

EPEAT-IECC-2024

Imaging Equipment Consumables Criteria

October 28, 2024

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Contents

1.0 Purpose
1.1 Scope1
2.0 Normative References
3.0 Definitions and Acronyms 2
3.1 Definitions
3.2 EPEAT Program Terms
3.3 Acronyms4
4.0 This section is intentionally left blank4
5.0 This section is intentionally left blank4
6.0 This section is intentionally left blank4
7.0 This section is intentionally left blank4
8.0 Imaging Equipment Consumables
8.1 Imaging equipment design for consumables
8.1.1 Required – Equipment allows use of recycled content office paper
8.1.2 Required – Design to reduce paper usage5
8.1.3 Required - Design to allow use of remanufactured cartridges
8.1.4 Required – Indoor air quality emissions 8
8.2 Imaging equipment consumables take-back program
8.2.1 Required – Take-back program for consumables
Annex A (Informative): Table of criteria for Section 8.0 Imaging Equipment
Consumables
Annex B (Informative): Examples for calculating and disclosing Criterion 8.1.3, Option 3
Document Change History



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).³ 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 International. 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 Available at: <u>https://www.iso.org</u>

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

³ Available at: <u>https://www.epeat.net</u>



Participants

The following stakeholders were members of the Technical Committee:

Alison Cameron, Minnesota Pollution Control Agency	Christopher Newman, US EPA
Sandra Cannon, US DOE Sustainable Acquisition	Mary-Rose Nguyen, Strategy Advisory LLC
Mike Easterbrook, SERI	Tom Ogonek, Close the Loop
Joel Finley, Epson America, Inc.	Roger Portner, Ricoh USA
William Hoffman, UL Solutions	Nuno Santos, HP, Inc
Brenden Jiang, CA Department of General Services	Gerwald Van Der Gijp, Armor Print Solutions
Tricia Judge, International Imaging Technology Council	Robert Westbrook, Clover Imaging Group
Jason Kelley, Lexmark International	Julia Wolfe, Commonwealth of Massachusetts
Dave Krupar, Consultant	Operational Services Division
Andrew Lirio, Canon USA	Sergey Yurcha, Landbell Group
Mark Murray, Californians Against Waste	

Stakeholders from the following organizations participated in criteria drafting as participants in Expert Ad Hoc Groups:

Brother Industries, Ltd. Canon USA, Inc Clover Imaging Group, LLC Epson America, Inc. FujiFilm Business Innovation Corporation HP, Inc Information Technology Industry Council International Imaging Technology Council Key Point Intelligence Konica Minolta Holdings USA, Inc. Korsan Management Services Kyocera Document Solutions America, Inc. LandBell Group Lexmark Ricoh USA, Inc Sharp Corporation Toshiba America Business Solutions, Inc. US Department of Energy Xerox Corporation



1.0 Purpose

The purpose of this document is to establish performance-based criteria that address design of imaging equipment to minimize the use of consumables (specifically paper, ink and toner cartridges), to allow for the use of recycled content paper and remanufactured cartridges, and to meet internationally recognized indoor air quality standards. The criteria also include consumable take-back programs to enable circularity. It is not the intention of these criteria to address the overall design and material content of consumables such as ink and toner cartridges.

1.1 Scope

EPEAT applies these criteria to the Imaging Equipment product category only, along with criteria for Climate Change Mitigation, Sustainable Use of Resources, Reducing Chemicals of Concern and Corporate Environment, Social and Governance Performance. EPEAT policies and procedures govern the implementation of these criteria within the EPEAT program. These criteria apply to products that have a paper printing function. Products such as scanners are excluded.

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.

DE-UZ 219, Blue Angel Office Equipment with Printing Function, Substance emissions⁴

ENERGY STAR[®], Imaging Equipment Specification⁵

EN 12281, Printing and business paper – Requirements for copy paper for dry toner imaging processes⁶

ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories⁷

ISO/IEC 17065, Conformity assessment – Requirements for bodies certifying products, processes and services⁸

ISO/IEC 28360-1:2021, Information technology — Determination of chemical emission rates from electronic equipment — Part 1: Using consumables⁹

⁴ <u>https://produktinfo.blauer-engel.de/uploads/criteriafile/en/DE-UZ%20219-202101-en%20Criteria-V3-2022-06-03.pdf</u>

⁵ <u>https://www.energystar.gov/products/spec/imaging_equipment_specification_version_3_0_pd</u>

⁶ <u>https://standards.iteh.ai/catalog/standards/cen/8d344a67-2d38-4c7b-acca-e04ee0bde952/en-12281-2002</u>

⁷ <u>https://www.iso.org/ISO-IEC-17025-testing-and-calibration-laboratories.html</u>

⁸ <u>https://www.iso.org/standard/46568.html</u>

⁹ <u>https://www.iso.org/standard/82317.html</u>



3.0 Definitions and Acronyms

3.1 Definitions

automatic duplexing: The capability of a multi-function device (MFD) or printer to produce images on both sides of an output sheet, without manual manipulation of output as an intermediate step. A product is considered to have automatic duplexing capability only if all accessories needed to produce a duplex output are included with the product upon shipment.

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.

corporation level: See Section 3.2, EPEAT Program Terms.

cartridge: A type of consumable that holds a quantity of ink or toner, designed for insertion into an imaging equipment device. It may include integral components necessary for its operation. Examples include toner cartridges, inkjet cartridges, and impact or ribbon cartridges.

container: A type of consumable that holds a quantity of ink or toner. It does not contain integrated components or moving parts integral to the imaging product's function; examples include toner bottles, collection bottles, inkjet bottles, inkjet tanks, ink packs, and solid ink modules.

office paper: Uncoated cut-size paper for ink and dry toner imaging processes (i.e., copy paper) with a weight of 64 to 100 g/m2.

remanufactured cartridge: Cartridge resulting from a commercially compliant process where previously used original manufacturer cartridges are prepared for reuse by cleaning and possibly replacing critical worn imaging components to meet desired functionality and quality requirements.

To meet the definition of "remanufactured cartridge" a cartridge must contain:

- a) For toner cartridges, greater than 50% of aggregated weight of the original manufacturer cartridge housing and components not counting toner.
- b) For ink cartridges, greater than 75% of aggregated weight of the original manufacturer cartridge housing and components not counting ink and sponges.

The fraction of reused parts is calculated from the parts which are typically replaced/reused during remanufacturing as identified on a bill of materials. Where a bill of materials is not available the fraction of reused parts may be measured as a mass balance average over at least 100 units.

product: 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 level: See Section 3.2, EPEAT Program Terms.

product type: See Section 3.2, EPEAT Program Terms.

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

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 point of sale (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 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.³ For example, the following product types are included in the



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Computer and Display product category: desktop computer, monitor, integrated desktop computer, notebook computer, tablet/slate, thin client, workstation, and 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 (GTIN) (e.g., Universal Product Code (UPC), European Article Number (EAN), and Manufacturer Part Number (MPN).

3.3 Acronyms

- EAN European Article Number
- EN European norm
- **EPA** Environmental Protection Agency
- GTIN Global Trade Item Number
- IEC International Electrotechnical Commission
- **ISO** International Standards Organization
- MFD multi-function device
- MPN Manufacturer Part Number
- MPS managed print services
- **POS** point of sale
- **UPC** Universal Product Code
- **URL** uniform resource locator
- US United States
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8.0 Imaging Equipment Consumables

8.1 Imaging equipment design for consumables

8.1.1 Required – Equipment allows use of recycled content office paper

The imaging equipment product shall be capable of using office paper with 100% post-consumer recycled content that meets the paper runnability performance requirements of EN 12281 regardless of if the equipment uses ink or toner.

For products that do not have a function to print on office paper, the manufacturer may indicate not applicable for this criterion.

Verification requirements:

This criterion is verified at the product level.

a) Documentation that the imaging equipment product allows for the use of office paper with 100% post-consumer recycled content. Examples of documentation include an owner's manual, set-up instructions, warranty, or repair information; or information on a manufacturer's website such as an environmental product declaration; or list of recycled content paper brands tested to EN 12281, at minimum, and if they failed or passed.

References and details: None.

8.1.2 Required – Design to reduce paper usage

Part A

Imaging equipment product shall have automatic duplexing capability for office paper, as specified in the most current version of the applicable US EPA ENERGY STAR[®] specification. For products where the automatic duplexing capability requirements of ENERGY STAR do not apply, manufacturers may indicate not applicable for Part A of this criterion.

And,

<u>Part B</u>

Professional Imaging Product(s), as defined in the most current version of the applicable ENERGY STAR specification, shall be capable of printing and/or copying of more than one page (i.e., two pages or more) on one side of one sheet of office paper, referred to as N-up printing.

For products that are not a professional imaging product(s) the manufacturer may indicate not applicable for Part B of this criterion. For products that do not have an office paper printing function the manufacturer may indicate not applicable for this criterion.



Verification requirements:

This criterion is verified at the product level.

- a) Documentation that the imaging equipment product has automatic duplexing capability as required in the most current version of the applicable ENERGY STAR specification. Examples include documentation provided with the product, such as an owner's manual, set-up instructions, warranty or repair information; or information on a manufacturer's website such as an environmental product declaration; or ENERGY STAR test report indicating duplex capability.
 - i. For countries where ENERGY STAR certification is available, URL to the product's valid listing on the US ENERGY STAR or international partner ENERGY STAR certified product listing website demonstrates conformance with the automatic duplexing capability portion of this criterion.
- b) For professional imaging product(s), documentation that the imaging equipment product allows for N-up printing. Examples include documentation provided with the product such as an owner's manual, set-up instructions, warranty, or repair information; or information on a manufacturer's website such as an environmental product declaration.

References and details: None.

8.1.3 Required – Design to allow use of remanufactured cartridges

Manufacturer shall ensure registered products do not prevent the use of remanufactured cartridges, either manufacturer or non-manufacturer branded, by implementing one or more of the following options:

a) Refraining from issuing firmware updates that intentionally disable remanufactured cartridges that, at the time of the firmware update, use aftermarket electronic circuitry to operate with the registered product's then-current manufacturer firmware.

Or,

- b) Making available a manufacturer approved solution using unmodified original manufacturer electronic circuitry that ensures registered products permit the uninterrupted use of remanufactured cartridges and that provides at least the following key functionality:
 - i. Full and continuous cartridge acceptance without any inflammatory message(s) (i.e., "may be counterfeit") during installation and throughout use.

NOTE — It is acceptable to ask the user to acknowledge that they are using a nonmanufacturer remanufactured cartridge. This is not considered an interruption of use or inflammatory.

- ii. Cartridge and/or printhead calibration, cleaning, and alignment, as applicable.
- iii. No intentional blocking of data collection agents.



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- iv. Maintain the ability to provide supplies status reporting functions of page count, ink/toner remaining, and active "toner low" (or equivalent) and "toner out" (or equivalent) user prompts, but in each case only to the extent said function is available when using a genuine new manufacturer cartridge. This functionality may be lost if the cartridge is removed from the printer before the ink or toner is depleted.
- v. No intentional adjustments to print control parameters to reduce the print quality or page yield of remanufactured cartridges, except that for end-user-commanded adjustments, for example, to reduce ink or toner consumption rates, shall be permitted.

NOTE 1 — With use of non-manufacturer remanufactured cartridges, optimal automatic adjustment of image quality may not be possible because ink/toner, component materials and the adequacy of the data stored in the electronic circuitries are unknown. The manufacturer is not responsible for actual yields achieved or accuracy of supplies status reporting for non-manufacturer remanufactured cartridges. Manufacturer is not required to guarantee proper calibration, cleaning, and alignment.

NOTE 2 — Manufacturer approved solutions are not required to be free of charge.

Or,

- c) Manufacturer makes available to purchasers remanufactured cartridges, either manufacturer or nonmanufacturer branded for at minimum registered products. Make available means the manufacturer informs purchasers, e.g., on their website, via a media release or via contractual arrangements, how they can obtain remanufactured cartridges either directly from the manufacturer or from a manufacturer approved third party. The program for remanufactured cartridges shall be offered through the same ordering process as typically used by purchasers for non-remanufactured cartridges. Manufacturer shall publicly disclose:
 - i. Within one year of product registration the percentage of ink and toner remanufactured cartridges versus total cartridges produced annually (ink and toner cartridges reported separately). This shall be reported as an aggregated calculation across a family of EPEAT registered products that share a common consumable, as illustrated in Annex B.
 - ii. An annual disclosure by product family that provides a status of remanufactured cartridge availability.

Informative calculation and disclosure examples are provided in Annex B.

NOTE — Some cartridges collected by third-party remanufacturers might not be capable of being successfully remanufactured for use in an end customer's registered product if they are subscription or service model cartridges. This would not impact the ability of the registered product to accept other applicable remanufactured cartridges.

A manufacturer may indicate not applicable for this criterion if:

— products do not have a paper printing function, including but not limited to scanners; or



— products do not use a cartridge as part of the paper printing function, including but not limited to thermal printers.

Verification requirements:

This criterion is verified at the product level.

- a) To demonstrate conformance with criterion Option 1, a signed declaration of conformance applicable to each registered product.
- b) To demonstrate conformance with criterion Option 2, evidence of a manufacturer approved solution that meets the requirements of the criterion (e.g., a written procedure or program document).
- c) To demonstrate conformance with criterion Option 3, evidence manufacturer makes remanufactured cartridges available to purchasers in accordance with the requirements of this criterion, including URL(s) or examples of contracts for (1) information on how to obtain remanufactured cartridges; and (2) within one year of product registration, the percentage of remanufactured cartridges versus total cartridges produced annually. This shall be reported as an aggregated calculation across a family of EPEAT registered products that share a common consumable as illustrated in Annex B; and (3) an annual disclosure by product family that provides a status of remanufactured cartridge availability.

References and details: Manufacturer is not responsible for product performance when using nonmanufacturer remanufactured cartridges.

8.1.4 Required – Indoor air quality emissions

The manufacturer shall provide a testing certificate or laboratory report demonstrating the product conforms with the permissible emission rates specified, as applicable for electrophotographic or inkjet devices, in DE-UZ 219¹⁰ with use of original manufacturer cartridge(s) or container(s) and original manufacturer toner and ink¹¹. Testing is to be done in accordance with current version of DE-UZ 219, Appendix S-M or ISO/IEC 28360-1:2021. Imaging equipment products that are rated for outputting images in the following ranges shall meet the requirements of this criterion¹²:

- a) Black-and-white imaging equipment products, below 86 ipm.
- b) Color imaging equipment products, below 50 ipm.

For black-and-white imaging equipment products rated for outputting images greater than or equal to 86 ipm or for color imaging equipment products rated for outputting images greater than or equal to 50 ipm, the manufacturer may declare the criterion not applicable.

The testing certificate or laboratory report must be from one of the following:

¹⁰ DE-UZ 219 specifies maximum emission rates for TVOCs, benzene, styrene, ozone, fine and ultrafine particles.

¹¹ This criterion does not include OEM testing of third-party cartridge toners and inks. Use of third party, non-OEM toner and ink in the product can cause emission rates outside of the EPEAT specification.



- Laboratory that is accredited to ISO/IEC 17025, where the laboratory's scope of accreditation includes the standard or test method for which it is supplying data; or
- Laboratory in which the testing is witnessed or supervised by a certification body accredited to ISO/IEC 17065. 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.

For products whose sole intended print function is a date stamp, postage, or document counter, the manufacturer may indicate not applicable for this criterion.

For products which are not electrophotographic devices or inkjet devices described in DE-UZ 219, the manufacturer may declare not applicable for this criterion.

Verification requirements:

This criterion is verified at the product level:

- a) Test certificate or laboratory report indicating testing was conducted in accordance with DE-UZ 219¹³ or ISO/IEC 28360-1:2021 and that the product conforms with the permissible emission rates specified in DE-UZ 219 or ISO/IEC 28360-1:2021.
- b) Evidence testing was done by an accredited ISO/IEC 17025 laboratory or evidence of enrollment in a witnessed or supervised testing program by a certification body accredited to ISO/IEC 17065, per the requirements of this criterion.

References and details: None.

8.2 Imaging equipment cartridges and containers take-back program

8.2.1 Required – Take-back program for imaging equipment cartridges and containers

Manufacturer shall provide a take-back program that prioritizes responsible material and components reuse and secondarily materials recycling for cartridges and containers. The take-back program shall:

- include, at minimum, all manufacturer branded cartridges and containers used with its registered and formerly registered imaging equipment products;
- be available and communicated to purchasers in all geographies where products are registered; and
- prioritize material reuse and remanufacturing first, and secondarily recycling before incineration with energy recovery (waste-to-energy).

¹³ A test certificate used to demonstrate conformance with Blue Angel (Annex 7a) may be used to demonstrate conformance with this criterion.



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At minimum, manufacturer branded cartridges and containers from registered and formerly registered products shall not be sent to landfill or for incineration without energy recovery.

Manufacturer shall publicly report annually on its imaging equipment cartridges and containers take-back program, including¹⁴:

- total mass (metric tons) of cartridges and containers collected annually;
- total mass (metric tons) or mass percent of cartridges and containers recovered, with each recovery method reported separately. Reporting must include data on reuse, materials recycling, incineration with energy recovery (waste-to-energy) and materials in storage pending processing; and
- total mass (metric tons) sent to landfill or for incineration without energy recovery (cannot be used for registered or formerly registered products).

For manufacturers that do not register any products that use cartridges or containers, the manufacturer shall indicate not applicable for this criterion.

Verification requirements:

This criterion is verified at the product category level.

- a) URL(s) for documentation of manufacturer take-back program that meets the requirements of this criterion, including information on how to use the program and evidence such as a publicly available statement indicating the manufacturer's take-back program prioritizes reuse and recycling.
- b) URL(s) for annual public reporting in accordance with the requirements of this criterion.

References and details: None.

¹⁴ Data may be reported globally or by EPEAT-registered country or region. Cartridge and container data may be aggregated or reported separately.



Annex A (Informative): Table of criteria for Section 8.0 Imaging Equipment Consumables

Criteri	on	Optional Points
8.1	Imaging equipment design for consumables	
8.1.1	Required – Equipment allows use of recycled content office paper	N/A
8.1.2	Required – Design to reduce paper usage	N/A
8.1.3	Required – Design to allow use of remanufactured cartridge	N/A
8.1.4	Required – Indoor air quality emissions	N/A
8.2	Imaging equipment consumables take-back program	
8.2.1	Required – Take-back program for consumables	N/A



Annex B (Informative): Examples for calculating and disclosing Criterion 8.1.3, Option 3

Criterion Calculation:

Manufacturer shall publicly disclose **percentage**^{*} of the applicable remanufactured cartridges (as a percent of total manufacturer applicable new cartridges and the applicable remanufactured cartridges) produced annually.

*Formula for % = <u>Total aggregate number of (remanufactured cartridges) produced</u>

Total aggregate number of (total cartridges) produced

Reporting Examples:

(1) Report the percentage of aggregated remanufactured cartridges versus total aggregated cartridges produced annually within one year of product registration.

Example: 27% of Company X cartridges produced in 2023 were remanufactured.

(2) An annual disclosure by product family that provides a status of remanufactured cartridge availability:

Example:

Product Families with Common Consumables	Availability Status	
A1, A2, A3, etc.	Yes	
B1, B2, B3, etc.	Yes	
C1, C2, C3, etc.	No	



Document Change History

lssue	Revision	Author	Description of Change	Approver	Approval Date	Effective Date
1	0	Vice President, Category and Criteria Development	Initial release	CEO	October 28, 2024	October 28, 2024