



Sustainability for a Connected Future

EPEAT-SUR-2025

Sustainable Use of Resources Criteria

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Foreword

The Global Electronics Council (GEC) is a mission driven non-profit working to create a more sustainable and just world, focused on supporting institutional purchasers in procuring only credible sustainable and circular technology products and services. GEC owns and operates EPEAT[®], a comprehensive voluntary sustainability ecolabel. GEC ecolabel criteria address priority impacts throughout the life cycle of the product, based on an evaluation of scientific evidence and international best practices.

Criteria are developed in balanced, voluntary consensus processes consistent with:

- a) ISO 14024 *Environmental labels and declarations – Type 1 environmental labelling – Principles and procedures*,¹ and
- b) US Executive Office of the President, Office of Management and Budget, OMB Circular A-119: *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*.²

A summary of GEC's Criteria Development Process (P74) and procedures governing the process are publicly available on the EPEAT Registry.³ Public stakeholder consultation occurs throughout the criteria development process. Stakeholder comments on criteria are considered by the Technical Committee as part of the Voluntary Consensus Process. Detailed policies for the EPEAT Program and criteria implementation are available in the EPEAT Policy Manual, also found on the EPEAT Registry. The EPEAT Program may issue temporary policy addenda to this document, EPEAT Policy Manual (P65), to address unforeseeable and extraordinary circumstances that are beyond the control of manufacturers. Such circumstances include but are not limited to natural disasters, acts of war or terrorism, significant labor strikes, devastating accidents to a supplier facility, epidemics, or pandemics.

These criteria were developed in collaboration with NSF. NSF facilitated the voluntary consensus process, in alignment with GEC's Criteria Development Process.

GEC Criteria are owned by GEC and, unless noted otherwise, their use is limited to the tools and resources developed by GEC as part of its mission activities. All GEC Criteria are publicly available.

¹ <https://www.iso.org>

² https://www.whitehouse.gov/wp-content/uploads/2020/07/revised_circular_a-119_as_of_1_22.pdf

³ <https://globalelectronicscouncil.org/ecolabels/>

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California Department of General Services	Northeast Recycling Council
Canon USA, Inc	Panasonic
Closing the Loop	Regency Technologies
Dell Technologies	Ricoh Company, Ltd.
Dynabook	Sharp
Epson	Sustainable Electronics Recycling International
Fujitsu	Toshiba
Global Electronics Council	TÜV Rheinland
HP, Inc	US Department of Defense
iFIXIT	US Department of Energy
Information Technology Industry Council	US Environmental Protection Agency
Kyocera	US Green Building Council
Lenovo	US National Institute of Standards and Technology
Maine Department of Environmental Protection	US National Renewable Energy Laboratory
Microsoft	Xerox Corporation

1.0 Purpose

The purpose of this document is to establish performance-based criteria to reduce life cycle impacts of resource consumption, from raw material extraction and manufacturing to end-of-life (EOL). State of Sustainability Research identifies priority resource consumption impacts and mitigation strategies for the sector, providing the scientific evidence-based foundation for criteria development.⁴ Criteria address manufacturer programs and activities to reduce negative sustainability impacts with respect to material selection and use, product design, EOL management, water management and product packaging for in-scope electronic products.

1.1 Scope

EPEAT applies these criteria to its product categories, providing an incentive for manufacturers to design products, supply chains and reverse supply chains to promote more sustainable use of resources and circularity, and allowing purchasers to identify sustainable products. EPEAT policies and procedures govern the implementation of these criteria within the EPEAT Program.

2.0 Normative References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. European Union Directives, which contain the adoption date in their title, are not treated as “dated references” (as described above). Unless explicitly indicated otherwise, when a European Union (EU) Directive is referenced in this document, a new or updated European Union Directive shall apply upon its enforcement date, unless otherwise noted in the criteria.

32 Code of Federal Regulations (CFR) Part 117 NISPOM Rule.⁵

ASTM D256, *Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics*.⁶

ASTM D7611/D7611M-20, *Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics*.⁷

⁴ <https://globalelectronicscouncil.org/resources/state-of-sustainability-research/state-of-sustainability-research-sustainable-use-of-resources>

⁵ <https://www.dcsa.mil/Industrial-Security/National-Industrial-Security-Program-Oversight/32-CFR-Part-117-NISPOM-Rule/#:~:text=32%20Code%20of%20Federal%20Regulation%20Part%20117%2C%20NISPOM&text=The%20NISPOM%20rule%20replaces%20the,M%20will%20remain%20in%20effect.>

⁶ <https://www.astm.org/d0256-23e01.html>

⁷ https://www.astm.org/d7611_d7611m-20.html

DIN 6120:2019, *Marking of packaging and packaging materials*.⁸

ECMA-341, *Environmental Design Considerations for ICT & CE Products, 4th Edition, December 2010 (Annex C)*.⁹

e-Stewards, *Standard for Responsible Recycling and Reuse of Electronic Equipment*.¹⁰

EN 45554, *General methods for the assessment of the ability to repair, reuse and upgrade energy-related products*.¹¹

EN 50614, *Preparing for re-use of waste electrical and electronic equipment*.¹²

EN 50625, *Series (Parts 1–5), Collection, logistics & treatment requirements for WEEE*.¹³

EU, Commission Regulation 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*.¹⁴

EU, Green Public Procurement (GPP) *Criteria for computers, monitors, tablets and smartphones, Annex II (March 5, 2021)*.¹⁵

EU, Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).¹⁶

IEC 60068, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*.¹⁷

IEC 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*

⁸ <https://webstore.ansi.org/standards/din/din61202019>

⁹ <https://ecma-international.org/publications-and-standards/standards/ecma-341/>

¹⁰ <https://e-stewards.org/the-e-stewards-standard/>

¹¹ <https://www.en-standard.eu/din-en-45554-general-methods-for-the-assessment-of-the-ability-to-repair-reuse-and-upgrade-energy-related-products/>

¹² <https://www.en-standard.eu/bs-en-50614-2020-requirements-for-the-preparing-for-re-use-of-waste-electrical-and-electronic-equipment/>

¹³ <https://www.en-standard.eu/bs-en-50625-1-2014-collection-logistics-treatment-requirements-for-wEEE-general-treatment-requirements/>

¹⁴ <https://eur-lex.europa.eu/eli/reg/2023/1670/oj/eng>

¹⁵ <https://circabc.europa.eu/ui/group/44278090-3fae-4515-bcc2-44fd57c1d0d1/library/bf592737-c5a8-43ce-99e1-dea61648d3f9/details>

¹⁶ <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:en:PDF>

¹⁷ <https://webstore.iec.ch/publication/516>

secondary cells and batteries made from them.¹⁸

IEC 62680-1-3:2018, *Universal serial bus interfaces for data and power – Part 1-3: Common components – USB type-C® Cable and Connector Specification*.¹⁹

IEEE 2883, *Standard for Sanitizing Storage*.²⁰

ISO 179-1, *Plastics – Determination of Charpy impact properties*.²¹

ISO/DIS 180, *Plastics – Determination of Izod impact strength*.²²

ISO 11469/1043, *Plastics – Generic identification and marking of plastics products*.²³

ISO 14021, *Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)*.²⁴

ISO 14040, *Environmental management – Life cycle assessment – Principles and framework*.²⁵

ISO 14044, *Environmental management – Life cycle assessment – Requirements and guidelines*.²⁶

ISO 14067, *Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification*.²⁷

ISO/IEC 17020, *Conformity assessment – Requirements for the operation of various types of bodies performing inspection*.²⁸

ISO/IEC 17021-1, *Conformity assessment – Requirements for bodies providing audit and certification of management systems*.²⁹

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*.³⁰

¹⁸ <https://webstore.iec.ch/publication/29603>

¹⁹ <https://webstore.iec.ch/publication/66588>

²⁰ <https://standards.ieee.org/ieee/2883/10277/>

²¹ <https://www.iso.org/standard/84393.html>

²² <https://www.iso.org/standard/84394.html>

²³ <https://www.iso.org/standard/63434.html>

²⁴ <https://www.iso.org/standard/66652.html>

²⁵ <https://www.iso.org/standard/37456.html>

²⁶ <https://www.iso.org/standard/38498.html>

²⁷ <https://www.iso.org/standard/71206.html>

²⁸ <https://www.iso.org/standard/52994.html>

²⁹ <https://www.iso.org/standard/61651.html>

³⁰ <https://www.iso.org/publication/PUB100424.html>

ISO/IEC 17065, *Conformity assessment – Requirements for bodies certifying products, processes and services*.³¹

ISO 22095, *Chain of custody – General terminology and models*.³²

MIL-STD-810H, *Department of Defense test method standard: Environmental engineering considerations for laboratory tests*.³³

NIST 800-88, Revision 1, *Guidelines for Media Sanitization*.³⁴

SCS Global Services, *Recycled Content Standard*.³⁵

SERI (R2) Standard.³⁶

ULE 2809-2, *Environmental Claim Validation Procedure (ECVP) for Recycled Content*.³⁷

3.0 Definitions and Acronyms

3.1 Definitions

additives and fillers: Substances or compounds such as pigments and stabilizers added to polymers to improve processing, properties, and end use performance.

agent: An entity acting on behalf of a manufacturer.

authorized repair provider: An entity who has been authorized by a manufacturer to diagnose, maintain, or repair its products.

battery: Any part consisting of one or several battery cells, including, as relevant to the product model, an electronic circuitry with battery-related sensors for battery management, housing(s), battery tray, brackets, shielding, thermal interface materials, and electric connections to other assemblies of the device.

battery, secondary cell: Cell which is designed to be electrically recharged. (Source: IEC.³⁸)

biobased: A material that is composed, in whole or in significant part, of biological materials or renewable

³¹ <https://www.iso.org/standard/46568.html>

³² <https://www.iso.org/standard/72532.html>

³³ <https://www.iesf.org/Standards-RPs/MIL-STD-810H>

³⁴ <https://doi.org/10.6028/NIST.SP.800-88r1>

³⁵ <https://www.scsstandards.org/standards/recycled-content-standard>

³⁶ <https://sustainableelectronics.org/welcome-to-r2v3/document-library/>

³⁷ <https://www.shopulstandards.com/Catalog.aspx?SearchText=2809&uniquekey=1>

³⁸ <https://www.electropedia.org/iev/iev.nsf/display?openform&ievref=482-01-03>

agricultural (including plant, animal, and marine materials) or forestry materials. (Source: IEEE 1680.1.³⁹)

charge cycle: One charge cycle is completed when the battery is fully charged and then fully discharged. This could be performed by partially charging/discharging the battery multiple times on different state of charge levels, as long as the total amount of charge discharge percentage is approximately equal to the nominal capacity.

cooling assembly: A system that is designed to facilitate thermal transfer of heat or cold from one place to another in the product, and may include plastic or metal parts, as well as fluids, in its construction.

commonly available tools: Implements or devices generally available for purchase by individuals or organizations not affiliated with the manufacturer, as defined by EN 45554:2020,¹¹ Class A, B, or C, used in repair or preparation for reuse that are either included in the point of sale (POS) packaging or generally available for purchase by individuals or organizations not affiliated with the manufacturer. (Derived from: EN 45554:2020)

component: Constituent of a product which cannot be fragmented without losing its particular function. (Source: IEC 63333⁴⁰)

consumable: Components that are integral to the functioning of imaging equipment that are consumed and routinely replaced or replenished by the user during normal equipment usage.

consumer: Purchaser of a consumer product.

consumer product: A product that is not an institutional product.

corporation level: See Section 3.2, EPEAT Program terms.

data: Facts represented as text, numbers, graphics, images, sound, or video. Data is the raw material used to represent information, or from which information can be derived. (Source: DAMA Dictionary of Terms⁴¹)

disposal: Any operation which does not lead to materials recovery, recycling, or reuse of equipment or components. This includes operations which result in the deposition of waste into, or on, land or water, or treatment via incineration.

display assembly: A system of components comprised of one or more display panels, the mounting enclosure or enclosures and any other components enclosed between the enclosures and the display panel.

³⁹ <https://standards.ieee.org/ieee/1680.1/7124/>

⁴⁰ <https://webstore.iec.ch/en/publication/66677>

⁴¹ <https://technicspub.com/dama-dictionary/>

display panel/display screen: The electronic portion of a product or component that shows a visual output of text, graphics, or video for human viewing.

NOTE — The support or housing containing a display panel or display screen is excluded from this definition. All sizes of display panel/display screen are included in this definition.

end-of-life (EOL): Life cycle stage of electronic equipment and components when they are no longer intended for use for their original purpose and are destined, or intended to be destined for, dismantling, material recovery, recycling, or disposal.

energy recovery: An operation where the material is used principally as a fuel or to generate useful energy through direct and controlled combustion.

NOTE — Solid-waste incinerators producing hot water, steam and/or electricity are a common form of energy recovery. (Source: ISO 472:2013.⁴² and ISO 15270:2008.⁴³)

external enclosure: The outside casing of the product that houses its components. This does not include battery external enclosures.

NOTE — The liquid crystal display (LCD) panel and other optical components accessible to the user and other external components (e.g., keyboards) are not included in this definition.

fan: A component (including its housing, circuit boards, etc., to operate as a thermal module) that produces a current of air for cooling and heat transfer purposes.

NOTE — Cables that provide electrical power to the fan are not included in the definition.

feedstock: Raw material used in a manufacturing process.

fiber: Cellulose material derived from trees and other plants, including but not limited to wood, hemp, kenaf, palm, bamboo, straw, and bagasse.

final disposition: The last facility or operation managing equipment and/or components and materials derived from them at which they either:

- a) are processed into materials that will be used directly in manufacturing new products or processes, or
- b) are ready for disposal.

firmware: Computer programs and data stored in hardware, typically in read-only memory (ROM) or programmable read-only memory (PROM), such that the programs and data cannot be dynamically written or modified during execution of the programs. (Source: NIST SP 800-53.⁴⁴)

⁴² <https://www.iso.org/standard/44102.html>

⁴³ <https://www.iso.org/standard/45089.html>

⁴⁴ <https://www.nist.gov/privacy-framework/nist-privacy-framework-and-cybersecurity-framework-nist-special-publication-800-53>

independent repair provider: An individual or business that is engaged in repair services of products and does not have an arrangement with the manufacturer for offering such services.

initial service providers: Companies who contract directly with manufacturers or companies who contract with an agent acting on behalf of the manufacturer to provide and/or coordinate take-back services.

institutional product: A product that is marketed primarily as a product for “commercial,” “business,” or “enterprise,” or equivalent, whether available only through authorized dealers or resellers or sold directly.

manufacturer: See Section 3.2, EPEAT Program terms.

optical components: An individual part or combination of parts that are used in the creation, transmission, manipulation, or detection of light. This includes transparent or translucent plastic parts that are not purely decorative or cosmetic.

packaging: All materials of any nature to be used for the containment, protection, handling, delivery, and presentation of products from the manufacturer to the user or the customer.

NOTE 1— For the purposes of this criteria document, unless otherwise noted, the term “packaging” only applies to manufacturer sales packaging or primary packaging, i.e., packaging that contains and protects, and is designed to deliver a product unit to the customer and does not include pallets/skids or the mechanism such as nails, screws, and bolts that is used to attach primary packaging to pallets/skids.

NOTE 2— Sales and primary packaging are often one and the same. For instances where “sales” and “primary” packaging differ, “primary” packaging applies, which is the packaging configuration that is in direct contact with the product.

EXCLUDED — Accessory carrying cases, printed materials, and packaging of printed material, and secondary and tertiary packaging as defined by the EU Packaging Directive.

packaging component: Any individual assembled part of packaging excluding inks, toners, labels, and radio-frequency identification (RFID) tags.

plastic: A material that contains, as an essential ingredient, one or more organic polymeric substances of large molecular weight, is solid in its finished state, and, at some stage in its manufacture or processing into finished articles, can be shaped by flow.

NOTE — Rubber, textiles, adhesives, paint, inks, and coatings which may in some cases meet this definition are not considered plastics. (Adapted from ASTM D883-24.⁴⁵)

plastic part: The plastic portion of a component’s construction.

NOTE — If plastic pieces are bonded together (into a single component) whether connected to either another plastic piece or a different material, the “plastic part” refers to the plastic portion of the component’s construction. A plastic part may be entirely plastic.

⁴⁵ <https://www.astm.org/standards/d883>

post-consumer material: Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. (Source: ISO 14021:2016)²³

pre-consumer material: Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it. (Source: ISO 14021:2016)²³

printed circuit board (PCB): A thin board made of fiberglass, composite epoxy, or other laminate material with conductive pathways etched or “printed” onto the board, with the purpose of, or to be used for, the connection of different components on the board, such as transistors, resistors, and integrated circuits.

printed circuit board electronic component: An individual electronic part or combination of parts that are typically directly attached to a PCB. Examples include capacitors, diodes, resistors, and integrated circuits. This does not include those components attached to a PCB solely to draw power and/or those that perform an electromechanical function (such as a fan).

product: See Section 3.2, EPEAT Program terms.

product level: See Section 3.2, EPEAT Program terms.

product category: See Section 3.2, EPEAT Program terms.

product category level: See Section 3.2, EPEAT Program terms.

product type: See Section 3.2, EPEAT Program terms.

publicly available: Obtainable by the public without restriction of access; for example, cannot require member only access. A requirement to provide a name and/or organization to obtain access is not considered a “restriction of access.”

rapidly renewable: Content not sourced from trees: materials derived from plants or fungi that take 10 years or fewer to grow. Examples of rapidly renewable materials include pulp and paper fibers made from various feedstocks such as hemp, flax, bagasse, *arundo donax*, wheat straw, kenaf, bamboo, and bioplastics made from feedstocks such as corn starch, sugarcane, and a variety of other sources like potatoes, algae, mycelium (mushroom “roots”), and food waste.

rare earth elements (REEs): Seventeen elements on the periodic table comprising the lanthanide series, scandium, and yttrium.

recovery: Operations that are part of a process to recapture elements, compounds, or materials, and transform them into commodities.

recycled content: Proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content. (Source: ISO 14021:2016)²³

recycling: Operations by which products, components, materials, or waste are processed and converted into raw materials for use in the production of new products or in processes, not including energy recovery or disposal.

refurbishment: Functional or aesthetic maintenance or repair of a product to restore to original or near original or upgraded functional state.

reuse: Using a product or component again for the originally intended purpose.

reused component: Component removed from a product and used again in the same or another product. (Source: IEC 63333⁴⁰)

NOTE 1 — A component is reused with or without alteration (e.g., functional or aesthetics alternation)

NOTE 2 — A component is reused for the same or a different purpose.

ruggedized device: A notebook computer or tablet designed and marketed to withstand extreme conditions; used for applications requiring increased durability, such as military, industrial, and outdoor environment applications.

software tool: A program used for software development or system maintenance.

state of charge: The remaining battery capacity expressed as a percentage of full charge capacity.

state of health: A measure of the general condition of a rechargeable battery and its ability to deliver the specific performance compared with its initial condition, expressed as the percentage of remaining full charge capacity relative to the rated capacity. (Source: Commission Regulation (EU) 2023/1670¹³)

storage: Retrievable retention of data. Electronic, electrostatic, or electrical hardware or other elements (media) into which data may be entered, and from which data may be retrieved. (Source: NIST SP 800-88 Rev. 1³⁴)

supplier: Entity that provides goods or services to the manufacturer.

take-back service: An offering of a manufacturer by which a product, packaging, or other item can be returned to the manufacturer or an entity designated by the manufacturer for the purpose of recycling and/or reuse, refurbishment, or remanufacturing.

trade secret: All forms and types of financial, business, scientific, technical, economic, or engineering information, including patterns, plans, compilations, program devices, formulas, designs, prototypes, methods, techniques, processes, procedures, programs, or codes, whether tangible or intangible, and whether or how stored, compiled, or memorialized physically, electronically, graphically, photographically, or in writing if:

- a) the owner thereof has taken reasonable measures to keep such information secret, and
- b) the information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable through proper means by, another person who can

obtain economic value from the disclosure or use of the information. (Source: 18 USC 1839).⁴⁶

unique product identifier: See Section 3.2, EPEAT Program terms.

user data: Personal, proprietary, or sensitive data or information created, owned, or processed by the user of a product, including configuration settings, networking details, credentials-related data, and account information that is stored or processed on the product. User data does not include technical data generated by a product to monitor performance or system health, such as self-monitoring, analysis and reporting technology (SMART), total volume or number of consumables used, battery charge cycle count, counter of times paper is fed into an imaging equipment device, error history, and counter information for functions (including scanning) that do not involve printing.

3.2 EPEAT Program terms

The terms below are important for the application of these criteria in the EPEAT Program. They are defined by the EPEAT Program for the purpose of assessment of conformance to the criteria in this document.

corporation level: Evidence provided to support conformance with the criterion addresses, at a minimum, all product categories in which the manufacturer has EPEAT registered products.

manufacturer: A brand owner that registers products to the EPEAT ecolabel and is responsible for ensuring ongoing conformance of products to criteria; also referred to as “participating manufacturer” in EPEAT policy documents.

product: A marketing model and chassis type associated with a unique product registration, including accessories and peripherals, integral to the operation of the product and contained by default in the POS packaging associated with the unique product registration, excluding consumables in imaging equipment.

NOTE 1 — “Integral” means the accessory or peripheral is fundamental or essential to product function. If the manufacturer does not include the peripheral or accessory in the POS packaging by default, it is not within scope. “By default” means that the peripheral or accessory is standard in the POS package(s). Manufacturer may offer choices for the “default” peripheral or accessory (e.g., different mouse options or output tray options.)

NOTE 2 — Criteria may modify product scope (e.g., include or exclude an accessory, peripheral, or component) or define a calculation methodology that accounts for variation in accessories and peripherals included in POS packaging (e.g., recycled content.)

NOTE 3 — “Unique product registration” may have multiple unique product identifiers.

product category: A group of products identified by the EPEAT Program for the purpose of product registration (e.g., computers and displays, servers, mobile phones, and imaging equipment).

product category level: Evidence provided to support conformance with the criterion covers all products registered by the manufacturer in the EPEAT product category. Manufacturers may indicate if the submitted

⁴⁶ <https://www.govinfo.gov/content/pkg/USCODE-2011-title18/html/USCODE-2011-title18-part1-chap90-sec1839.htm>

evidence addresses multiple product categories.

product level: Evidence provided to support conformance with the criterion is for individual EPEAT-registered products.

product type: Sub-categories of products identified by the EPEAT Program for the purpose of product registration and searching the EPEAT Registry. For example, the following product types are included in the computer and display product category: desktop computer, monitor, integrated desktop computer, notebook computer, tablet/slate, thin client, workstation, signage display.

unique product identifier: A distinct code used to unambiguously identify and differentiate an individual sales unit on the marketplace, whether it be a specific version or model of a device, or a bundle or multi-pack of multiple products. Common unique product identifiers include global trade item numbers (GTINs) (e.g., universal product code (UPC), European article number (EAN), and manufacturer part number (MPN).

3.3 Acronyms

AIO:	all in one
ASTM:	American Society for Testing and Materials
CAS:	Chemical Abstract Services
CDP:	Carbon Disclosure Project
CE:	Conformité Européenne
CERFLOR:	Brazilian National Forest Certification Program
CFR :	Code of Federal Regulations
CPU:	central processing unit
CSA:	Canadian Standards Association
DEG:	Deutsche Investitions und Entwicklungsgesellschaft
DOD:	Department of Defense
E:	energy (discharge power)
EAN:	European article number
ECMA:	European Computer Manufacturers Association
ECVP:	environmental claim validation procedure
EMI:	electromagnetic interference

eMMC:	embedded multimedia card
EN:	European Norm
EOL:	end-of-life
ESD:	electrostatic discharge
EU:	European Union
FSC:	Forest Stewardship Council
GEMI:	Global e-Sustainability Initiative
GPU:	graphic processing unit
GTIN:	global trade item number
HDD:	hard disk drive
IAF:	International Accreditation Forum
ICT:	information and communications technology
IEC:	International Electrotechnical Commission
ISCC:	International Sustainability and Carbon Certification
ISO:	International Standards Organization
ITB:	intermediate transfer belt
LCA:	life cycle assessment
LCD:	liquid crystal display
LNE:	large network equipment
MPN:	manufacturer part number
N/A:	not applicable
NIST:	National Institute of Standards and Technology
ODD:	optical disc drive
OPC:	organic photo-conductor
PCB:	printed circuit board
PEFC:	Programme for the Endorsement of Forest Certification
POS:	point of sale

PROM:	programmable read-only memory
SFI:	Sustainable Forestry Initiative
RAM:	random access memory
REE:	rare earth element
RFID:	radio-frequency identification
ROM:	read-only memory
RSB:	Roundtable on Sustainable Biomaterials
RSPO:	Roundtable on Sustainable Palm Oil
RTRS:	Round Table for Responsible Soy
SMART:	self-monitoring, analysis and reporting technology
SNE:	small network equipment
SSD:	solid state drives
TR:	technical report
UFS:	universal flash storage
UL:	UL Solutions
UPC:	universal product code
URL:	uniform resource locator
US:	United States
USB:	universal serial bus
WEEE:	waste electrical and electronic equipment
WRI:	World Resources Institute
WWF:	World Wide Fund for Nature

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5.0 Sustainable Use of Resources

5.1 Materials selection

5.1.1 Required – Disclosure of post-consumer reused or recycled and/or biobased plastic content

Manufacturer shall disclose the minimum percentage of plastic (by weight) derived from the use of post-consumer reused, recycled, and/or biobased plastic content in the product, mass of each is reported individually; additionally, percentage of (1) post-consumer reused content and/or (2) post-consumer recycled and/or biobased content are also reported separately. The disclosure shall be entered into the EPEAT Registry. Manufacturer may indicate zero for the reused, recycled and/or biobased content for plastic for this criterion.

For post-consumer reused content, the minimum percentage is calculated as the minimum weight of post-consumer reused plastic in the product (numerator) divided by the total weight of plastic in the product not including excluded items (denominator).⁴⁷

For post-consumer recycled content, the minimum percentage is calculated as the minimum weight of post-consumer recycled and/or biobased plastic in the product (numerator) divided by the total weight of plastic in the product not including excluded items (denominator). Only the weight of post-consumer recycled content and biobased content in the plastic shall be included in the numerator. Additives or fillers in plastic formulations shall not contribute to the weight of recycled or biobased content (numerator), except in the case where the additives or fillers are derived from a recycled or biobased feedstock.

To include biobased plastic content in the numerator, it must meet the following conditions:

- a) The manufacturer must demonstrate that the specific biobased plastic used is environmentally preferable to petrochemical based plastic:⁴⁸
 - i. Third-party verified or third-party critically reviewed LCA done in accordance with ISO 14040,²¹ ISO 14044,²² or ISO 14067,²³ and inclusive of:
 - a. sourcing aspects: An evaluation of the environmental impacts associated with the sourcing of materials,
 - b. treatment of biogenic carbon in the LCA: An assessment of how biogenic carbon is accounted for within the LCA, ensuring that carbon sequestration and emissions from biobased sources are accurately represented,
 - c. treatment of technological maturity: Consideration of the technological maturity of the

⁴⁷ Calculations should be done in accordance with the mass calculation methodologies of IEC 63333.

⁴⁸ The plastic chosen for comparison purposes should be the plastic used in the previous model of the product or like model, or industry standard plastic (e.g., compared to industry standard ABS and PC for electronics).

biobased plastic, including the efficiency and scalability of its production processes.

- ii. shows the global warming potential of the biobased plastic is lower than that of the petrochemical based plastic that would have been used in that application in the product,
- iii. if bio-feedstocks are grown for the purpose of making biobased plastics (as opposed to waste and residue bio-feedstocks), the bio-feedstocks must meet an applicable standard for sustainable production.

Exclusions: The manufacturer may exclude any of the following items from the calculation: PCBs, labels, cables and wires, connectors, PCB electronic components, optical components, ESD components, EMI components, external enclosure, and specialized parts (e.g., hinges) for ruggedized devices, fans, motors, and cooling assemblies. Power cords are considered cables. For imaging equipment products, stressed parts (i.e., gears, rotational supports and integrally molded components including rotational supports).

For server and LNE products, individual plastic parts weighing < 25 g may be excluded from the calculation. Servers and LNE products not containing plastic parts > 25 g may indicate "N/A" for this criterion.

For imaging equipment products, individual plastic parts weighing < 25 g may be excluded from the calculation. For imaging equipment products with a total combined weight of plastic in the product < 100 g (after exclusions), the manufacturer may indicate "N/A" for this criterion.

For computers and displays, individual plastic parts weighing < 5 g may be excluded from the calculation. Computers and displays with a total combined weight of plastic in the product < 100 g (after exclusions), the manufacturer may indicate "N/A" for this criterion.

For mobile phones, individual plastic parts weighing < 1 g may be excluded from the calculation. For mobile phones with a total combined weight of plastic in the product < 10 g, the manufacturer may indicate "N/A" for this criterion.

Post-consumer recycled and biobased content in the product is calculated in accordance with the methodology outlined in Annex E, or manufacturer may choose to calculate the worse-case configuration, i.e., lowest concentration of recycled content in case of configurable products.

Verification requirements:

This criterion is verified at the product level.

- a) For post-consumer reused content, evidence of use of reused components in at minimum registered products (e.g., documentation of the manufacturer's process for receiving and processing reused components).
- b) For post-consumer reused content, documentation of the calculation of post-consumer reused content that includes:
 - i. total weight (g) and list of applicable plastic parts in the product (i.e., not including excluded items),
 - ii. weight (g) of post-consumer reused plastic parts in the product,

- iii. percentage of post-consumer reused plastic used in the product.
- c) For post-consumer recycled and/or biobased content, documentation identifying the minimum percentage of post-consumer recycled and/or biobased plastic in material supplied to manufacturer or to manufacturer's part supplier for the product through means such as one or more of the following:
- i. supplier letter or supplier data submission to manufacturer indicating the recycled and/or biobased content, each, of the parts or materials contributing to the declared recycled or biobased content of the product. For biobased content, supplier letter indicating applicable standard used (e.g., ISCC PLUS⁴⁹ or equivalent) to demonstrate if it is physically segregated or mass balance attributed,
 - ii. material-level certification disclosing the minimum recycled content of post-consumer recycled plastic using ULE 2809-2³⁷ or SCS Global Services, *Recycled Content Standard*³⁵ v7.0 or later, ISCC PLUS⁴⁹ for biobased content,
 - iii. additional chain-of-custody procedures, inclusive of third-party verification and disclosure of post-consumer recycled plastic content as defined by ISO 14021,²⁴ may be deemed equivalent, as determined by EPEAT.
- d) For post-consumer recycled and/or biobased content, evidence connecting the post-consumer recycled and/or biobased plastic content supplied to the part(s) in the product (e.g., part specification, bill of materials).
- e) For post-consumer recycled and/or biobased content, documentation of the calculation of post-consumer recycled and/or biobased plastic content that includes:
- i. total weight (g) and list of applicable plastic parts in the product (i.e., not including excluded items),
 - ii. weight (g) of post-consumer recycled and/or biobased plastic in the applicable parts of the product (i.e., not including excluded items),
 - iii. percentage of post-consumer recycled and/or biobased plastic in material supplied for use in the product,
 - iv. type of plastic(s) containing the post-consumer recycled and/or biobased content.
- f) For biobased plastics included in the numerator:
- i. Third party critically reviewed LCA shows the cradle to grave 100-year GWP including biogenic carbon of the plastic part(s) is not more than the cradle to grave 100-year GWP including biogenic carbon of the virgin plastic part(s) it is replacing or a similar/equivalent plastic. The LCA report, as provided for critical review shall include evidence of being done in accordance with ISO 14040,²⁵ ISO 14044,²⁶ or 14067,²⁷ and inclusive of:
 - a. sourcing aspects: an evaluation of the environmental impacts associated with the sourcing of materials,

⁴⁹ <https://www.iscc-system.org/certification/iscc-certification-schemes/iscc-plus/>

- b. treatment of biogenic carbon in the LCA: an assessment of how biogenic carbon is accounted for within the LCA, ensuring that carbon sequestration and emissions from biobased sources are accurately represented,
 - c. treatment of technological maturity: consideration of the technological maturity of the biobased plastic, including the efficiency and scalability of its production processes.
- g) For biobased plastics included in the numerator, explanation of what qualifies the virgin or equivalent petrochemical-based plastic alternative as a plastic for comparison.
- h) For biobased plastics included in the numerator, statement of whether the bio-feedstock is waste and residue material or if it was grown for the purpose of making biobased plastic.
- i) If bio-feedstocks are grown for the purpose of making biobased plastics (as opposed to waste and residue bio-feedstocks), documentation that the bio-feedstocks meet one or a combination of the following as applicable:
- i. Roundtable on Sustainable Palm Oil (RSPO),
 - ii. Round Table for Responsible Soy (RTRS),
 - iii. Forest Stewardship Council (FSC),
 - iv. Roundtable on Sustainable Biomaterials (RSB),
 - v. International Sustainability and Carbon Certification (ISCC),
 - vi. Bonsucro Production Standard,
 - vii. Equivalent standards or certifications.

References and details:

Additional guidance on calculating post-consumer recycled content can be found in EN 45557:2020.⁵⁰

Additional guidance on calculating biobased content can be found in ULE 2809-2,³⁷ ASTM D6866,⁵¹ and ISCC PLUS,⁴⁹ along with ISCC mass balance approach.⁵²

Ellen MacArthur Foundation mass balance approach.⁵³

Rainforest Alliance mass balance approach.⁵⁴

5.1.2 Required – Disclosure of reused and/or recycled metal content

Manufacturer shall disclose the minimum percentage (by weight) of aluminum alloys, magnesium alloys, and steel alloys derived from the use of reused or recycled content metal in the product. The disclosure shall include the reused or recycled content percentage for each of the three types of metals. The disclosure(s) shall

⁵⁰ <https://www.en-standard.eu/csn-en-45557-general-method-for-assessing-the-proportion-of-recycled-material-content-in-energy-related-products/>

⁵¹ <https://www.astm.org/d6866-12.html>

⁵² <https://www.iscc-system.org/news/enabling-a-circular-economy-for-chemicals-with-the-mass-balance-approach/>

⁵³ <https://www.ellenmacarthurfoundation.org/white-papers-and-articles>

⁵⁴ <https://www.rainforest-alliance.org/business/certification/what-is-mass-balance-sourcing/>

be entered into the EPEAT Registry. Manufacturer may indicate zero for the reused or recycled content percentage for aluminum, magnesium, or steel for this criterion. Reused and/or recycled aluminum alloy, magnesium alloy and/or steel alloy content shall be reported separately. Manufacturer shall indicate “unknown” if they request data but are unable to obtain a disclosure required for this criterion.

For all product categories except for mobile phones, individual metal parts ≥ 25 g shall be included in the calculation. The manufacturer may choose to include individual metal parts < 25 g in the calculation.

For mobile phone product category individual metal parts ≥ 10 g shall be included in the calculation. The manufacturer may choose to include individual metal parts < 10 g in the calculation.

For aluminum alloys, magnesium alloys, and steel alloys, the minimum percentage is calculated separately for each metal as the minimum weight of reused or recycled content for the metal in the product (numerator) divided by the total weight of the metal in the product (denominator). Only the weight of reused or recycled content shall be included in the numerator. Reused and recycled content are reported separately.

If a manufacturer is unable to obtain a disclosure required by this criterion, the manufacturer shall provide evidence of having requested the supplier data.

“Request” means one or more of the following:

- a) the manufacturer, or an agent or supplier of the manufacturer, has requested this information in writing from the supplier directly (for example, email, letter),
- b) a contract, agreement, or purchase order between the supplier and the manufacturer (or between the supplier and an intermediary supplier, for example, a contract manufacturer) that requires the supplier to provide this information,
- c) a specification or other document between the supplier and the manufacturer (or between the supplier and an intermediary supplier that requests this information.

Exclusions: The manufacturer may exclude any of the following items from the calculation: oxides, mineral compounds, platings, surface treatments, pigments, dyes, dopants, PCBs, labels, cables, power cords, connectors, PCB electronic components, optical components, ESD components, EMI components, batteries, AC adaptors, fans, screws, bolts, nuts, washers, fasteners and OPC drums, magnetic rollers, and ITB in imaging equipment.

For all product categories except mobile phones, products that do not contain metal parts ≥ 25 g the manufacturer may indicate “N/A” for this criterion.

For mobile phones, products that do not contain metal parts ≥ 10 g may indicate “N/A” for this criterion.

Recycled content in the product is calculated in accordance with the methodologies outlined in Annex E or manufacturer may choose to calculate the worse-case configuration, i.e., lowest concentration of recycled content in case of configurable products.

Verification requirements:

This criterion is verified at the product level.

- a) For reused metal content, evidence of use of reused aluminum alloy, magnesium alloy and/or steel alloy components in at minimum registered products (e.g., documentation of the manufacturer's process for receiving and processing reused aluminum alloy, magnesium alloy and/or steel alloy components).
- b) For reused metal content, documentation of the calculation of reused aluminum alloy, magnesium alloy and/or steel alloy components (each reported separately) that includes:
 - i. total weight (g) and list of applicable aluminum alloy, magnesium alloy and/or steel alloy components in the product (i.e., not including excluded items),
 - ii. weight (g) of reused aluminum alloy, magnesium alloy and/or steel alloy components in the product,
 - iii. percentage of reused aluminum alloy, magnesium alloy and/or steel alloy components used in the product.
- c) For recycled content, documentation identifying the minimum percentage of recycled content aluminum alloys, magnesium alloys, and steel alloys in material supplied to manufacturer or to manufacturer's part supplier for the product through means such as one or more of the following:
 - i. supplier letter or supplier data submission to manufacturer indicating product contains parts that meet the disclosed recycled content,
 - ii. material-level certification disclosing the minimum recycled content of aluminum alloys, magnesium alloys, and steel alloys using ULE 2809-2³⁷ or SCS Global Services, *Recycled Content Standard*³⁵ v7.0 or later,
 - iii. additional chain-of-custody procedures, inclusive of third-party verification and disclosure of aluminum alloys, magnesium alloys, and steel alloys recycled content as defined by ISO 14021,²⁴ may be deemed equivalent, as determined by EPEAT.
- d) For any type of documentation provided for c) i), specification of the chain-of-custody model utilized (e.g., segregation or mass balance without mixing per ISO 22095³² Section 5.3, controlled blending or mass balance with mixing per ISO 22095 Section 5.4, or mass balance with proportional allocation⁵⁵).
- e) Evidence demonstrating that the recycled content aluminum alloys, magnesium alloys, and steel alloys content was used in the part(s) in the product (e.g., part specification, bill of materials).
- f) Documentation of the calculation of recycled content for each metal that includes:
 - i. total weight and list of applicable metal parts in the product (i.e., not including excluded items),

⁵⁵ Proportional allocation refers to the ratio between inputs and outputs to a process, e.g., if 10% of the input to a process is recycled content, 10% recycled content would be apportioned to each batch or output used in or claimed for a product.

- ii. total weights, each, of aluminum alloys, magnesium alloys, and steel alloys in the product,
 - iii. total weights, each, of recycled content aluminum alloys, magnesium alloys, and steel alloys in the product,
 - iv. total percentages, each, of recycled content aluminum alloys, magnesium alloys, and steel alloys in material supplied for use in the product,
 - v. type of metal(s) containing the recycled content.
- g) If manufacturer is unable to obtain a disclosure required by this criterion, evidence of manufacturer's "request" to suppliers.

References and details:

Additional guidance on calculating pre-consumer and post-consumer recycled content, can be found in EN 45557:2020.⁵⁰

5.1.3 Required – Minimum post-consumer reused or recycled and/or biobased plastic content

Product shall contain, on average, the minimum percentage of combined post-consumer reused, recycled, and/or biobased plastic content (by weight) as defined in Table 5.1.3. Calculation and disclosure of post-consumer reused, recycled, and biobased content shall be done in accordance with criterion 5.1.1 inclusive of exclusions and verification requirements. The manufacturer may indicate "N/A" for this criterion in accordance with the provisions described in criterion 5.1.1, if they apply.

Table 5.1.3

Product type		Minimum percentage post-consumer reused, recycled and/or biobased plastic content (by weight)
Desktop		15%
Integrated desktop computer		15%
Thin client		10%
Workstation		15%
Display		15%
Notebook computer		2%
Tablet/slate		2%
Mobile phone		5%
Imaging equipment	< 180 kg	2%
	180 to < 500 kg	0.6%
	≥ 500 kg	0.06%
Server		2%
Network equipment		2%
Televisions		2%

Verification requirements:

This criterion is verified at the product level.

- a) Evidence the minimum percentage of combined post-consumer reused, recycled and/or biobased plastic content (by weight) is met as required by this criterion.

References and details:

Additional guidance on calculating post-consumer recycled content, can be found in EN 45557:2020.⁵⁰

Additional guidance on calculating biobased content can be found in ULE 2809-2,³⁷ ASTM D6866,⁵¹ and ISCC PLUS,⁴⁹ along with ISCC mass balance approach.⁵²

Ellen MacArthur Foundation mass balance approach.⁵³

Rainforest Alliance mass balance approach.⁵⁴

5.1.4 Optional – Higher post-consumer reused, recycled and/or biobased plastic content

Part A:

Product shall contain, on average, the minimum percentage of combined post-consumer reused, recycled and/or biobased plastic content (by weight) as defined in Table 5.1.4. Calculation and disclosure of post-consumer reused, recycled and biobased content shall be done in accordance with criterion 5.1.1 inclusive of exclusions and verification requirements. The manufacturer may indicate "N/A" for this criterion in accordance with the provisions described in criterion 5.1.1, if they apply.

Table 5.1.4

Product type	Minimum percentage post-consumer reused, recycled and/or biobased plastic content (by weight) (1 point)	Minimum percentage post-consumer reused, recycled and/or biobased plastic content (by weight) (2 points)	
Desktop	35%	45%	
Integrated desktop computer	40%	50%	
Thin client	35%	45%	
Workstation	35%	45%	
Display	50%	85%	
Notebook computer	10%	20%	
Tablet/slate	5%	15%	
Mobile phone	25%	35%	
Imaging equipment	< 180 kg 180 kg to < 500 kg ≥ 500 kg	10% 8% 0.08%	25% 19% 0.4%
Server	10%	25%	
Network equipment	10%	20%	
Television	5%	25%	

Part B:

Manufacturer shall provide evidence that the achievement of the minimum percentage of post-consumer recycled plastic qualifying for 2 points, as identified in Table 5.1.4, are certified to ULE 2809-2,³⁷ SCS Global Services, *Recycled Content Standard*³⁵ v7.0 or later, or equivalent; ISCC PLUS⁴⁹ or equivalent for biobased content.

Point value:

Part A: 1 or 2 points (maximum of 2 points)

Part B: 1 point

Total maximum point value for Criterion 5.1.4 is 3 points.

Verification requirements:

This criterion is verified at the product level.

Part A:

Evidence the minimum percentage of combined post-consumer reused, recycled and/or biobased plastic content (by weight) is met as required by this criterion.

Part B:

Supplier documentation identifying the minimum percentage of post-consumer recycled plastic content in material supplied to manufacturer or to manufacturer's part supplier for the product through material-level certification disclosing the minimum recycled content of post-consumer recycled plastic using ULE 2809-2³⁷ or SCS Global Services, *Recycled Content Standard*³⁵ v7.0 or later; ISCC PLUS⁴⁹ or equivalent for biobased content. Additional chain-of-custody procedures, inclusive of third-party verification and disclosure of post-consumer recycled plastic recycled content, as defined by ISO 14021,²⁴ may be deemed equivalent, as determined by EPEAT.

References and details:

Additional guidance on calculating post-consumer recycled content can be found in EN 45557:2020.⁵⁰

Additional guidance on calculating biobased content can be found in ULE 2809-2,³⁷ ASTM D6866,⁵¹ and ISCC PLUS,⁴⁹ along with ISCC mass balance approach.⁵²

Ellen MacArthur Foundation mass balance approach.⁵³

Rainforest Alliance mass balance approach.⁵⁴

5.1.5 Optional – Reused and/or recycled metal content

Product shall contain the minimum percentage of reused and/or recycled content aluminum alloys, magnesium alloys, or steel alloys content (by weight) as defined in Table 5.1.5.

Table 5.1.5

Metal type	For each metal type, minimum percentage of combined reused and/or recycled content (by weight)	Points Awarded
Steel alloys (reused and/or recycled)	≥ 5%	1
Reused magnesium and/or aluminum and/or recycled content magnesium and/or aluminum alloys in components primarily (largest percentage of operations) fabricated by CNC process	≥ 75% Imaging equipment: < 300 kg: N/A 300 kg to ≤ 600 kg: ≥ 30% > 600 kg: ≥ 50%	1
Recycled content magnesium and/or aluminum alloys in components fabricated primarily (largest percentage of operations) by processes other than CNC	≥ 25% Imaging equipment: ≥ 2%	1

For reused content, the minimum percentage is calculated as the minimum weight of reused metal in the product (numerator) divided by the total weight of metal in the product not including excluded items (denominator) for each type of metal.⁴⁷

For recycled content, the minimum percentage is calculated as the minimum weight of recycled metal in the product (numerator) divided by the total weight of metal in the product except in excluded items (denominator) for each type of metal.

For all product categories except for mobile phones, individual metal parts ≥ 25 g shall be included in the calculation. The manufacturer may choose to include individual metal parts < 25 g in the calculation.

For mobile phone product category, individual metal parts ≥ 10 g shall be included in the calculation. The manufacturer may choose to include individual metal parts < 10 g in the calculation.

Exclusions: The manufacturer may exclude any of the following items from the calculation: oxides, mineral compounds, platings, surface treatments, pigments, dyes, dopants, PCBs, labels, cables, power cords, connectors, PCB electronic components, optical components, ESD components, EMI components, batteries, AC adaptors, fans, screws, bolts, nuts, washers, fasteners and drums, magnetic rollers and ITB in imaging equipment.

For all product categories except mobile phones, products that do not contain metal parts with a total combined weight of aluminum alloys and magnesium alloys, weighing ≥ 25 g, the manufacturer may indicate “N/A” for the point awarded for aluminum alloy and magnesium alloy.

For all product categories except mobile phones, products that do not contain metal parts with a total combined weight of steel alloys, weighing ≥ 25 g, the manufacturer may indicate "N/A" for the point awarded for steel alloy.

For mobile phones, products that do not contain metal parts with a total combined weight of aluminum alloys and magnesium alloys, weighing ≥ 10 g, the manufacturer may indicate "N/A" for the point awarded for aluminum alloy and magnesium alloy.

For mobile phones, products that do not contain metal parts with a total combined weight of steel alloy, weighing ≥ 10 g, the manufacturer may indicate "N/A" for the point awarded for steel alloy.

Recycled content in the product is calculated in accordance with the methodology outlined in Annex E or manufacturer may choose to calculate the worse-case configuration, i.e., lowest concentration of recycled content in case of configurable products.

If the product does not contain any parts of the type that could be used to achieve a point, the manufacturer may claim "N/A" for that point. "N/A" may be claimed individually for each of the 3 points.

Point value: 1 to 3 points (maximum of 3 points)

Verification requirements:

This criterion is verified at the product level.

- a) For reused metal content, evidence of use of reused aluminum alloy, magnesium alloy and/or steel alloy components in at minimum registered products (e.g., documentation of the manufacturer's process for receiving and processing reused aluminum alloy, magnesium alloy and/or steel alloy components).
- b) For reused metal content, documentation of the calculation of reused aluminum alloy, magnesium alloy and/or steel alloy components (each reported separately) that includes:
 - i. the total weight (g) and list of applicable aluminum alloy, magnesium alloy and/or steel alloy components in the product (i.e., not including excluded items),
 - ii. the weight (g) of reused aluminum alloy, magnesium alloy and/or steel alloy components in the product,
 - iii. the percentage of reused aluminum alloy, magnesium alloy and/or steel alloy components used in the product.
- c) For recycled content, documentation stating minimum percentage of recycled content aluminum alloys, magnesium alloys, and steel alloys content in material supplied to manufacturer or to manufacturer's part supplier for the product through means such as one or more of the following:
 - i. supplier letter or supplier data submission to manufacturer indicating product contain parts that meet the recycled content threshold of this criterion,
 - ii. material-level certification declaring the minimum recycled content of aluminum alloys, magnesium alloys, and steel alloys using ULE 2809-2³⁷ or SCS Global Services, *Recycled*

- Content Standard*³⁵ v7.0 or later,
- iii. additional chain-of-custody procedures, inclusive of third-party verification and declaration of aluminum alloys, magnesium alloys, and steel alloys recycled content as defined by ISO 1402²³ may be deemed equivalent, as determined by EPEAT.
- d) For any type of documentation provided for c) i., specification of the chain-of-custody model utilized (e.g., segregation or mass balance without mixing per ISO 22095³² Section 5.3, controlled blending or mass balance with mixing per ISO 22095 Section 5.4 or mass balance with proportional allocation).
 - e) Evidence demonstrating that the recycled content aluminum alloys, magnesium alloys, and steel alloys content was used in the part(s) in the product (e.g., part specification, bill of materials).
 - f) Documentation of the calculation of recycled content for each metal in scope that includes:
 - i. the total weight and list of applicable metal parts in the product (i.e., not including excluded items),
 - i. the total weights, each, of aluminum alloys, magnesium alloys, and steel alloys in the product,
 - ii. the total weights, each, of recycled content aluminum alloys, magnesium alloys, and steel alloys in the product,
 - iii. the total percentages, each, of recycled content aluminum alloys, magnesium alloys, and steel alloys in material supplied for use in the product,
 - iv. the type of metal(s) containing the recycled content.
 - g) For aluminum alloys, a declaration of the fabrication process used to create the part(s) containing the recycled content aluminum alloys.
 - h) If claiming "N/A" for a point, declaration and/or evidence the product does not contain any parts of the type that could be used to achieve the point.

References and details:

Additional guidance on calculating pre-consumer and post-consumer recycled content can be found in EN 45557:2020.⁵⁰

5.2 Critical minerals and rare earth elements

5.2.1 Optional – Critical mineral content disclosure

Manufacturer shall disclose the content of Annex B critical minerals used in at minimum, secondary (rechargeable) batteries, rare earth magnets, and display panels or display screens. Points are awarded in accordance with Table 5.2.1. The disclosure shall include the CAS number or element/mineral name from Annex B, the location in the product, and the mass of the mineral. It is acceptable to report data in mass ranges, such as < 1 mg, 1-100 mg, 101-500 mg, 501-1,000 mg, >1-5 g, 6-25 g, > 25 g. The substances disclosed for each component or assembly are not required to be the same list of substances reported for another component or assembly.

The URL(s) for the manufacturer’s public website disclosing this information shall be provided on the EPEAT Registry.

Table 5.2.1 – Number of Annex B substances disclosed

Number of Annex B substances	Points
Eight. If < 8 are used, disclosure of those used substances (point is not awarded if Al and/or Zn are the only critical minerals disclosed)	1

Manufacturer shall indicate the criterion is “N/A” if the product does not contain secondary (rechargeable) batteries, rare earth magnets, or display panels or display screens.

Point value: 1 point

Verification requirements:

This criterion is verified at the product level.

- a) Supplier documentation identifying the components containing critical minerals, the type of critical mineral present in each component, and the mass or mass range of the mineral(s) in, at minimum each component listed in the criterion.
- b) URL(s) for the manufacturer’s public website disclosing the information in this criterion.

References and details: None.

5.2.2 Optional – Recycled content or direct reuse of rare earth magnets in product

Products that contain rare earth magnets weighing ≥ 5 g individually shall meet the recycled content thresholds identified in Table 5.2.2, of critical minerals (e.g., neodymium, dysprosium, terbium, samarium cobalt) within rare earth magnet(s) in the product.

For example, neodymium, dysprosium, terbium, samarium cobalt contained within rare earth magnets used in motors of consumer electronics, hard drives with actuator / voice coil or spindle rare earth magnets, etc., shall contain recycled content of critical and rare earth magnetic material (e.g., neodymium, dysprosium, terbium, samarium cobalt) calculated as the mass ratio of recycled critical and REE materials to the total mass of the critical and rare earth material in the product, in accordance with Table 5.2.2. Any REE, as defined by the 17 elements on the periodic table comprising the lanthanide series, along with scandium and yttrium, is acceptable whether explicitly listed in Annex B or not as new uses in electronics may be identified.

Direct reuse of rare earth magnets that are integral to the function of the device is an acceptable and preferred alternative to use of recycled content. A manufacturer may claim conformance with this criterion for direct reuse of at least one rare earth magnet in each registered product.

If the product does not contain rare earth magnets weighing ≥ 5 g individually, “N/A” may be indicated.

Table 5.2.2 – Use of recycled content critical and REE content in rare earth magnet(s) in Annex B or direct reuse of rare earth magnet(s)

Recycled content of critical and rare earth element materials in product (by mass), as identified in Annex B or direct reuse	Optional points
1% to 5%	1
> 5% to 15%	2
Direct reuse of rare earth magnet(s)	2

Point value: 1 or 2 points (maximum of 2 points)

Verification requirements:

This criterion is verified at the product level.

- a) Evidence that rare earth magnets used in registered products meet the recycled content threshold identified in Table 5.2.2 by means of supplier documentation identifying the minimum percentage of recycled content of critical and REE material supplied to manufacturer or to manufacturer’s part supplier for the product through means such as one or more of the following:
 - i. supplier letter or supplier data submission to manufacturer indicating the recycled content of the parts or materials contributing to the declared recycled content of the product,

Or

 - ii. material-level certification disclosing the minimum critical and REE material recycled content using ULE 2809-2³⁷ or SCS Global Services, *Recycled Content Standard*³⁵ v7.0 or later,
 - iii. additional chain-of-custody procedures, inclusive of third-party verification and declaration of recycled content, as defined by ISO 14021²⁴ may be deemed equivalent, as determined by EPEAT.
- b) For any type of documentation provided for a) i., specification of the chain-of-custody model utilized (e.g., segregation or mass balance without mixing per ISO 22095³² Section 5.3, controlled blending or mass balance with mixing per ISO 22095 Section 5.4, or mass balance with proportional allocation).
- c) Evidence demonstrating that the critical and REE recycled content was used in the applicable part(s) in the product (e.g., part specification, bill of materials).
- d) Documentation of the calculation of recycled critical and REE content that includes the total weight of critical and REE material in each applicable magnet in the product.

- e) For direct reuse of rare earth magnets, evidence of supplier declaration of conformity indicating registered products contain at least one reused rare earth magnet that is integral to the function of the device, inclusive of a bill of materials for the rare earth magnet suppliers use of EOL rare earth magnets for reuse in the production process.

References and details: None.

5.2.3 Optional – Recycled content metal in lithium-based secondary (rechargeable) batteries

Registered products that contain lithium-based secondary (rechargeable) batteries shall meet any one of the recycled content thresholds identified in Table 5.2.3, calculated as the mass ratio of the mass of each recycled content metal to the total mass content of each metal in the secondary (rechargeable) battery.

If the product does not contain lithium-based secondary (rechargeable) batteries that contain these metals, “N/A” may be indicated.

Table 5.2.3 – Use of recycled content metal in secondary (rechargeable) battery

Critical mineral	Minimum recycled content (by mass)	Optional point
Cobalt	10%	1
lithium, and/or	5%	
nickel	5%	

Point value: 1 point

Verification requirements:

This criterion is verified at the product level.

- a) Identification of metal (i.e., cobalt, lithium, nickel) and evidence that the recycled content threshold identified in Table 5.2.3 is met for secondary (rechargeable) batteries used in registered products, by means of supplier documentation identifying the minimum percentage of recycled content of critical and REE material supplied to manufacturer or to manufacturer's part supplier for the product through means such as one or more of the following:
 - i. supplier letter or supplier data submission to manufacturer indicating the recycled content of the parts or materials contributing to the declared recycled content of the product,

Or

 - ii. material-level certification disclosing the minimum critical and REE material recycled content using ULE 2809-2³⁷ or SCS Global Services, *Recycled Content Standard*³⁵ v7.0 or later,
 - iii. additional chain-of-custody procedures, inclusive of third-party verification and declaration of recycled content, as defined by ISO 14021:2016,²⁴ may be deemed equivalent, as

determined by EPEAT.

- b) For any type of documentation provided for a) i., specification of the chain-of-custody model utilized (e.g., segregation or mass balance without mixing per ISO 22095³² Section 5.3, controlled blending or mass balance with mixing per ISO 22095 Section 5.4, or mass balance with proportional allocation).
- c) Evidence demonstrating that the critical and REE recycled content was used in the applicable part(s) in the product (e.g., part specification, bill of materials).
- d) Documentation of the calculation of recycled critical and REE content that includes the total weight of critical and REE material in each applicable battery in the product.

References and details: None.

5.3 Product longevity

5.3.1 Required – Firmware or operating system updates

Manufacturer shall make product firmware or OS updates available, as appropriate based on product design, to users, independent repair providers and refurbishers to maintain functionality of the device, thereby enabling product longevity, user security, and safety. The latest available version of firmware shall be available for, at minimum, the time-period specified in Table 5.3.1. The time-period for which the firmware will be available shall be clearly identified on the manufacturer's website.

The manufacturer may choose to utilize software tools developed by a third party to meet this requirement, provided that the manufacturer makes available information on the tools, how to access them, and their intended purpose or use.

For servers and imaging equipment, firmware can be made available either openly on public website or with authentication or account validation.

Table 5.3.1 – Duration for firmware or OS availability

Product	Duration following the end of production (years)
Computer	5
Display	8
Slate tablets	5
Imaging equipment	5
Mobile phone	5
Network equipment	SNE-2, LNE-5
Server	8
Television	8

Excluded: Accessories and peripherals are excluded from the requirements of this criterion. Third-party provided/managed OS and firmware system updates.⁵⁶

Verification requirements:

This criterion is verified at the product level.

- a) Statement of whether firmware or OS is applicable to the product.
- b) Based on verification requirement a), evidence, such as URL(s) for product user firmware or OS updates as applicable, or product documentation, that the manufacturer makes firmware updates available as described in this criterion, including identification of duration of firmware availability.

References and details: None.

⁵⁶ Examples of third-party provided/managed OS and firmware include Google Chrome and Microsoft Windows.

5.3.2 Required – Durability of notebooks, tablets, and mobile phones

The manufacturers shall test notebook, tablet, and mobile phone products in accordance with one of the following standards:

- a) IEC 60068¹⁷ Part 2-31: Free fall, procedure 1 (notebooks and tablets) or free fall repeated, procedure 2 (mobile phones),

Or

- b) MIL-STD-810H,³³ Method 516.8: Shock (Procedure IV), Unpackaged Handling scenario.

The notebook or tablet must be dropped from a height of at least 45 cm onto a non-yielding surface (e.g., ³/₄-inch or 2-cm particleboard with Shore D hardness of 75 ± 5 or rubber or simulated plywood). Mobile phones must be dropped from a height of at least 100 cm.

For notebooks and tablets at least one fall per orientation (with at least six orientations) shall be performed. Four out of five tested notebooks and tablets shall meet the functional performance requirements specified in Annex II of EU *Green Public Procurement (GPP) criteria for computers, monitors, tablets and smartphones*¹⁵ after exposure to the drop test.

Four out of five tested mobile phones shall meet the performance requirements for smartphones as specified in Annex III, Section 7 of Commission Regulation (EU) 2023/1670¹³ after exposure to the drop test.

Or

The device must be provided with cover and protection cases either tested or confirmed to be designed to meet the same robustness standard(s). In the event that such a cover or case is provided, it must be considered an included peripheral as identified in the definition of product.

Test reports are to be from a:

- a) laboratory that is accredited to ISO/IEC 17025,³⁰ where the laboratory's scope of accreditation includes the standard or test method for which it is supplying data,

Or

- b) laboratory in which the testing is witnessed or supervised by a certification body accredited to ISO/IEC 17065.³¹ Manufacturer must provide evidence of the testing laboratory enrollment in the witnessed testing program, and evidence that the certification body accredited to ISO/IEC 17065 has the testing method in its scope of accreditation.

Lab accreditation or witnessed/supervised status shall be achieved within 12 months of the date EPEAT requires new product registrations be conformant with the updated criteria. Testing performed by a lab that is not accredited or witnessed/supervised within these 12 months are acceptable; re-testing is not required.

This criterion is only applicable to notebook computers, tablets, and mobile phones.

Verification requirements:

This criterion is verified at the product level.

- a) Test report demonstrating product was tested in conformance with the requirements of this criterion.
- b) Evidence that the test laboratory used to conform with this criterion is accredited to ISO/IEC 17025³⁰ or that testing was witnessed or supervised by a certification body accredited to ISO/IEC 17065.³¹
- c) Evidence that the registered product met the functional performance requirements of this criterion after testing.

Or

- d) Evidence that a device with a cover or protection case that ships with the product was either tested in conformance with the requirements of this criterion or otherwise confirmed to be designed to meet the robustness standards specified in this criterion.

References and details: None.

5.3.3 Required – Long-life rechargeable battery for notebook computers, tablets and mobile phones

Notebook computers, tablets and mobile phones shall be provided with a long-life rechargeable battery.

A long-life rechargeable battery is a rechargeable battery with a tested battery state of health of at least > 80% after 300 cycles. For mobile phones, the rechargeable battery shall have a tested battery state of health of at least 80% after 800 cycles. Tests for the battery cells or packs are to be performed in conformance with, at minimum IEC 61960-3:2017,¹⁸ for example, testing at higher temperatures is acceptable. It is acceptable to use a constant discharge power of 0.2 to 0.5 E to discharge the battery cells or packs or a charging profile that is representative of the charging profile of the product. If a cell level test report is used to demonstrate battery performance, information must also be provided to demonstrate how battery cells are graded and assembled to ensure the battery pack performs as required by this criterion.

For instances where a product has multiple pack-cell source combinations, the manufacturer shall either demonstrate that all battery packs meet the performance requirements of the criterion or choose a representative combination pack-cell source combination to demonstrate the performance requirements of the criterion are met. Additional evidence must be provided for remaining pack-cell combinations including: *(a)* list of pack-cell combinations that may ship in the product, and *(b)* supplier/ or manufacturer battery pack or cell specification sheet(s). This applies to scenarios where pack or cell level test report is used to demonstrate the battery performance. If cell level test report is submitted, manufacturer shall ensure the battery pack performs as required. Test reports are to be from a:

- a) laboratory that is accredited to ISO/IEC 17025,³⁰ where the laboratory's scope of accreditation includes the standard or test method for which it is supplying data,

Or

- b) laboratory in which the testing is witnessed or supervised by a certification body accredited to

ISO/IEC 17065.³¹ Manufacturer must provide evidence of the testing laboratory enrollment in the witnessed testing program, and evidence that the certification body accredited to ISO/IEC 17065 has the testing method in its scope of accreditation.

Lab accreditation or witnessed/supervised status shall be achieved within 12-months of the date EPEAT requires new product registrations be conformant with the updated criteria. Testing performed by a lab that is not accredited or witnessed/supervised within these 12 months are acceptable; re-testing is not required.

This criterion is only applicable to notebook computers, tablets, and mobile phones. This criterion does not apply to separate batteries that provide power to accessories or peripherals.

Verification requirements:

This criterion is verified at the product level.

- a) Test report for the battery cells or packs demonstrating that registered product's battery cells or packs were tested in conformance with the requirements of this criterion and met the performance requirements of the criterion. Test parameters that exceed (i.e., are more aggressive) the criterion's requirements are acceptable. If a cell level test report is provided, evidence as to how battery cells are graded and assembled to ensure the battery pack performs as required by this criterion.
- b) Evidence that the test laboratory used to conform with this criterion is accredited to ISO/IEC 17025³⁰ with a scope of accreditation that includes the standard or test method for which its supplying data or evidence that the test laboratory is witnessed by a certification body accredited to ISO/IEC 17065.³¹

References and details: None.

5.3.4 Optional – Longer-life rechargeable battery for notebook computers, tablets, and mobile phones

Notebook computers, tablets and mobile phones shall be provided with a longer-life rechargeable battery.

A longer-life rechargeable battery is a tested battery with a State of Health of $\geq 90\%$ after 300 cycles⁵⁷ or $\geq 80\%$ after 500 cycles. For mobile phones, the rechargeable battery shall have a tested battery state of health of at least 80% after 1,000 cycles. Tests for the battery cells or packs are to be performed in conformance with, at minimum IEC 61960-3:2017,¹⁸ for example, testing at higher temperatures is acceptable. It is acceptable to use a constant discharge power of 0.2 to 0.5 E to discharge the battery cells or packs or a charging profile that is representative of the charging profile of the product. If a cell level test report is used to demonstrate battery performance, information must also be provided to demonstrate how battery cells are graded and assembled to ensure the battery pack performs as required by this criterion.

For instances where a product has multiple pack-cell source combinations, the manufacturer shall either demonstrate that all battery packs meet the performance requirements of the criterion or choose a

⁵⁷ The testing threshold of 300 cycles does not represent the expected endurance but is a proxy for much longer endurance (e.g., > 500 cycles).

representative combination pack-cell source combination to demonstrate the performance requirements of the criterion are met. Additional evidence must be provided for remaining pack-cell combinations including: (a) list of pack-cell combinations that may ship in the product, and (b) supplier/or manufacturer battery pack or cell specification sheet(s). This applies to scenarios where pack or cell level test report is used to demonstrate the battery performance. If cell level test report is submitted, manufacturer shall ensure the battery pack performs as required.

Test reports are to be from a:

- a) laboratory accredited to ISO/IEC 17025,³⁰ where the laboratory's scope of accreditation includes the standard or test method for which it is supplying data,

Or

- b) laboratory in which the testing is witnessed or supervised by a certification body accredited to ISO/IEC 17065.³¹ Manufacturer must provide evidence of the testing laboratory enrollment in the witnessed testing program, and evidence that the certification body accredited to ISO/IEC 17065 has the testing method in its scope of accreditation.

Lab accreditation or witnessed/supervised status shall be achieved within 12 months of the date EPEAT requires new product registrations be conformant with the updated criteria. Testing performed by a lab that is not accredited or witnessed/supervised within these 12 months are acceptable; re-testing is not required.

This criterion is only applicable to notebook computers, tablets, and mobile phones. This criterion does not apply to separate batteries that provide power to accessories or peripherals.

Point value: 1 point

Verification requirements:

This criterion is verified at the product level.

- a) Test report for the battery cells or pack demonstrating registered product's battery cells or packs were tested in conformance with the requirements of this criterion and met the performance requirements of the criterion. Test parameters that exceed (i.e., are more aggressive) the criterion's requirements are acceptable. If a cell level test report is provided, evidence as to how battery cells are graded and assembled to ensure the battery pack performs as required by this criterion.
- b) Evidence that the test laboratory used to conform with this criterion is accredited to ISO/IEC 17025³⁰ with a scope of accreditation that includes the standard or test method for which its supplying data or evidence that the test laboratory is witnessed by a certification body accredited to ISO/IEC 17065.³¹

References and details: None.

5.3.5 Required – Battery software for notebook computers, tablets and mobile phones

Part A: Applies to notebook computers only:

Notebook computers shall include pre-installed software that enables the user to limit the maximum battery state of charge to $\leq 80\%$.

Part B: Applies to notebook computers, tablets, and mobile phones:

Notebook computers, tablets, and mobile phones shall include pre-installed software to determine and monitor the status of the battery and allow for the reading of the battery's state of health and state of charge, as well as the number of full charge cycles already performed from the battery and to display these data for the user. Information must also be provided for users on how to maximize battery lifespan and be accessible through the data display for users.

Part A of this criterion is only applicable to notebook computers. Part B is applicable to notebook computers, tablets, and mobile phones.

Verification requirements:

This criterion is verified at the product level.

- a) Evidence, such as documentation in a product manual of the application of pre-installed software that meets the requirements of this criterion.

References and details: None.

5.3.6 Optional – Additional battery software for notebooks, tablets, and mobile phones

To prolong battery lifespans, notebooks, tablets, and mobile phones shall have a pre-installed battery management system that includes intelligent charging software able to identify the user's regular charging habits/pattern, stop the charging process before it reaches 100% (e.g., at 80%), and fully charge the device only when needed by the user.

This criterion is only applicable to notebooks, tablets, and mobile phones.

Point value: 1 point

Verification requirements:

This criterion is verified at the product level.

- a) Evidence of pre-installed software, such as documentation in a product manual of the application of pre-installed software that meets the requirements of this criterion.

References and details: None.

5.3.7 Required – Interoperability and reusability of computers and mobile phone components

To enable interoperability and component reusability, computers and mobile phones with external ports for data exchange shall include a minimum of one external port for data exchange, or an adaptor shall be available,⁵⁸ that is backward compatible with USB 2.0, according to IEC 62680.¹⁹¹⁸

This criterion is only applicable to computers and mobile phones. If the product has no external ports for data exchange the manufacturer may declare the criterion “N/A.”

This criterion is “N/A” to workstation computers intended for use in industrial environments, such as data centers.

Verification requirements:

This criterion is verified at the product level.

- a) Evidence of provision of one receptacle port or availability of an adaptor for data exchange that is backward compatible with USB 2.0.

References and details: None.

5.4 Design for repair, reuse, recycling

5.4.1 Required – Design for repair and reuse

The product shall be designed with the following features to facilitate repair, preparation for reuse, and safe handling, unless otherwise required as part of compliance with safety regulations, safety standards or as part of a safety certification:

- a) External enclosures shall be removable or shall enable access to the battery and Annex C parts, by hand or with commonly available tools and without damaging the component or components (with the exception of fasteners) in the device such that it would preclude reuse or refurbishment of the product. Fasteners must be either resupplied or reusable. The enclosure removability aspect of this clause refers to the external enclosure of the product and not the outermost case or enclosure of internal parts of the product or to the external enclosure of accessories and peripherals integral to the operation of the product and contained by default in the POS packaging associated with the unique product registration.
- b) If present in the product, components identified in Annex C shall be removable by hand or with commonly available tools without damaging the component or other components in the device.⁵⁹ such

⁵⁸ “Shall be available” means the adapter may ship with the product or be available to purchasers separately.

⁵⁹ This requirement shall not be interpreted to require that the DC cable of an external power supply, the DC wiring harness of an internal power supply, or the USB cable of a wired keyboard or mouse need be removable by hand without damaging the cable.

that it would preclude reuse or refurbishment of the product. Fasteners are not required to be removable and replaceable by hand or with commonly available tools but must be either resupplied or reusable. Criterion requirement b) may be limited to a subset of the components identified in Annex C if supported by documented component failure rate data.

- c) Rechargeable batteries that provide primary power shall be removable and replaceable by hand or with commonly available tools without damaging the battery or other components in the device such that it would preclude reuse or refurbishment of the product. Fasteners are not required to be removable and replaceable by hand or with commonly available tools but must be either resupplied or reusable.

Removal without damaging the component or other components in the device means that the component remains intact (e.g., for lithium-ion batteries the pouch is not punctured or bent).

If one or more of the above features may be omitted from the product design due to compliance with safety regulations, safety standards or as part of a safety certification, in which case additional documentation supporting the omission must be provided.

For products placed on the market for the first time before the date EPEAT requires new product registrations be conformant with the updated criteria, manufacturer may indicate criterion is "N/A." Placed on the market for the first time refers to the first instance of making a product, including next generations of existing products, available to purchasers.

Verification requirements:

This criterion is verified at the product level.

- a) Evidence confirming that external enclosures are removable by hand or with commonly available tools without damaging the component or components in the device such that it would preclude reuse or refurbishment of the product.
- b) Evidence confirming Annex C components, as applicable, are removable by hand or with commonly available tools. Evidence fasteners can be either resupplied or reused. If limited to a subset of the components in Annex C, evidence of documented component failure rate data to support the subset identified.
- c) Evidence confirming rechargeable batteries that provide primary power are removable and replaceable by hand or with commonly available tools.
- d) If one or more of the required features is omitted from the product design due to requirement of compliance with safety regulations, safety standards or as part of a safety certification, evidence supporting the omission must be provided, such as weblinks to the regulations or safety standards, and evidence of how the product meets these requirements.

References and details: None.

5.4.2 Required – Design of components containing plastic for recycling

Individual components containing plastic meeting the weight threshold (after exclusions) in Table 5.4.2, shall be separable by hand or with commonly available tools, such that they can be separated into “compatible” or “compatible with limitations” material types, per ECMA-341⁹ Annex C.

- a) If made up of more than one resin, and “good compatibility” or “limited compatibility” per ECMA-341 Annex C cannot be determined because one or more of the resins is not reflected in ECMA-341 Annex C or equivalent, the manufacturer must demonstrate that the plastic part is nonetheless recyclable (e.g., letter from a recycler).
- b) If adhesives, coatings, paints, or finishes are applied, the manufacturer shall provide either:
 - i. test results showing no more than a 25% reduction in either the notched Izod impact at room temperature between a test sample made from the original plastic without adhesives, coatings, paints, or finishes and test sample made from the plastic with adhesives, coatings, paints, or finishes, as measured using ASTM D256⁶ or ISO/DIS 180,²² or the Charpy impact for the same test samples as measured using ISO 179,²¹

Or

- ii. peer reviewed published literature concluding there was no significant impact on the physical properties of the plastic when recycled.

Table 5.4.2. – Plastic component part weight threshold (after exclusions) by product category

Product category	Weight threshold
Computers and displays	≥ 25 g (Part a)) ≥ 100 g (Part b))
Imaging equipment	≥ 100 g
Mobile phones	≥ 10 g
Network equipment	≥ 100 g
Servers	≥ 100 g
Televisions	≥ 25 g

If one or more of the above features is omitted from the product design due to compliance with safety regulations, safety standards or as part of a safety certification, then additional documentation supporting the omission must be provided.

Exclusions: This section does not apply to:

- a) PCBs, connectors, wires, or cables and power cords, PCB electronic components, optical components, ESD components, EMI components, fans, or motors.
- b) For ruggedized equipment and imaging equipment, glass fiber reinforced plastics and sealed inside units necessary for containing toner and ink; and/or high-temperature parts such as fusing mechanism and parts containing a resin strengthening agent (glass).
- c) Metal inserted molded plastic parts or hybrid metal/plastic parts, e.g., RF window and antenna that cannot be separated with commonly available tools in accordance with criterion 5.4.1.
- d) *de minimis* uses that fall below 0.1% of the mass of the part.

Verification requirements:

This criterion is verified at the product level.

- a) Evidence confirming that all plastic parts, components, or materials are separable by hand or with commonly available tools into “compatible” or “compatible with limitations” material types, per ECMA-341 Annex C:⁹
 - i. if a plastic part, component, or material is made up of more than one resin, and “good compatibility” or “limited compatibility” per ECMA-341 Annex C cannot be determined because one or more of the resins is not reflected in ECMA-341 Annex C, the manufacturer must provide evidence that the plastic part is nonetheless recyclable.
- b) If the product contains adhesives, coatings, paints, or finishes that are applied to the plastic parts, components, or materials, additional documentation that includes:
 - i. test results showing no more than a 25% reduction in either the notched Izod impact at room temperature between a test sample made from the original plastic without adhesives, coatings, paints, or finishes and test sample made from the plastic with adhesives, coatings, paints, or finishes, as measured using ASTM D256⁶ or ISO/DIS 180,²² or the Charpy impact for the same test samples as measured using ISO 179,²¹

Or

- ii. peer reviewed published literature concluding there was no significant impact on the physical properties of the plastic when recycled.

References and details: None.

5.4.3 Required – Software parts pairing for notebook computers, tablets, and mobile phones

The manufacturer shall allow for full functionality of replacement part and post-repair device operation by providing software tools, firmware, or auxiliary means such as providing numerical authorization keys or code to end-users and professional repairers and refurbishers. This excludes limiting functionality necessary to prevent a thermal event. The purchaser may be required to inform but is not required to seek approval or authorization from the manufacturer or the manufacturer's authorized representative of the intended repair case. A product is still deemed conformant with this criterion if the replacement part is supplied by a third-party not authorized by the manufacturer.

Full functionality means the devices principal functions (e.g., mobile communication, internet access, etc.) are available to the extent said function was available before repair.

This criterion is only applicable to notebook computers, tablets, and mobile phones.

This criterion shall be achieved within 6 months after placement of product on the market.

If the product does not use parts pairing the manufacturer shall indicate the criterion is "N/A."

Verification requirements:

This criterion is verified at the product level.

- a) Evidence of a process for providing end-users and professional repairers and refurbishers with the information and tools necessary to meet the requirements of this criterion, including URL(s) for manufacturer provided information, software tool(s), firmware and/or auxiliary means (e.g., to enable remote authorization).
- b) If criterion is declared "N/A", written declaration of non-applicability.

References and details: None.

5.4.4 Optional – Software parts pairing for notebook computers, tablets and mobile phones

The manufacturer shall have a publicly available written declaration allowing for replacement of parts without the need for paired serial numbers, i.e., replacement parts, whether issued by a manufacturer or an authorized third-party, shall be capable of full function upon physical installation.

This criterion is only applicable to notebook computers, tablets, and mobile phones.

Exemptions for notebook computers: The policy may explicitly allow the use of part pairing to support these business processes:

- a) subscription services as part of a contract,
- b) software license management.

Point value: 1 point

Verification requirements:

This criterion is verified at the product or product category level.

- a) URL(s) for manufacturer declaration meeting the requirements of this criterion.

References and details: None.

5.5 Availability of repair services and information to enable repair, reuse and recycling

5.5.1 Required – Availability of repair services and replacement components

The manufacturer shall offer repair services and replacement components, including instructions on how to obtain them, for registered products that manufacturer places directly on the market.⁶⁰

- a) The manufacturer shall provide the option to obtain repair services directly through the manufacturer or a manufacturer's authorized service provider. This option may be available free of charge or for a separate charge. The manufacturer shall make a statement of commitment in a publicly available company policy or have contract(s) or alternative evidence of agreements with service provider(s), confirming the availability of repair services for a time period at least as long as what is specified in the *Duration of available service* column in Annex C.
- b) The manufacturer shall either make available replacement components listed in Annex C, if originally contained in or shipped with the product, or shall make available alternate replacement components by demonstrating a history of availability for use in similar products over an equal period of time, as supported by component failure rate data.

NOTE — For institutional products only, manufacturers have discretion as to whether each component in Annex C is available to end-users or only to trained service technicians.

Exclusions: Institutional products for which a maintenance or service contract is available, may be excluded from the requirements of this criterion.

Scanners are excluded from this criterion.

For products placed on the market before the date EPEAT requires new product registrations be conformant with the updated criteria, manufacturer may indicate criterion is "N/A." Placed on the market for the first time refers to the first instance of making a product, including next generations of existing products, available to purchasers.

This criterion shall be achieved within 6 months after placement of product on the market, with the exception of mobile phones.

⁶⁰ "Placing directly on the market" refers to product a manufacturer sells directly to an end user. It does not include product sold through third parties such as a retailer or reseller who in turn places product on the market.

For mobile phones, this criterion shall be achieved within 1 month after placement of product on the market.

Verification requirements:

This criterion is verified at the product level.

- a) URL(s) for the manufacturer's public website disclosing information about the availability of repair services or evidence of contract(s) or alternative evidence of agreements with service provider(s), confirming the availability of repair services that meet the requirements of this criterion.
- b) For institutional products for which a maintenance or service contract, that can be applied to the registered product, is available to purchasers, evidence that demonstrates service or maintenance contract(s) are available that can be applied to the registered product.

References and details: None.

5.5.2 Required – Publicly available repair information for notebook computers, tablets, and mobile phones

Manufacturers of notebook computers, tablets, and mobile phones shall enable broader purchaser access to repair by making repair information available to authorized repair providers, independent repair providers, and individual users.

Manufacturers of notebook computers, tablets and mobile phones shall provide the following information on its publicly available website:

- a) disassembly and reassembly instructions which address batteries and all other components declared replaceable per the disclosure requirement of criterion 5.5.1 including identification of required tools,
- b) available replacement components in accordance with criterion 5.5.1,
- c) maintenance procedures or guidance,
- d) troubleshooting instructions for fixing commonly encountered problems, inclusive of safety guidance.

The URL(s) for the public website where the manufacturer makes available the information described in this criterion shall be entered into the EPEAT Registry.

If the product is not a notebook computer, tablet or mobile phone, the manufacturer may indicate the criterion is "N/A."

This criterion shall be achieved within 6 months after placement of product on the market, with the exception of mobile phones.

For mobile phones, this criterion shall be achieved within 1 month after placement of product on the market.

Verification requirements:

This criterion is verified at the product level.

- a) URL(s) for the public website where the manufacturer makes available information described in this criterion.

References and details: None.

5.5.3 Required – Information for reuse and recycling

The manufacturer shall publish product information on materials requiring selective treatment, as identified in the EU WEEE Directive 2012/19/EU Annex VII¹⁶ for use by third-party reuse and recycling organizations, in a language of the manufacturer's choice. The information shall be made available to reuse and recycling organizations either upon request, publicly disclosed or otherwise.

The manufacturer shall have the information available for a minimum of seven years following the end of production of the product.

Exclusions: Plastic parts weighing ≤ 25 grams. For mobile phones, plastic parts weighing ≤ 10 grams.

The requirement to make information available, as described in this criterion shall be achieved within 12 months of the date of registration.

Verification requirements:

This criterion is verified at the product level.

- a) Evidence that the information is available in all regions or countries in which the criterion is declared, such as a corporate website accessible by all countries and stakeholders (e.g., reuse and recycling operators). If the evidence is not publicly available, provide identification of a contact for institutions and organizations to request.
- b) A procedure that assures that the information is available for seven years following the end of production of the product, and
- c) Evidence that the information complies with requirements of the EU WEEE Directive 2012/19/EU Annex VII.¹⁶

References and details: None.

5.6 Secure data deletion for circularity

5.6.1 Required – Secure data deletion

Manufacturer shall provide a user data sanitization solution for institutional purchasers that, at minimum, achieves the level of "clear" or "purge" but not "destroy" according to IEEE 2883,²⁰ ISO/IEC 27040,⁶¹ or NIST SP 800-88³⁴ in HDD, SSD, soldered down UFS and soldered down eMMC.

Manufacturer shall provide a user data sanitization solution for consumers that, at minimum, resets the device and erases user data stored in the HDD, SSD, soldered down UFS and soldered down eMMC.

If the manufacturer's solution for consumers achieves the user data sanitization level required for institutional

⁶¹ <https://www.iso.org/standard/80194.html>

purchasers, this also meets the minimum requirements for consumers.

Alternatively, for mobile phones and slate tablets in scope of Commission Regulation (EU) 2023/1670,¹³ manufacturer may provide both (1) encrypt by default, using a random encryption key, the user data stored in the internal storage of the device, and (2) include a software function, that resets the device to its factory settings and erases securely by default the encryption key and generates a new one.

Examples of manufacturer sanitization solutions include providing software shipped with the product, making software available on its website, or providing a remote or on-site secure data removal service, or native sanitization solutions built into products.

For products placed on the market before the date EPEAT requires new product registrations be conformant with the updated criteria, manufacturer may indicate criterion is "N/A." Placed on the market for the first time refers to the first instance of making a product, including next generations of existing products, available to purchasers.

If the product does not contain any storage devices in scope (HDD, SSD, soldered down UFS or soldered down eMMC), the manufacturer may indicate the criterion is "N/A."

Verification requirements:

This criterion is verified at the product level.

- a) Evidence that the manufacturer provides a solution or native sanitization solution built into products, that meets the requirements of this criterion. Examples include URL(s) where manufacturer makes available data sanitization software or instructions for using native sanitization solutions, in user manual or other documentation of how a customer can request data sanitization services. This does not mandate provision of product demonstrations or test data.

References and details: None.

5.6.2 Optional – Secure data deletion for circularity

Publicly available secure data deletion procedures enable refurbishment operations, which extends device lifetimes beyond the period of manufacturer support. Manufacturer shall make available on its public website user data sanitization instructions for the product. The user data sanitization instructions shall describe a process for the user to intentionally and securely sanitize all user data stored by the product. The user data sanitization instructions shall:

- a) include a list of all components that may store user data,
- b) be performable by hand, by use of an operational panel, and/or using commonly available tools,
- c) not require the purchase of separate software or hardware,
- d) describe how to physically access, remove, and replace any part from the list in point 1) where the user data cannot be sanitized to the requirements of this criterion through use of software or firmware-based tools.

For storage media types that can be sanitized to "purge" according to IEEE 2883,²⁰ ISO/IEC 27040,⁶¹ or

NIST SP 800-88,^{34, 62} the data sanitization instructions shall also:

- a) achieve the level of "purge,"
- b) not require the physical destruction of any component or part of the product,
- c) include restoring the product to original or equivalent functionality after user data sanitization.

For storage media types for which "purge" is "N/A" according to IEEE 2883,²⁰ ISO/IEC 27040,⁶¹ or NIST SP 800-88³⁴ (e.g., embedded flash memory on boards), the data sanitization instructions shall also:

- a) achieve the level of "clear,"
- b) not require the physical destruction of any component other than the components with non-removable "N/A" storage media types.

NOTE — Implementations of NIST SP 800-53,⁴⁴ such as 32 CFR Part 117 NISPOM Rule⁵ (formerly US DOD 5220.22-M) are acceptable.

Manufacturer shall make freely available on its public website all software tools, system software, and firmware needed to restore the product to its original functionality, if any.

The manufacturer shall make all the software tools and information described in this criterion available on its public website from the time the product is registered until production has ended for the time period for availability of updates specified in criterion 5.3.1.

The manufacturer shall not require third parties to register or have an account with the manufacturer to obtain the information in this criterion. The URL(s) for the public website where the manufacturer makes available the tools and information described in this criterion shall be entered into the EPEAT Registry.

Manufacturer shall verify that the instructions accomplish user data sanitization by providing evidence of a one-time demonstration of successful user data sanitization using one of the verification testing methodologies described in IEEE 2883²⁰ Section 7.1, ISO/IEC 27040,⁶¹ or NIST SP 800-88³⁴ Rev. 1, Section 4.7.

Nothing in this criterion shall be construed to require the manufacturer to divulge a trade secret.

If no user data is stored in the device, then manufacturer may indicate "N/A" for this criterion.

Point value: 1 point

Verification requirements:

This criterion is verified at the product level.

- a) URL(s) where manufacturer makes available instructions for user data sanitization as described in this criterion.
- b) Evidence that the user data sanitization instructions in accordance with IEEE 2883²⁰ Section 7.1,

⁶² Use of IEEE 2883 is encouraged as it is expected to supersede NIST SP 800-88 over time.

ISO/IEC 27040,⁶¹ or NIST SP 800-88³⁴ Rev. 1, Section 4.7 methods have been tested and verified.

References and details: None.

5.7 Responsible end-of-life management

5.7.1 Required – Provision of product take-back service

Manufacturer shall provide a country-wide product take-back service for reuse, refurbishment, and/or recycling for registered products and formerly registered products, either directly, or through a contracted third-party in the country(ies) of registration. The take-back service must demonstrate (such as via a program, policy, procedure, or contract language with initial service provider), employment of the pollution prevention hierarchy by first prioritizing reuse, refurbishment and then materials recovery, before considering energy recovery and/or disposal.

Manufacturer shall inform purchasers in product promotional materials (e.g., web-based sales information, product specifications) of the availability of the take-back service. Manufacturer shall make available information describing the product take-back service, including how to utilize the service, via the manufacturer's public website.

Manufacturer shall make information available that identifies if there are direct costs to the purchaser associated with use of the product take-back service, or manufacturer shall identify that there are no direct costs. If there are direct costs to the purchaser (including transportation if applicable), the disclosure shall be made publicly available (e.g., on the manufacturer website). The disclosure can allow for the purchaser to contact the manufacturer to receive a quote based on their unique circumstances (e.g., type of product, location, volume, etc.). Specific information, for example, an email address or contact form, for obtaining a quote must be provided on the manufacturer's website. This criterion does not require a manufacturer to provide financial credit to a purchaser in fulfillment of this criterion.

In jurisdictions or countries where there are existing laws and/or regulations which establish a program for the collection and recycling of registered and formerly registered products and the program includes collection and recycling of products from institutional, and consumer markets, manufacturer participation in the program meets all of the requirements of this criterion.

If existing laws and/or regulation only cover some purchasers (e.g., consumers and not institutional purchasers), manufacturers shall provide a take-back service that meets all the requirements for this criterion for those purchasers not covered by the law and/or regulation. If existing laws and/or regulations only cover part of a country where products are registered, (e.g., only some states or provinces), manufacturer shall provide a take-back service that meets all the requirements of this criterion for the remainder of the country.

Verification requirements:

This criterion is verified at the product category level.

- a) In a jurisdiction or country where products are registered and where there are existing laws and/or regulations which establish a program(s) for the collection and recycling of registered and formerly

registered products, and the program includes collection and recycling of products from institutional and/or consumer markets, evidence of the following:

- i. the program is approved or accepted in the jurisdiction or country as meeting the laws and/or regulations and includes collection and recycling of institutional products, and/or consumer products,
 - ii. manufacturer ongoing participation in the program
- b) In a jurisdiction or country where products are registered and where there are no existing laws/and or regulations which establish a program for the collection and recycling of registered and formerly registered products or where such a program does not address products from consumer or institutional markets, or where regulations only cover part of a country where products are registered evidence of the following:
- i. product take-back service is provided for registered products and formerly registered products,
 - ii. URL(s) for the manufacturer's public website that describes the product take-back service, including how to utilize the service,
 - iii. how purchasers are informed of the product take-back service in product promotional materials (e.g., web-based sales information, product specifications, user manuals or service guides),
 - iv. how information is made available to purchasers identifying if there are direct costs associated with use of the product take-back service. Including how to obtain a quote if there are costs associated with the service,
 - v. manufacturer program, policy, procedure, or contract language with initial service provider or with agent contracting with initial service provider, demonstrating hierarchy of equipment management.

References and details:

Manufacturer is not obligated to demonstrate utilization of product take-back services by purchasers. Manufacturer may adhere, on a case-by-case basis to institutional purchaser or government mandates for recycling rather than re-use.

5.7.2 Required – End-of-life processing requirements

Manufacturer shall demonstrate the following requirements are met for all EOL products collected by the manufacturer (or their contractual agent) pursuant to the "Required—Provision of product take-back service" criterion (5.7.1) contained herein, by utilizing:

- 1) A program that is approved or accepted in the jurisdiction or country as meeting the laws and/or regulations of the jurisdiction or country and includes collection, reuse, and recycling of institutional products, and/or consumer products for the types of products registered by the manufacturer.

If the manufacturer is not utilizing government sanctioned recycling vendors to meet a state, territory, country, province, etc. requirement; the manufacturer must meet criterion requirement 2.

Or

- 2) Initial service providers that meet one of the following:
- a) Are certified by a certification body to a Qualified Electronics Recycling Standard, (as specified in Annex D), such as:
- i. SERI (R2) Standard³⁶ with appendices and/or scope appropriate to the services provided,
 - ii. e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment,¹⁰
 - iii. EN 50625,¹³ (all applicable parts apply) or WEEELabex,⁶³ or
 - iv. EN 50614,¹² preparing for re-use of WEEE.

The certification body shall be accredited by an IAF member accreditation body and the scope of accreditation shall include the Qualified Electronics Recycling Standard(s).

Or

- b) Provide evidence of conformance through annual third-party audits to a Qualified Electronics Recycling Standard (as specified in Annex D). The audit shall be performed by either:
- i. a third-party certification body accredited by an IAF member accreditation body to ISO/IEC 17020,²⁸ ISO/IEC 17021-1²⁹ or ISO/IEC 17065.³¹

Or

- ii. an auditor holding one of the following auditor certifications:
 - R2 Auditor certification from an accredited certification body approved by R2,
 - e-Stewards Auditor certification from an accredited certification body approved by e-Stewards,¹⁰⁹
 - auditor certification to an internationally, nationally and/or regionally-recognized Qualified Electronics Recycling Standard or scheme (e.g., AS/NZS5377, EN 50625,¹³ WEEELabex⁶³).

For products declared in the US and Canada, manufacturers shall conform with option 1) or 2) a) above.

For either option 1) or 2) above, the manufacturer may use an initial service provider located in a country other than where the EOL equipment is required to be collected in compliance with national laws implementing applicable international agreements.

The following programs operated by the manufacturer (or their contractual agent) are exempt from the requirements of this criterion:

- a) management of leased products where the manufacturer (or their contractual agent) retains legal ownership,
- b) trade-in/exchange programs where the purchaser surrenders the product to the manufacturer (or

⁶³ <https://www.weeelabex.org/>

- their contractual agent) in return for compensation or replacement product,
- c) product servicing and/or warranty programs, operated by the manufacturer, or their contractual agent, where a product (or similar product) is returned to a purchaser,
 - d) any location pre-selected by customer for pre-processing before it enters manufacturers' initial service provider (e.g., data deletion service provider used by customer).

Verification requirements:

This criterion is verified at the product category level.

For each country where the manufacturer has registered products, evidence of the following:

- a) Identification of the government-approved or government-accepted program(s) utilized by the manufacturer in the jurisdiction where the product was registered with evidence that:
 - i. the scope of products covered by the government-approved or government-accepted program includes the registered products,
 - ii. the government-approved or government-accepted program accepts products from all product users (e.g., consumer, institutional), or the manufacturer offers take back and recycling as per the requirements of this criterion for products or users not covered by the government-approved or government-accepted program,
 - iii. the manufacturer is participating in the government-approved or government-accepted program in that jurisdiction or country.

And/or,

- b) For each initial service provider that performs take-back services outside of a government-approved or government-accepted program in the country or jurisdiction where the product was registered:
 - i. identification of the Qualified Electronics Recycling Standard(s) being met,
 - ii. for initial service providers meeting criterion requirement 2) a) above, evidence of the following:
 - valid certification to the Qualified Electronics Recycling Standard,
 - the certification body's scope of accreditation identifies the Qualified Electronics Recycling Standard(s) used

Or

- iii. for initial service providers meeting criterion requirement 2) b) above, evidence of the following:
 - report from the most recent audit of the initial service provider against the Qualified Electronics Recycling Standard, which identifies audit findings (including conformance status and all non-conformances),
 - identification of planned/implemented resolutions of non-conformances from the most recent audit of the initial service provider against the Qualified Electronics Recycling

- Standard,
- the certification body's scope of accreditation includes ISO/IEC 17020,²⁸ ISO/IEC 17021-1²⁹ or ISO/IEC 17065,³¹
 - the accreditation body, which accredited the certification body, is an IAF member.
- c) When an agent is being used, evidence of the following:
- i. procedure or reports from the agent demonstrating compliance to verification requirement a) or b),
 - ii. procedure or reports from the agent demonstrating that it is providing the take-back services for the manufacturer.

References and details: None.

5.8 Packaging

5.8.1 Required – Sustainable packaging content

Total product packaging shall contain at a minimum 50% combined recycled content, rapidly renewable content and/or certified wood content by weight, inclusive of all material types. The minimum percentage is calculated as the minimum weight of recycled content, rapidly renewable content and/or certified wood content in the packaging (numerator) divided by the total weight of packaging (denominator).

- a) If forest wood or bamboo content is used, it shall be certified by an independent third-party scheme for sustainable forest management and chain of custody, such as the FSC Chain of Custody standard,⁶⁴ PEFC Chain of Custody standard,⁶⁵ or a national forest certification system that has been endorsed by PEFC Sustainability Benchmark, which includes documentation of chain of custody certificates for fiber (e.g., SFI Program,⁶⁶ CSA Group Sustainable Forest Management Program,⁶⁷ and CERFLOR.⁶⁸)
- b) The rapidly renewable content shall be derived from plants or fungi that take 10 years or fewer to grow and can be harvested in a sustainable fashion. Examples of rapidly renewable materials include pulp and paper fibers made from various feedstocks such as hemp, flax, bagasse, arundo donax, wheat straw, kenaf, bamboo and bioplastics made from feedstocks such as corn starch, sugarcane, and a variety of other sources like potatoes, algae, mycelium (mushroom "roots"), and food waste. The manufacturer shall select sustainably harvested rapidly renewable content. Examples of sustainable sourcing and harvesting considerations include but are not limited to use of agricultural

⁶⁴ <https://fsc.org/en/chain-of-custody-certification>

⁶⁵ <https://pefc.org/standards-implementation/standards-and-guides>

⁶⁶ <https://sfimi.org/about-program>

⁶⁷ <https://natural-resources.canada.ca/our-natural-resources/forests/sustainable-forest-management/forest-management-certification-canada/17474>

⁶⁸ <http://www.inmetro.gov.br/qualidade/cerflor.asp>

byproducts and evaluation of the environment in which the feedstock is harvested to ensure selection of plant species that are from locations or programs that have been demonstrated to manage species in a way that they are not invasive. Invasive species can also be considered as a rapidly renewable content when the plant meets the definition of rapidly renewable and it is sourced from a program that is reducing the impact the invasive species has on the ecosystem.

Exclusions: The manufacturer may exclude any of the following items from the calculation: plastic parts $\leq 50 \text{ cm}^2$, labels affixed to plastics bags or wraps, tape, staples, and plastic materials that contain a film or coating, for purposes of protection, moisture or ESD barrier. This criterion does not apply to invoices or other shipping documents.:

Verification requirements:

This criterion is verified at the product level.

- a) list of types of packaging materials, weights for each material, and whether packaging material contains recycled content, rapidly renewable content, or forest wood/bamboo certified content:
 - i. calculation demonstrating that the total weight of all packaging materials meets the 50% requirement of recycled content, rapidly renewable and/or forest wood/bamboo certified content,
 - ii. calculation of percentage of recycled content for each packaging material,
 - iii. supplier documentation, such as a declaration of conformity, with recycled content percentage for each applicable packaging material,
 - iv. if applicable, supplier documentation of source of rapidly renewable content, and percentage of rapidly renewable content for each applicable packaging material,
 - v. if applicable, supplier documentation, such as a declaration of conformity, that rapidly renewable content meets the requirements of this criterion, including identification of the material used and how it was harvested in a sustainable fashion,
 - vi. if applicable, documentation of forest wood/bamboo content percentage in the packaging and chain of custody certification, from at least one of the following:
 - FSC Chain of Custody standard,⁶⁵
 - PEFC Chain of Custody standard,⁶⁶ or
 - a national forest certification system that has been endorsed by PEFC Sustainability Benchmark which includes documentation of chain of custody certificates for fiber.

References and details: None.

5.8.2 Required – Enhancing recyclability of packaging materials

Product packaging shall meet the following requirements:

- 1) All packaging components $\geq 25 \text{ g}$ shall be separable by material type, including by plastic material type specified in criterion requirement 2, without the use of tools.

Exclusions: plastic parts smaller than 50 cm², labels affixed to plastics bags or wraps, tape, glue, staples, nails in pallets, and plastic materials that contain a film or coating for purposes of protection, moisture or ESD barrier.

- 2) All plastic packaging components ≥ 25 g shall be clearly marked with material type in accordance with at least one marking type such as ISO 11469/1043,²³ ASTM D7611/D7611M,⁷ DIN6120,⁸ or as required by local regulation(s) where the product is being sold.

Exclusions: plastic materials that contain a film or coating, stretch wraps, strapping, tape, label, surface area < 50 cm², plastic pieces when due to shape marking is not possible and expanded polyurethane foam.

For products with packaging that does not contain any plastic components ≥ 25 g, manufacturer may indicate "N/A" for requirement 2) in this criterion.

Verification requirements:

This criterion is verified at the product level.

- a) evidence from manufacturer:
- i. for criterion requirement 1) manufacturer's packaging part or assembly / disassembly drawing, or photographs,
 - ii. for criterion requirement 2) photographs or physical evidence of plastic markings

References and details: None.

5.9 Water inventory

5.9.1 Optional – Water inventory

Manufacturer shall demonstrate that suppliers meet the water inventory requirements of this criterion for facilities in scope. Facilities in scope include, at a minimum, those constituting 50% of annual production spend on key components or five facilities that supply key components. Key components for EPEAT registered products are either the priority components defined below, or the top five components for water consumption as identified for the product category of interest using LCAs done in accordance with EPEAT Climate Change Mitigation criterion 4.1.4. Priority components include the following:

- a) main PCB,
- b) integrated circuits: CPUs, SSDs, HDDs, RAM, GPUs,
- c) power supply units,
- d) display panels.

Production spend on key components includes:

- a) Total annual spend by the manufacturer on directly sourced key components of EPEAT registered products.

- b) Total annual spend by the manufacturer on suppliers of key components and assemblies containing key components that are directly sourced for EPEAT registered products. Supplier spend may include both key components and assemblies containing key components, excluding any key components already accounted for in a).
- c) Total annual spend by final assembler(s) (including the manufacturer as applicable) on key components and assemblies containing key components for EPEAT registered products (excluding key components purchased from the manufacturer).

NOTE — Estimated total annual spend by outsourced final assembler(s) on key components and assemblies containing key components, based on manufacturer's estimated production cost breakdowns, can be used when actual spend is not available from the assembler(s).

An illustration of the main elements of production spend on key components can be found in Annex F.

The water inventory, compiled at least annually, for each facility may apply to the operations in scope or the entire facility.

Suppliers shall have a compiled water inventory (in megaliters per year) by location for facilities in scope. Company/corporate reporting is an acceptable alternative to facility reporting, where aggregation includes applicable supplier facilities. The inventory shall include and identify the following metrics..⁶⁹

Part A: Water quantity (1 point)

- a) the volume of total annual water (in megaliters per year) withdrawals from all source(s),
- b) the volume of wastewater discharged by destination, e.g., fresh surface water, seawater, groundwater, and third-party destinations (e.g., municipal wastewater plants, public or private utilities, and other organizations involved in the transport, treatment, disposal, or further use of wastewater)
- c) the volume and percentage of water that is reused,
- d) the proportion of total water withdrawals sourced from water stressed areas. Regions subject to water stress must be identified using one of the following tools: the WRI Aqueduct Global Water Risk Mapping Tool,⁷⁰ GEMI Local Water Tool,⁷¹ WWF Water Risk Filter,⁷² and the CDP Water Watch Tool.⁷³ Reporting entities must identify the water stressed area(s) and the tool used for identification of these water stressed areas.

⁶⁹ CDP Water Security Reporting Guidance is provided as an informative reference. <https://guidance.cdp.net/en/guidance?cid=15&ctype=theme&idtype=ThemeID&incchild=1µsite=0&otype=Guidance&tags=TAG-646%252CTAG-607%252CTAG-600>

⁷⁰ <https://www.wri.org/data/aqueduct-water-risk-atlas>

⁷¹ <https://gemi.org/localwatertool/>

⁷² <https://waterriskfilter.org/>

⁷³ <https://www.cdp.net/en/disclose/question-bank/water-security/water-watch>

Part B: Water quality (1 point)

- a) the volume of wastewater discharged compared to the volume in the wastewater discharge permit, as applicable. If wastewater discharges are managed by a third-party source, manufacturer may claim "N/A" for wastewater quality discharge reporting,
- b) the final effluent concentrations, by pollutant, and the applicable permit effluent limit or as specified in Annex G.

Point value: 1 or 2 points (maximum of 2 points)

Verification requirements:

This criterion is verified at the product category level.

- a) Evidence of having met, at minimum, the 50% production spend supplier inclusion threshold or five identified facilities that supply key components.
- b) List of in-scope supplier priority component facilities.
- c) For each in-scope supplier facility identified in verification requirement a) location and evidence of compilation of a water inventory, volume, and quality information inclusive of the parameters included in this criterion. If disclosure is at the company level, evidence of compilation of water inventory and quality information inclusive of the parameters included in this criterion.
- d) If performance is demonstrated for operations in scope (and not entire facility), the supplier shall provide in writing to the manufacturer an indication of how the relevant portions of the operations relevant to the products in scope have been calculated or uniquely accounted for (e.g. based on sales, unit volume, or water metering).
- e) Evidence wastewater discharges are managed by a third-party source if claiming wastewater quality discharge reporting metrics are "N/A" for associated facilities.

References and details: None.

Annex A (Informative): Table of criteria and optional points

Topic	Subtopic	Criterion	Optional Points
5.0 Sustainable Use of Resources	5.1 Materials selection	5.1.1 Required – Disclosure of post-consumer reused or recycled and/or biobased plastic content	N/A
		5.1.2 Required – Disclosure of reused or recycled metal content	N/A
		5.1.3 Required – Minimum post-consumer reused or recycled and/or biobased plastic content	N/A
		5.1.4 Optional – Higher post-consumer reused, recycled and/or biobased plastic content	1-3 points
		5.1.5 Optional – Reused and/or recycled metal content	1-2 points
	5.2 Critical minerals and rare earth elements	5.2.1 Optional – Critical mineral content disclosure	1 point
		5.2.2 Optional – Recycled content or direct reuse of rare earth magnets in product	1-2 points
		5.2.3 Optional – Recycled content metal in lithium-based secondary (rechargeable) batteries	1 point
	5.3 Product longevity	5.3.1 Required – Firmware or Operating System updates	N/A
		5.3.2 Required – Durability of notebooks, tablets and mobile phones	N/A
		5.3.3 Required - Long life rechargeable battery for notebook computers, tablets and mobile phones	N/A
		5.3.4 Optional – Longer-life rechargeable battery for notebook computers, tablets and mobile phones	1 point
		5.3.5 Required – Battery software for notebook computers, tablets and mobile phones	N/A
		5.3.6 Optional – Additional battery software for tablets and mobile phones	1
5.3.7 Required – Interoperability and reusability of computers and mobile phone components		N/A	

Topic	Subtopic	Criterion	Optional Points
5.0 Sustainable Use of Resources	5.4 Design for repair, reuse, recycling	5.4.1 Required - Design for repair and reuse	N/A
		5.4.2 Required – Design of components containing plastic for recycling	N/A
		5.4.3 Required – Software parts pairing for notebook computers, tablets and mobile phones	N/A
		5.4.4 Optional – Software parts pairing for notebook computers, tablets and mobile phones	1
	5.5 Availability of repair services and information to enable repair, reuse and recycling	5.5.1 Required - Availability of repair services and replacement components	N/A
		5.5.2 Required – Publicly available repair information for notebook computers, tablets and mobile phones	N/A
		5.5.3 Required – Information for reuse and recycling	N/A
	5.6 Secure data deletion	5.6.1 Required – Secure data deletion	N/A
		5.6.2 Optional – Secure data deletion	1
	5.7 Responsible end-of-life management	5.7.1 Required – Provision of product take-back service	N/A
		5.7.2 Required – End-of-life processing requirements	N/A
	5.8 Packaging	5.8.1 Required – Sustainable packaging content	N/A
		5.8.2 Required – Enhancing recyclability of packaging materials	N/A
	5.9 Water inventory	5.9.1 Optional - Water inventory	1 to 2

Annex B (Normative): Critical and rare earth elements in electronics

Critical minerals	Rare earth elements
Bismuth	Cerium
Aluminum*	Lanthanum
Antimony	Dysprosium
Tin	Neodymium
Cobalt	Praseodymium
Lithium	Samarium
Tantalum	Terbium
Gallium	Yttrium
Germanium	
Graphite (natural and synthetic)	
Indium	
Silicon metalloid	
Tellurium	
Tungsten	
Manganese	
Zinc*	
*Aluminum and Zinc are also classified as base metals.	

Annex C (Normative): Components for which design enables replacement and duration for a available service agreements

For designs where the following parts are provided as part of a spare part assembly that includes other components, the product shall be deemed conformant with criteria that require the part to be separable or replaceable: RAM, SSD, fan/cooling radiator, power connector, ports, connectors. If the aforementioned components are attached to one of the other replaceable components in the table, all of the replaceable components are to be deemed conformant.

Product	Replaceable components	Duration of available service
Computers (notebooks, desktops, AIOs, tablets)	Battery, LCD display panel or display assembly, HDD, SSD, ODD (desktops, integrated desktops/AIOs only), RAM, PCB system/motherboard, peripheral boards, fan/cooling radiator, external/internal PSU or charger, external power connector, keyboard or keyboard assembly (anything less than the entire external case can be part of the keyboard assembly), ports and connectors.	3 years from date of end of placement on the market
Computer monitors	External electric cables, external power cables, external/internal power supply unit.	2 years from date of end of placement on the market
Imaging equipment	<p><u>Electrophotographic</u> Storage devices (HDD and SSD), laser unit, fuser unit, drum cassette/unit, transfer belts/kits/units, control circuit boards, roller kits/paper feed rollers, internal power supplies, control panel, ° external power supplies/power cable.</p> <p><u>Inkjet</u> Storage devices (HDD and SSD), roller kits/paper feed rollers, print head (not integrated into the ink cartridge), control circuit boards, control panel, ° external power supply/power cable.</p>	5 years from date of end of placement on the market

Product	Replaceable components	Duration of available service
<p>Mobile phones and slate tablets^c</p>	<p>Battery or batteries,^b front-facing camera assembly, rear-facing camera assembly, external audio connector(s), external charging port(s), mechanical button(s), main microphone(s), speaker(s), hinge assembly, mechanical display folding mechanism, protective foil for foldable displays, display assembly, SIM tray and memory card tray if there is an external slot for a SIM tray or memory card.</p> <p><u>Exceptions:</u></p> <ul style="list-style-type: none"> a) microphones may be part of a loudspeaker or external charging port assembly, b) external audio connector(s) may be combined with the external charging port(s) as the same port(s), c) external charging port(s) may be combined with the external audio connector(s) as the same port(s), d) hinge assembly may be part of a mechanical display folding mechanism, e) microphone, speaker(s), buttons and external connectors may be combined with a higher-level assembly if the following reliability requirements are met: <ul style="list-style-type: none"> i. For mobile phones: <ul style="list-style-type: none"> • the power button has a contact closure cycle resistance $\geq 225,000$ cycles, • the volume button has a contact closure cycle resistance $\geq 100,000$ cycles, • the charging connector has an insertion/extraction cycle resistance $\geq 12,000$ cycles. 	<p>7 years from date of end of placement on the market</p>

Product	Replaceable components	Duration of available service
Mobile phones and slate tablets ^c	ii. For slate tablets: <ul style="list-style-type: none"> • the power button has a contact closure cycle resistance $\geq 20,000$ cycles, • the volume button has a contact closure cycle resistance $\geq 10,000$ cycles, • the charging connector has an insertion/extraction cycle resistance $\geq 3,000$ cycles. 	7 years from date of end of placement on the market
Network equipment	Power supplies, fans or other mechanical cooling devices, hard drives, memory, processors (CPUs), and PCB assemblies	2 years from date of end of placement on the market for SNE 5 years from date of end of placement on the market for LNE
Servers	Power supplies, fans, hard drives (storage), memory, processors (CPUs), and PCB assemblies (PCB, expansion cards/graphic cards), batteries.	5 years from date of end of placement on the market
Televisions	Connectivity cables, power cables, external power supply unit.	2 years from date of end of placement on the market
<p>^a "Control panel" refers to the display panel or display screen and any attached frame and keyboard assembly, as typically found in office imaging equipment.</p> <p>^b Must also make available back or back cover assembly if required to be fully removed for battery replacement.</p> <p>^c For purposes of this criteria document, the definition of "slate tablet" in EU, <i>Commission Regulation 2023/1670</i> applies.</p>		

NOTE — If a manufacturer demonstrates that the duration of available service is for the number of years indicated in the table after sale to customers rather than after end of placement on the market, they shall be deemed conformant to the duration of available service requirement.

Annex D (Normative): Qualified Electronics Recycling Standard

A Qualified Electronics Recycling Standard shall meet minimum technical requirements a) through g) below. For the purposes of this criterion, a manufacturer's internal technical performance requirements for initial service providers may qualify, if it meets the requirements below for a Qualified Electronics Recycling Standard, as determined by EPEAT.

The minimum technical requirements for a Qualified Electronics Recycling Standard are:

- a) The standard is applicable within the country(s) in which products are registered and includes the equipment covered by this criterion.
- b) The standard includes:
 - i. a definition for "materials of concern" (or analogous term identifying materials with hazardous characteristics as well as materials with special handling needs),
 - ii. requirements for handling and disposition of those materials to protect human health and the environment,
 - iii. a requirement that initial service providers have a written management plan that addresses "materials of concern" and applicable legal requirements.
- c) The standard requires that initial service providers shall document, maintain, review annually, and update as needed, an environmental, health and safety management system, and train their workers regarding the implementation of this system.
- d) The standard requires that equipment/components/material intended for reuse, repair, refurbishment, remanufacturing, recycling and/or disposal shall be managed in accordance with applicable trade and transporting laws of the exporting, transit, and importing countries.
- e) The standard requires that equipment/components going for reuse, repair or refurbishment shall be tested or evaluated to determine if the product is suitable for reuse, refurbishment, or repair (for example, key functions are working if intended for reuse) prior to export and in conformance with the laws of the importing, exporting, and transit countries.
- f) The standard requires that initial service providers shall control, document, and track the material flow of all equipment, components, and materials covered by the Standard, that pass through its facilities or its control.
- g) The standard requires that initial service providers shall track all "materials of concern" to final disposition and ensure that the downstream take-back service providers are meeting the requirements of items b) through f).

The following Qualified Electronics Recycling Standards meet minimum technical requirements a) through g) of Annex D:

- SERI (R2) Standard³⁶ with appendices and/or scope appropriate to the services provided,
- e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment,¹⁰
- EN 50625¹³ (all applicable parts apply) or WEEELabex,⁶³
- EN 50614.¹²

Annex E (Normative): Calculation Methodology for Configurable Products

For recycled plastic and/or biobased content

The minimum recycled and/or biobased content percentage for each part in a product with customer-configurable accessories or peripherals (e.g., keyboards, mice, external power supplies, and monitor stands), shall be calculated as a weighted average based on a forecast of all n configurable options for that part, as defined below.

For each of n configurations of a part, the minimum percentage of recycled and/or biobased content for configurable part (weight in grams):

$$\sum_{i=1}^n \frac{PCR_i + BIO_i}{Total\ Plastic_i} \times ATT_i$$

PCR_i = mass of post-consumer plastic content in configuration

BIO_i = mass of bio feedstock plastic content in configuration

$Total\ Plastic_i$ = Total plastic weight including accessories in configuration

ATT_i = Forecast shipment attach-rate of configuration

Example: A product with 3 different configurations (keyboard)

Configuration 1	Configuration 2	Configuration 3
PCR = 30 g BIO = 10 g Total Plastic = 100 g ATT = 40% (0.40)	PCR = 20 g BIO = 15 g Total Plastic = 90 g ATT = 35% (0.35)	PCR = 10 g BIO = 5 g Total Plastic = 60 g ATT = 25% (0.25)
$\frac{(30 + 10)}{100} \times 0.40 = 0.16$	$\frac{(20 + 15)}{90} \times 0.35 = 0.136$	$\frac{(10 + 5)}{60} \times 0.25 = 0.0625$

Then, sum the weighted contributions:

$$0.16 + 0.1361 + 0.0625 = 0.3586$$

Overall minimum recycled and biobased content percentage for the product, considering all configurations and their attach-rates, would be approximately 35.86%.

For recycled metal content

Include PARTRM into product Recycled Metal weight by each metal type and PARTMetal into product in scope metal weight by each metal type to determine a product's recycled metal ratio.

Calculate below metal weight by three metal types:

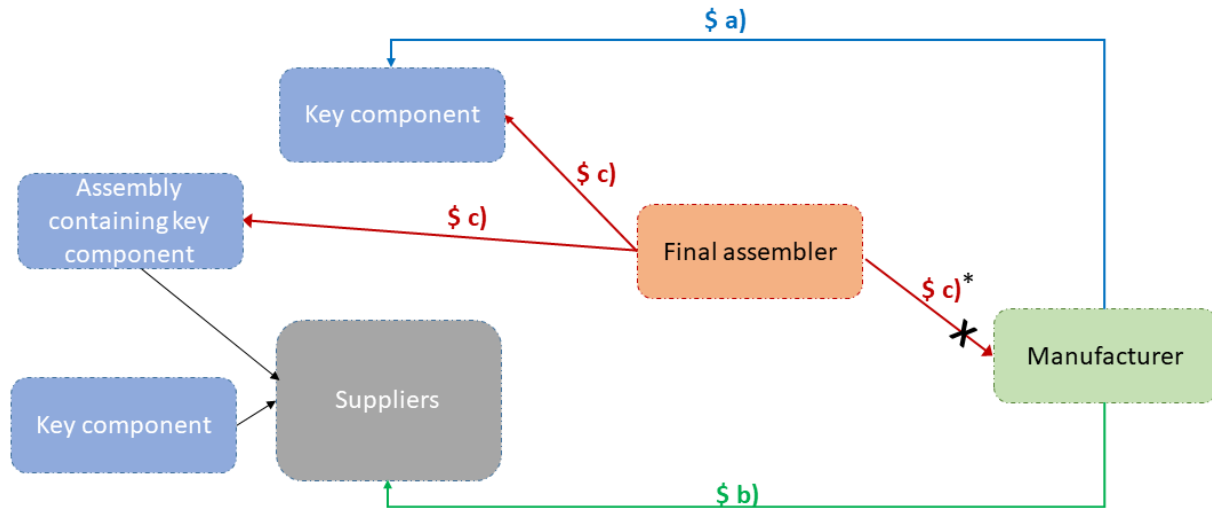
$$\sum_{i=1}^n \frac{RC_i}{Total\ Metal_i} \times ATT_i$$

RC_i = mass of recycled content metal in configuration

$Total\ Metal$ = Total metal weight including accessories in configuration

ATT_i = Forecast shipment attach-rate of configuration

Annex F (Informative): Elements of production spend on key components



- a) total annual spend by the manufacturer on directly sourced key components of EPEAT registered products
- b) total annual spend by the manufacturer on suppliers of key components and assemblies containing key components that are directly sourced for EPEAT registered products
- c) total annual spend by final assembler(s) (including the manufacturer as applicable) on key components and assemblies containing key components for EPEAT registered products (excluding key components purchased from the manufacturer*)

* Spend for components purchased from the manufacturer are counted under a)

Annex G (Normative): Wastewater quality

Wastewater quality analysis shall include:

- a) metals including arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, and silver using EPA Method 200.8, 40 CFR 136.3 or testing criteria and method accepted regionally,
- b) total fluoride using EPA Method 300.1 or a suitable method from 40 CFR Part 136.1 for inorganic fluoride anions in water or testing criteria and method accepted regionally,
- c) volatile and semi-volatile organics using analysis EPA Methods 624.1 and 625.1, 40 CFR Part 136.3 or testing criteria and method accepted regionally.

Or

- d) if the facility has a solvent management plan, then a declaration that:
 - i. solvent management plan is being implemented,
 - ii. listed organic solvents in Tables 1 and 2 of 624.1 (publication number EPA 821-R-16-008), and Table 1, 2, and 3 of EPA method 625.1 (publication number EPA 821-R-16-007) are not being dumped into waste waters.

Annex H (Informative): Bibliography

The following references are provided as informative references for the application of this document.

CDP Water Watch Tool⁷³

EN 15343-2007, *Plastics Recycling Traceability and Assessment of Conformity and Recycled Content*⁷⁴

EN 45557:2020 – General method for assessing the proportion of recycled material content in energy related products⁵⁰

GEMI Local Water Tool⁷¹

WRI Aqueduct Global Water Risk Mapping Tool⁷⁰

WWF Water Risk Filter⁷²

Additional guidance on calculating biobased content can be found in ULE 2809,³⁷ ASTM D6866,⁵¹ and ISCC PLUS,⁴⁹ along with ISCC mass balance approach.⁵²

Ellen MacArthur Foundation mass balance approach.⁵³

Rainforest Alliance mass balance approach.⁵⁴

⁷⁴ <https://www.en-standard.eu/bs-en-15343-2007>

Document Change History

Issue	Revision	Author	Description of Change	Approver	Approval Date	Effective Date
1	0	Vice President, Category and Criteria Development	Initial release	CEO	January 29, 2025	January 29, 2025