of product under test (GB);
- EP_{RI} for Ready Idle (GB/W).

- Active Tests
  - Video Data Acquisition: EP_{VDA} (MiB/s/W);
  - Database: EP_{DB} (MiB/s/W);
  - Virtual Desktop Integration: EP_{VDI} (MiB/s/W);
  - Software Build: EP_{SWB} (MiB/s/W).

The measurement results must be published on the product website. The "Information Reporting Requirements" for the Energy Star in accordance with the currently valid version of the *Program Requirements for Data Center Storage* **[3]** must also be fulfilled. If the product itself is not covered by the scope of the Energy Star, the applicant is only required to publish information that can be determined at a reasonable cost.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and state the measured values on the product website.

3.1.6 Monitoring data interface

The server and data storage products must provide the following data in real time [min. 1/10s]:
- Power consumption [W];
- Data transfer via the network interface [Mbit/s];
- In the case of servers: Load state for every logical CPU [%].

This data must be made available in a published or user-accessible format that is readable by third-party, non-proprietary management software via a standard network. The following data formats are, for example, acceptable: SNMP (simple network management protocol), IPMI (intelligent platform management interface) or XML (extensible markup language).

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract. The applicant shall also publish the data format on the product website and provide a link (Internet link) to the documentation about the monitoring of the data interface.

3.2 Material requirements

3.2.1 Primary plastics in the housing and housing parts

The primary plastics in the housing and housing parts of the servers, power supply units and data storage devices with a mass >25g 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

[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.

up in accordance with Article 59, Paragraph 1 of the REACH Regulation (so-called "list of candidates"). [6,7]

b) Substances that according to the CLP Regulation **[7]** have been classified in the following hazard categories or which meet the criteria for such classification:[8,6]
   - carcinogenic in categories Carc. 1A or Carc. 1B
   - germ cell mutagenic in categories Muta. 1A or Muta. 1B
   - reprotoxic (teratogenic) in categories Repr. 1A or Repr. 1B
   - endocrine disruptors with a negative effect on human health, categories ED HH 1 and 2[9]
   - endocrine disruptors with a negative effect on the environment, categories ED ENV 1 and 2[10]
   - persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) characteristics[10]
   - persistent, mobile and toxic (PMT) or very persistent, very mobile (vPvM) characteristics[10]

c) Halogenated polymers containing chlorine, bromine or fluorine.

d) In the case of flame retardants,
   - no halogenated organic compounds may be used and
   - 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 requirement is also considered to be fulfilled if no substances have been given a benchmark score of 1 using the GreenScreen[11] evaluation system.

The hazard statements (H Phrases) that correspond to the hazard categories can be found in Anhang B: Assignment of hazard categories and H Phrases.

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[6] The list of candidates in its relevant version can be found under the following link: https://echa.europa.eu/de/candidate-list-table

[7] The current version of the list of candidates or classifications according to the CLP Regulation at the time of application are valid. The label holder is obligated to take into account current developments and classifications on the list of candidates. If an ingredient is newly added to the list of candidates or newly 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. A deadline for substituting this ingredient will then be defined in consultation with the German Environment Agency.

[8] A comprehensive classification and labelling inventory, which also includes all of the self-classifications of hazardous substances made by manufacturers (self-classification and harmonised classifications) is available on the website of the European Chemicals Agency (ECHA): ECHA classification and labelling inventory.

[9] New hazard categories in the CLP Regulation, legally binding from 1 May 2025 at the latest for all substances placed onto the market.

[10] New hazard categories in the CLP Regulation, legally binding for substances newly placed onto the market from 1 May 2025 at the latest and for existing substances on the market by 1 November 2026 at the latest.

[11] https://registry.greenscreenchemicals.org/

Exemption:

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); If this information is not available to the applicant, it is sufficient for the plastic manufacturer to submit this information to RAL confidentially;
- plastic parts with a mass of less than or equal to 25 g.

Compliance verification:

The applicant

- shall declare compliance with the requirements in Annex 1 to the contract.
- shall state which plastics are used for plastic parts with a mass > 25g in Annex P-L.
- shall submit a written declaration from the plastics manufacturer or guarantee the provision of these documents to RAL gGmbH for each of the plastics used. If this information is not available to the applicant, it is sufficient for the plastic manufacturer to submit this information to RAL confidentially. This declaration must state 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). 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.

When first applying for the Blue Angel environmental label, the submitted declarations (Annex P-M and Annex P-L) must not be older than 6 months. If one applicant submits additional applications for the labelling of products that contain the same plastics, the submitted declarations may be presented unchanged during the term of the Basic Award Criteria. Notwithstanding this, RAL shall be entitled to ask for an updated version of the declarations if the German Environment Agency (Umweltbundesamt) finds that product-relevant substances have been added to the list of candidates.

3.2.2 Recycled plastics used in the housing and housing parts

3.2.2.1 Origin of the recycled plastics

If post-consumer recycled materials (PCR materials) with a mass >25g are used in the housing or housing components, they must

- come from certified sources and the certificate must clearly verify the origins of the recycled plastics and
- be sourced from recycling processes (e.g. chemical recycling of plastics).

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.

The applicant

- *shall declare compliance with the requirements in Annex 1 to the contract.*
- *shall submit the certificate as Annex 4.*

3.2.2.2 Exclusion of certain PCR additives

No substances excluded in Paragraph 3.2.1 may be added to the PCR materials.

Compliance verification:

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

3.2.3 Declaration of the SVHC content of the product

If the product contains SVHC (substances of very high concern) [12] on the list of candidates, which must be declared to the European Chemicals Agency (ECHA), the applicant must provide a link for this specific product to the entry made by the manufacturer for the product in the SCIP database.

Compliance verification:

The applicant shall declare compliance with the requirements in Annex 1 to the contract and include the link in a clearly visible place on the product website.

3.3 Durability and reusability

3.3.1 Secure data deletion

Servers and data storage products must have a software-based function that allows the devices to be prepared for reuse. This process must reliably delete all data on the devices and reset the system settings (e.g. default settings) so that no data from the previous user is present. This function can also be provided using an external software or service that is provided free of charge by the manufacturer from the time at which the product is launched on the market until at least 8 years after the termination of production of the product.

Note:

Secure deletion goes further than simply deleting the index table and includes overwriting used areas of the storage medium with random data or, in the case of encrypted storage media, securely removing the decryption key so that the storage memory can be overwritten. As the firmware on the storage medium generally prohibits application software from accessing faulty or protected areas of the memory, the software used to securely delete the data must be installed at the level of the firmware on the storage medium.

[12] 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.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract and document this process in Annex 5.

3.3.2 Software updates

The following requirements for software updates apply until at least 8 years after the termination of production of the product:

- 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), 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.

3.4 Repairability

3.4.1 Availability of spare parts

The applicant undertakes to make sure that the provision of spare parts for the repair of the devices is guaranteed for at least 8 years following the termination of production. The spare parts must be available at reasonable prices from the manufacturer themselves or from a third party. Spare parts are functionally identical or compatible and functionally improved components or modules that may be exchanged during repair in the course of the service life of a server or data storage device to replace defect parts.

This applies to the following components:

- Fans
- Hard disks (SSD and HDD)
- Power supply units
- Batteries and rechargeable batteries
- CPU
- Short-term memory (RAM)
- Motherboards
- Graphics cards
- RAID controller (redundant array of independent disks)
- Network cards

Note:
The manufacturer is not expected to stock standard components, such as button batteries, that are widely available on the market.

Compliance verification

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

3.4.2 Replaceability of spare parts

The product must comply with the following requirements:

- The devices must be designed in such a way that they can be repaired using the spare parts named in Paragraph 3.4.1 either without tools or with a tool supplied with the product or spare part, with basic or product-specific tools (class A and B according to EN 45554 §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.
- Any fixing elements that must be removed in order to replace spare parts must be removable. They must also be reusable or supplied with the spare part.

Compliance verification

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

3.4.3 Delivery deadlines for spare parts

The applicant must ensure that the spare parts stated in Paragraph 3.3.1 can be delivered

- during the first five years: within five working days of receipt of the order by the manufacturers and
- during the remaining period in which the spare parts are available: within ten working days of receipt of the order by the manufacturers.

Exemption:
Unforeseeable delays to deliveries caused by force majeure (e.g. storms, pandemics, etc.).
Standard components, such as button batteries, that are widely available on the market and which the manufacturer does not have to stock are also exempt.

Compliance verification

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

3.4.4 Parts pairing

The product must not place any software-based limitations on the use of physically and technically compatible spare parts from other manufacturers.

The applicant undertakes to support interested manufacturers of spare parts in the production of suitable interfaces. This includes a fair pricing policy for providing access to the necessary information. Ideally, the documentation on the interfaces will be made publicly accessible.

Exemption:

Rechargeable batteries, motherboards and external power supplies are excluded from this requirement due to the risk of fire.

Note:

It is appropriate for the manufacturer to limit their liability if spare parts from third parties are used. In this case, the user must be explicitly informed of this fact.

Compliance verification

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

Compliance verification

The applicant shall verify compliance by submitting a report from the manufacturer of the devices in Annex 6. 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 (Annex ZZZ). 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[14]:

- *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

[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] Reports from other auditing bodies may be approved upon application to the German Environment Agency.

of the OECD due diligence process (Annex XX). 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 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]
- 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),

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

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

[17] https://www.fairever.gold/de/shop/category/fairmined-gold-56?gad_source=1&gclid=CjwKCAjwzNvBhAkEiwAYiO7oFFedvf5avdEBPqz7MkzaqCrPEcuITEir7V3hRIbHE1hBnFMh7RR6hoCPG0QQAvD_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).

- Social security (ILO C102).

The obligation to comply with the requirements also extends to levels 1 and 2 of the supply chain. The individual levels of the supply chain are defined (according to BMI/Bitkom 2019)[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 7 and declare compliance with the above-mentioned requirements for these production sites. The certificates[23] must be enclosed as Annex 8. The following certificates 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 promoted ILO standards. Verification of compliance with this requirement can, for example, be provided by disclosing the detailed evaluation in the audit results with respect to the promoted ILO standards.*
- *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 XX. Or the report must be created by an independent testing institution accredited according to ISO/IEC 17065 that can verify compliance with the above-mentioned requirements. The audit on which the report is based must not be more than three years old when the application is submitted.[26]*

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[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 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] SA 8000 standard: https://sa-intl.org/programs/sa8000/, version: 2024

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

[26] The manufacturer of the devices is obligated to submit revisions of the verifications at regular intervals if the contents of his declaration have changed. The frequency at which revisions of the verifications need to be submitted is determined based on the assignment of the production sites to levels 1 and 2 according to the country-specific risk categories in the currently valid ranking for the SA 8000 Country Risk Assessments Process, which is based on the World Governance Indicators (WGI). 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.

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 manufacturer must request documentation to verify that these obligations exist and provide feedback to RAL gGmbH. RAL must be provided with the names and addresses of the affected production sites to clarify the matter.[27]

3.6 Product documentation

The product must have a product website accessible to the public. The product website must contain

- all of the information stipulated in the "Information to be provided by manufacturers" in the ecodesign regulation for servers and data storage products (Regulation (EU) 2019/424 **[1]**)
- the following information in a clearly visible place or via a clearly visible link:
    - the energy efficiency in an active state (Eff_{ACTIVE}) and the selected configurations for the server (see 3.1.3)
    - the power consumption in idle mode, under load and the ratio between these values (Idle to Active Ratio) (see 3.1.4)
    - The energy efficiency of the data storage products determined in accordance with the SNIA Emerald™ Power Efficiency Measurement Specification (see 3.1.5)
    - a link for this specific product to the entry made by the manufacturer for the product in the SCIP database (see 3.2.3)
    - the audited report in accordance with the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas" (latest version) (see 3.5.1)

Compliance verification

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

3.7 Outlook

The following changes will be considered in future revisions of these Basic Award Criteria:

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.

[27] This corresponds to the process in the "Joint Declaration on social sustainability in IT procurement in the public sector" from Bitkom in section 4 "Ordering authorisation". Accessible at: https://www.nachhaltige-beschaffung.info/SharedDocs/DokumenteNB/Verpflichtungserkl%C3%A4rung_ILO_BeschA_Bitkom_2019.pdf?__blob=publicationFile&v=7

- As soon as SERT is able to include loads for GPUs, the scope of these Basic Award Criteria will be expanded to include HPC.
- Additionally to SERT, it should also be possible to verify the efficiency of the server with the aid of comparable open source tools.
- As soon as a reliable set of data is available, a maximum value will also be defined for the "Idle to Active Ratio".
- As water cooling systems are becoming increasingly popular, the data interface should be able to monitor and report on the thermodynamic efficiency of the liquid cooling system.
- In contrast to the Blue Angel ecolabel for Computers, Keyboards and Mice (DE-UZ 78), the material requirements were not expanded in this revision to include cables because the voltages are higher and PVC-free cables are not yet widely used. These requirements will be revised in the future.

4 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.

5 Use of the environmental label

The use of the environmental label by the applicant is governed by a Contract on the Use of the Environmental Label concluded with RAL gGmbH.

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

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until 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 (manufacturer/distributor)

- Brand/trade name, product description
- Distributor (Label User), i.e. the marketing organization.

Anhang A Quoted literature, standards and laws

[1] 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. Available online at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02019R0424-20210501, last checked on 13/08/2024.

[2] Energy Star for Computer Servers (2024): ENERGY STAR Program Requirements - Product Specification for Computer Servers - Eligibility Criteria Version 4.0. EPA. Available online at https://www.energystar.gov/sites/default/files/asset/document/ENERGY%20STAR%20Version%204.0%20Computer%20Servers%20Final%20Specification.pdf, last checked on 13/08/2024.

[3] Energy Star for Data Center Storage (2021): ENERGY STAR Program Requirements - Product Specification for Data Center Storage - Eligibility Criteria Version 2.1. EPA. Available online at https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Data%20Center%20Storage%20Version%202.1%20Final%20Specification_0.pdf, last checked on 13/08/2024.

[4] Standard Performance Evaluation Corporation (SPEC), Server Efficiency Rating Tool (SERT). Available online at http://www.spec.org/sert2/, last checked on 13/08/2024.

[5] Storage Networking Industry Association (SNIA), SNIA Emerald™ Power Efficiency Measurement Specification V4.0.0. Available online at https://www.snia.org/tech_activities/standards/curr_standards/emerald, last checked on 13/08/2024.

[6] Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorization, and Restriction of Chemicals; REACH Regulation

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

Anhang 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).

Table 3: Hazard categories and H Phrases

CLP Regulation (EC) No. 1272/2008		
Hazard category	**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.
Carc. 2	H351	Suspected of causing cancer.
Germ cell mutagenic substances		
Muta. 1A Muta. 1B	H340	May cause genetic defects.
Reprotoxic substances		
Repr. 1A Repr. 1B	H360D	May damage the unborn child.
Repr. 1A Repr. 1B	H360F	May damage fertility.
Repr. 1A Repr. 1B	H360FD	May damage fertility. May damage the unborn child.
Repr. 1A Repr. 1B	H360Df	May damage the unborn child. Suspected of damaging fertility.
Repr. 1A Repr. 1B	H360Fd	May damage fertility. Suspected of damaging the unborn child.
Environmental hazards		
Aquatic Chronic 1	H410	Very toxic to aquatic life with long-lasting effects.