The New Zealand Ecolabelling Trust

Licence Criteria for

Copying Machines, Printers, Scanners and Multifunctional Devices

EC-24-17

The New Zealand Ecolabelling Trust
Office 503
48 Greys Ave
Auckland, 1010
New Zealand

Ph + 64-9-845 3330
Email: info@ecochoice.org.nz
Website: http://www.ecochoiceaotearoa.org.nz

Specification change history

Minor clarifications, corrections or technical changes made since the specification was last reviewed and issued in April 2017.

Date	Version	Change
22/12/2020	December 2020	Specification title, category definition, and criteria revised to include scanners and remove fax machines. Criteria updated to reflect Eco Mark 155 v1.3.
01/06/2023	June 2023	'Environmental Choice New Zealand' renamed to 'Eco Choice Aotearoa' and all references in this document amended to reflect the new name. Wording in Section 7 'Use of the Eco Choice Aotearoa Label' updated. The requirement for the label to be accompanied by the specification name is now optional.

Table of contents

1. INTRODUCTION

Eco Choice Aotearoa (ECA) is an environmental labelling programme which has been created to help businesses and consumers find products and services that ease the burden on the environment. The programme results from a New Zealand Government initiative and has been established to improve the quality of the environment by minimising the adverse and maximising the beneficial environmental impacts generated by the production, distribution, use and disposal of products, and the delivery of services.

ECA operates to the ISO 14024 standard "Environmental labels and declarations - Guiding principles". This requires environmental labelling specifications to include criteria that are objective, reasonable and verifiable. It requires that interested parties have an opportunity to participate and have their comments considered. It also requires that environmental criteria be set, based on an evaluation of the environmental impacts during the actual product or service life cycle, to differentiate product and services on the basis of preferable environmental performance. The ECA programme is managed by the New Zealand Ecolabelling Trust (the Trust). The Trust is a member of the Global Ecolabelling Network (GEN) an international network of national programmes also operating to the ISO 14024 standard.

The life cycle approach is used to identify and understand environmental issues (adverse or beneficial impacts) across the whole life of a product or service (within a defined product or service category). This information is evaluated to identify the most significant issues and from those to identify the issues on which it is possible to differentiate environmentally preferable products or services from others available in the New Zealand market. Criteria are then set on these significant and differentiating issues. These must be set in a form and at a level that does differentiate environmentally preferable products or services, is attainable by potential ECA licence applicants and is able to be measured and verified. As a result of this approach, criteria may not be included in an ECA specification on all aspects of the life cycle of a product or service. If stages of a product or service life cycle are found not to differentiate environmentally preferable products or services, or to have insufficient data available to allow objective benchmarking in New Zealand, those stages will not generally be included in criteria in the specification. For some issues, however, (such as energy and waste) criteria may be set to require monitoring and reporting. These criteria are designed to generate information for future reviews of specifications.

The Trust is pleased to publish this specification for copying machines, printers, scanners and multifunctional devices. As a member of the Global Ecolabelling Network, ECA is working with other members to harmonise specifications for environmental labels, while still appropriately reflecting local environmental and life cycle issues. Accordingly, the current specification incorporates common criteria for copiers, printers, and scanners, developed and agreed with the Japan Eco Mark programme. The result of this alignment with the Eco Mark programme is a streamlining of the assessment process, whereby products which hold a current Eco Mark licence will meet the majority of the ECA criteria. Evidence that a machine has a current Eco Mark (or in some cases a Blue Angel) licence will be accepted by ECA as sufficient to demonstrate compliance with common criteria.

In this specification, ECA aligns with the Eco Mark specification for *Imaging Equipment such as opiers, Printers, etc.* (product category 155, version 1.3, January 2018).

A cross-reference table for the criteria included in this specification and those in Eco Mark 155 v1.3 is provided in Appendix 1. Where relevant, other common ECA criteria have also been included in this proposed revised specification.

This specification sets out the requirements that copying machines, printers, scanners and multifunctional devices will be required to meet in order to be licensed to use the ECA Label. The requirements include environmental criteria and product characteristics. The specification also defines the testing and other means to be used to demonstrate and verify conformance with the environmental criteria and product characteristics.

This specification will be valid for a period of five years. Twelve months before the expiry date (or at an earlier date if required), the Trust will initiate a further review process for the specification.

2. BACKGROUND

Copiers, printers, scanners and multifunctional devices are amongst the most extensively used office products in New Zealand. The main environmental impacts of these products occur during their use and disposal phases. Avoiding polluting emissions and waste, minimising resource use, and maximising materials reuse and recycling are important aims of environmental protection. Actions to pursue these aims help to prevent contaminant discharges to the environment, protect resources and save disposal site space.

Based on a review of currently available information, the following product category requirements will produce environmental benefits by:

- reducing energy consumption, air emissions and noise;
- conserving resources and minimising waste through improved durability, reuse and recycling of parts and packaging;
- reducing the environmental impacts associated with the use of hazardous substances.

This proposed revised specification has drawn heavily from criteria and requirements that have been agreed and harmonised by other (GEN) member programmes, in particular with Japan Eco Mark. Mutual recognition criteria devised by Eco Mark, Nordic Swan and Blue Angel, and Common Core Criteria, previously agreed upon by New Zealand and Eco Mark, have been included in this proposed revised specification, where relevant. Further work on harmonised criteria is planned by GEN members. Eco Choice Aotearoa will continue to monitor this work. As information and technology change, product category requirements will be reviewed, updated and possibly amended.

3. INTERPRETATION

Back-side printing means printing on the blank side of a sheet of paper which already has one side printed, for example, by putting the page back into a paper feed tray.

Copolymer means a polymer consisting of two or more types of monomer.

Copy/ Print Speed mean the number of A4 sheets copied/ printed per one minute, given as Pages Per Minute (PPM), Copies Per Minute (CPM) or Impressions Per Minute (IPM). A double-sided copy or print is counted as two sheets. For monochrome printers it is determined in accordance with ISO/IEC 10561:1999. There is no standard for colour printers. For Large Format printers, printing speed is determined by converting the number of sheets printed per minute, using the maximum page size for that printer, to A4 equivalents as follows: 4 times the PPM for A2; 8 times the PPM for A1; and 16 times the PPM for A0.

Double-sided Printing means automatic printing on both sides of a sheet of paper.

Energy Management Programme means a programme of actions to achieve and sustain efficient and effective use of energy.

HCFCs mean hydrochlorofluorocarbons.

Homopolymer means a single polymer, or a polymer consisting of one type of monomer.

IPM means Impressions per Minute. See "Copying/Printing Speed" above for further details.

ISO means International Organisation for Standardisation.

Label means the Eco Choice Aotearoa Label.

Large Format Printer/Copier means a printer capable of printing A2 or larger size sheets, or a copier capable of copying A2 or larger size sheets. It includes models that use rolls of paper with a width of 406 mm or greater.

Low Power Mode means the low power consuming condition which the machine automatically switches to after a set period of inactive time.

Multifunctional Device (MFD) means a machine with a printing function as one of its standard features, plus one or more of the additional standard functions of copying, scanning or facsimile.

OECD means Organisation for Economic Co-operation and Development.

Parallel Equipment means marking technology using multiple light sources and photoconductor drums to enhance the maximum speed of colour printing.

Recovery Rate means the mass rate of equipment or consumables which have been put into the recovery process; or the mass rate of all parts that are reused, recycled, energy recovered, converted to oil, processed via gasification, or subject to blast furnace reduction or conversion to chemical materials by a coke oven.

Recycled Plastic means plastic material made from pre or post consumer materials.

Post-Consumer: 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.

Pre-Consumer: Material diverted from the waste stream during a manufacturing process. Excluded is re-use of materials such as rework, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

RAL-UZ171 is the Blue Angel specification for *Office Equipment with Printing Function (Printers, Copiers, Multifunction Devices).*

Recycled Plastic Part means a plastic part that contains recycled plastics.

Reused Part means a part reused in a product, which was previously used in another product.

Safety Data Sheet (SDS) means a document that describes the properties and uses of a substance, that is, identity, chemical and physical properties, health hazard information, precautions for use, and safe handling information in accordance with the New Zealand Chemical Industry Council Preparation of Safety Data Sheets Code of Practice.

Serial Equipment means marking technology using one photoconductor drum and using one or multiple light sources to produce multi-colour hard copies.

Sleep Mode means the secondary low power consuming condition which the machine automatically switches to following a set period of inactive time in low power mode.

TVOC means total volatile organic compounds, and is the total of concentrations of identified and unidentified volatile organic compounds, which elute between n-hexane to n-hexadecane (inclusive), during gas chromatographic separation on a nonpolar column, in

4. CATEGORY DEFINITION

This category includes the following:

Copying machines: a commercially available electrostatic image reproducing unit, the function of which is to produce a duplicate of a graphic original paper copy. The copying machine must as a minimum contain a system for inking paper, an image projecting system and a paper-handling unit.

Printers: a commercially available image or text reproducing unit for printing out on paper from single user or network linked computers. The printers encompassed by the criteria may be based on various print technologies such as electrophotographic (laser/LED), thermosensitive, ink jet or matrix technology. Printers that can receive information directly from a memory card or a digital camera are also included.

Ticket vending machines at transport stations, order ticket issuing machines to serve people waiting in a queue, cash registers, and search equipment for use in medical facilities or public libraries are not included in this product category.

Multifunction Devices (MFDs): a physically integrated electrostatic, inkjet or thermosensitive image reproducing unit or combination of functionally integrated components, the primary function of which is to print, but which is also capable of copying and scanning.

Scanners: a product whose primary function is to convert paper originals into electronic images that can be stored, edited, converted, or transmitted, primarily in a personal computing environment. This definition is intended to cover products that are marketed as scanners.

Extra equipment: the above products also include various consumables, such as OPC kits, photoconductor drums, toner powder and residual toner cartridges. If extra equipment such as desks, sorters, feeders and external scanners are to be included in the product licence, the individual parts must meet the applicable requirements for design, materials, chemical requirements during production, packaging and recycling.

To be licensed to use the Label, machines must meet all of the environmental criteria set out in clause 5 and product characteristics set out in clause 6.

Many of the criteria in this specification have equivalent criteria in the applicable Eco Mark specification for imaging equipment. The criteria in this specification that do not have equivalent criteria in the Eco Mark specification are listed in Appendix 4. For products that hold a current Eco Mark certification, the Licence applicant must demonstrate conformance with the additional criteria listed in Appendix 4.

5. ENVIRONMENTAL CRITERIA

5.1 Legal Requirements

Criteria

The product must comply with the provisions of all relevant environmental laws and regulations that are applicable during the product's life cycle.

Verification Required

Conformance with this requirement shall be demonstrated by providing a written statement on regulatory compliance, signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be supported by documentation identifying the applicable regulatory requirements including specific obligations arising from permits, regulations, and rules, and demonstrating how compliance is monitored and maintained.**

Where the Licence applicant/holder is not the manufacturer of the copying machines, printers, scanners or multifunctional devices, information must be provided on environmental regulatory compliance of the manufacturing facility. Verification of continued compliance with legal requirements will form part of the Licence Supervision Plan. This will include requirements, if any, for ongoing supervision assessment of downstream warehousing or other distribution activities.

Explanatory Notes

Relevant laws and regulations applicable to the facilities that are manufacturing the ECNZ-licensed product and the Licence holder's distribution and sales operations could, for example, include those that relate to:

- producing, sourcing, transporting, handling and storing raw materials and components for manufacture;
- manufacturing processes;
- handling, transporting and disposing of waste products arising from manufacturing;
- transporting products within and between countries; and
- using and disposing of the product.

The documentation required may include, as appropriate:

- procedures for approving and monitoring suppliers and supplies; and
- information provided to customers and contractors regarding regulatory requirements.
- Evidence of a formal certified environmental management system (for example an ISO 14001 certificate) and supporting records on regulatory compliance (for example, copies of regulatory requirements registers, procedures to manage regulatory compliance, monitoring and evaluation reports on regulatory compliance, internal or external audits covering regulatory compliance and management review records covering regulatory compliance).
- Copies of published environmental, sustainability and/or annual reports expressly addressing environmental regulatory compliance (for example verified Environmental Statements prepared under the European EMAS regulations).
- Audit reports completed by independent and competent auditors addressing regulatory compliance (for example, reports for other eco-label licences or reports from regulator audits.
- Participation by the supplier in the licence applicants/holders own supplier audit programme.

It is not intended to require licence holders to accept increased legal responsibility or liability for actions that are outside their control. The Trust's intention is to ensure any potential for environmental regulatory non-compliance associated with an ECA labelled product is managed to a level that minimises risk of reputation damage to the ECA label and programme.

5.2 Product Design

5.2.1 Design Requirements

Criteria

Products must meet the following requirements:

a. Equipment shall meet the requirements included in Appendix 2 "Product Design Checklist".

b. Plastic casing parts greater than 25 g shall consist of a single material which may be a homo-/copolymer or polymer blend (polymer alloy).

c. A maximum total of four different types of plastic alloys may be present in the housing and these must be separable from one another.

d. If labels, markings or stickers are difficult to remove they must be made of the same material as the part to which they are attached and/or must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling.

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation including:**

- completed Product Design checklist;
- for (b), list of plastic components > 25 g and type of polymer for each;
- for (c), photographs showing plastic parts labelling; and
- information from recyclers indicating that labelling of parts does not prevent recycling.

5.2.2 Design and recyclability of plastic and metal parts

Criteria

Primary plastics (excluding re-used parts) and recycled plastics, with a weight in excess of 25 grams and a flat surface in excess of 200 mm^2 must comply with the following:

a. Must be identifiable in accordance with ISO 11469:2000(E) "Plastics – General identification and marking of plastic products".

b. Must be possible to dismantle without special tools.

c. Must not be painted or varnished in a way that reduces the recyclability of the material.

d. Must be visibly labelled after the machine has been disassembled.

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation including a list of all primary and recycled plastic parts that are greater than 25 grams and surface area 200 mm^2, if requested by ECA and information demonstrating that each of the requirements (a)-(d) are met.**

5.3 Requirements for Plastic and Metal Materials

5.3.1 Recycled or Reused Plastic Parts

Criteria

a. At least one part of the product, which is greater than 25 grams in weight, shall be made of reused plastic or recycled plastic.

b. If recycled plastic parts are used, the following shall be reported:
   - Name/identification of the recycled plastic parts,
   - Weight of the recycled plastic parts; and
   - Percentage of recycled parts used in the product (e.g. X %, X-Y % or >X %)

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation including:**

- Identification of at least one part with weight greater than 25 grams and demonstrating it is made of reused or recycled plastic; and
- The information requested in part b), if applicable.

5.3.2 Additives in Plastic Casing Parts

Criteria

a. Polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) or chlorinated paraffins (having a chain of 10 to 13 carbon atoms and a chlorine concentration of more than 50 %) shall not be added to plastic casing parts and printed circuit boards.

b. Plastic casing parts greater than 25 g shall not be made with polymers containing halogens.

c. Flame retardants containing organohalogen compounds shall not be added to plastic casing parts.

   This criterion does not apply if:

   For copiers: the collection rate[1] is greater than 80% and at least 95% of the plastic casing parts collected, which contain brominated flame retardants, are recycled, **AND**

   of the total mass of plastic casing parts in a product which contain brominated flame retardants, at least 15% is recycled or reused material collected as part of the manufacturer's take-back system.

   OR

   For Printers and printer-based MFDs:

   at least 95 % of the plastic casing parts collected, which contain brominated flame retardants, are recovered and at least 50% are recycled; AND

   one or more of the plastic casing parts that are greater than 50 g and contain brominated flame retardants shall be a recycled plastic part and at least 10% of this part shall comprise recycled material collected as part of the manufacturer's take-back system.

   There is no minimum collection rate for laser printers and MFDs whose main function is a printer, however, the collection rate achieved should be reported.

d. Names and CAS numbers or the code number according to ISO1043-4 shall be reported for all flame retardants used in plastic casing parts greater than 25 g.

e. Plastic casing parts greater than 25 g shall not contain substances classified, in accordance with Table 3.1 in Appendix VI of Regulation 1272/2008/EC as:
   - Carcinogenic: according to Category 1A or 1B,

- Mutagenic: according to Category 1A or 1B, or
- Toxic to Reproduction: according to Category 1A or 1B.

Antimony trioxide is excluded from requirement e) for products which meet the exceptions in requirement c).

Criteria (c) – (e) do not apply to:

- Fluoroorganic additives used to improve the physical properties of plastics, provided that they are not present in concentrations greater than 0.5 wt%,
- Fluorinated plastics, e.g. PTFE
- Special plastic parts which are installed in the direct vicinity of heating and fusing units; and
- Large plastic casing parts made of plastics which are demonstrably reused and marked in accordance with ISO11469.

Explanatory Notes

[1] The collection rate is the rate for a set time period for a group of products (classified as a single category according to indices such as copy speed).

[2] This may be a total for all product groups applying for an Eco Choice Aotearoa licence. Separate reporting for each product group is not required.

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation:**

- identifying the plastic materials used, and whether polymers containing the prohibited substances in a), b) and e) have been used;
- including the following for requirement c)
  a. description of collection flow;
  b. description of treatment flow;
  c. applicable collection and recycling districts;
  d. list of collectors and companies handling material recycling.
  e. provision of information to users via instruction manuals or labels on:
     i. if users are charged for collection;
     ii. contact number to request collection; and
     iii. indication that used products are collected/recycled after use;
  f. management system:
     i. tracking of collection and treatment volumes;
     ii. instructions provided to collection and recycling companies; and
     iii. management of records.
  g. description how to determine whether products are of the same product group, and list of products belonging to the same product group:
  h. results of calculating the collection rate, and the applicable period;
  i. results of calculating recycling rates; and
  j. total mass of plastic casing parts containing brominated flame retardants which have been recycled or reused as part of the manufacturer's take-back system; and
- listing the name and CAS number of all flame retardants used in plastic casing parts greater than 25 g.

5.3.3 Photoconductor Drums

Criteria

a. Photoconductor drums shall not intentionally contain selenium, cadmium, lead, mercury or their compounds.

b. Systems for collecting and recycling photoconductor drums shall be available.

Parts which cannot be recycled shall be processed/ disposed of in an environmentally sound manner (i.e. direct disposal to landfill should only be used where more environmentally benign options are not available).

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation including:**

- the type of photoconductor drums used, for example, product specifications and/or safety data sheets; and
- information about the collection and material recycling system.

5.3.4 Chemicals during Production

Criteria

a. The substances listed in Table 1 shall not be used in the end production of the machines, final supply stage of products or circuit boards, or during cleaning of parts for reuse.

Table 1: List of Prohibited CFCs and HCFCs

Main 5 CFCs	Trichlorofluoromethane	HCFCs	Chlorotrifluoroethane
	Dichlorodifluoromethane		Dichlorofluoroethane
	Trichlorotrifluoroethane		Chlorodiflouroethane
	Dichlorotetrafluoroethane		Chlorofluoroethane
	Chloropentafluoroethane		Hexachlorofluoropropane
Other CFCs	Chlorotrifluoromethane		Pentachlorodifluoropropane
	Pentachlorofluoromethane		Tetrachlorotrifluoropropane
	Tetrachlorodifluoroethane		Trichlorotetrafluoropropane
	Heptachlorofluoropropane		Dichloropentafluoropropane
	Hexachlorodifluoropropane		Chlorohexafluoropropane
	Pentachlorortrifluoropropane		Pentachlorofluoropropane
	Tetrachlorotetrafluoropropane		Tetrachlorodifluoropropane
	Trichloropentafluoropropane		Trichlorotrifluoropropane
	Dichlorohexafluoropropane		Dichlorotetrafluoropropane
	Chloroheptafluoropropane		Chloropentafluoropropane
	Carbon Tetrachloride		Tetrachlorofluoropropane
	1,1,1-Trichloroethane		Trichlorodifluoropropane
HCFCs	Dichlorofluoromethane		Dichlorotrifluoropropane
	Chlorodifluoromethane		Chlorotetrafluoropropane
	Chlorofluoroethane		Trichlorofluoropropane
	Tetrachlorofluoroethane		Dichlorodifluoropropane
	Trichlorodifluoroethane		Chlorotrifluoropropane
	Dichlorotrifluoroethane		Dichlorofluoropropane
	Chlorotetrafluoroethane		Chlorodifluoropropane

	Trichlorofluoroethane		Chlorofluoropropane
	Dichlorodifluoroethane		

b. The content of lead, mercury, cadmium and their compounds, hexavalent chromium compounds, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE) in the product shall not be greater than the limits in Table 2.

Parts exempt from the requirements in Clause 5.3.4 b) are listed in Appendix 3.

Table 2: Limits for Specific Chemical Substances

Chemical Substance	Allowable content wt.%
Lead and its compounds	≤ 0.1
Mercury and its compounds	≤ 0.1
Cadmium and its compounds	≤ 0.01
Hexavalent Chromium compounds	≤ 0.1
Polybrominated biphenyl (PBB)	≤ 0.1
Polybrominated diphenyl ether (PBDE)	≤ 0.1
Bis(2-ethylhexyl) phthalate (DEHP)	≤ 0.1
Butyl benzyl phthalate (BBP)	≤ 0.1
Dibutyl phthalate (DBP)	≤ 0.1
Diisobutyl phthalate (DIBP)	≤ 0.1

Verification Required

Conformance with these requirements shall be stated in writing and signed by Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported with documentation, including Safety Data Sheets.**

5.4 Requirements for Toner and Ink Consumables

5.4.1 Toner and Ink

Criteria

a. Mercury, lead, cadmium, chromium (VI) and nickel or their compounds must not be included as constituent parts of toners and inks.

Complex compounds of high molecular weight nickel included as colouring agents are excluded from this requirement.

b. Toners and inks must not contain shall not contain substances classified, in accordance with Table 3.1 in Appendix VI of Regulation 1272/2008/EC as:
   - Carcinogenic: according to Category 1A, 1B or 2
   - Mutagenic: according to Category 1A, 1B or 2
   - Toxic to Reproduction: according to Category 1A, 1B or 2

c. Azo dyes or pigments which may release one of the amines listed in Table 3 must not be used in toner or inks.

d. Toner and ink shall give a negative result in the Ames test for mutagenic properties and assumed linked carcinogenic properties.

Table 3: List of Prohibited Amines

Amine	CAS-number
4-amino-biphenyl	92-67-1
Benzidine	92-87-5
4-chloro-toluidine	95-69-2
2-naphtylamine	91-59-8
o-aminoazo-toluene	97-56-3
2-amino-4-nitro-toluene	99-55-8
p-chloroaniline	106-47-8
2,4-diamino-anisol	615-05-4
4,4'-diamino-diphenylmethane	101-77-9
3,3'-dichlorobenzidine	91-94-1
3,3'-dimethoxybenzidine	119-90-4
3,3'-dimethylbenzidine	119-93-7
3,3'-dimethyl-4,4'-diamino-diphenylmethane	838-88-0
p-cresidine	120-71-8
4,4'-methylenebis(2-chloroaniline)	101-14-4
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
2,4-toluilenediamine	95-80-7
2,4,5-trimethylaniline	137-17-7
o-anisidinedimethoxyaniline	90-04-0
4-animoazobenzene	60-09-3

Verification Required

Conformance with these requirements shall be demonstrated by providing a written statement of compliance, signed by the Chief Executive Officer or other authorised representative of the Applicant company. **This statement shall be supported by documentation (as relevant) that:**

- identifies the toners or inks used and their ingredients;
- includes SDS (safety data sheets) or other information to demonstrate the risks, if any, assigned to the toners or inks used; and
- a report of the results of the Ames test. The report should include:
    a. name of the testing institute,
    b. name of the tested substances,
    c. exact testing method used,
    d. testing period,
    e. strains used, and
    f. test result.

Testing Method

The Ames test or assay was developed by Dr. Bruce Ames and others in 1975. There are various methods used for the Ames test depending on the substances being tested. Different substances may require the use of either plate incorporation or preincubation methods, may need to be tested with different bacterial strains, or may require specific test conditions. Details of the specific method used should be included in the supporting information to ECNZ.

5.4.2 Toner Cartridges, Toner Containers, Ink Cartridges and Ink Ribbon Cartridges

Criteria

a. Toner cartridges, toner containers, ink cartridges and ink ribbon cartridges shall meet the requirements on design included in Appendix 2 "Product Design Checklist";

b. Polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) or short-chained chlorinated paraffin (having a chain of 10 to 13 carbon atoms and a chlorine concentration of 50 % or more) shall not be added to plastic parts of toner cartridges, toner containers, ink cartridges or ink ribbon cartridges.

c. Collection and recycling systems must be available for toner cartridges, toner containers and ink cartridges.

d. The reuse and material recycling rate of collected toner cartridge parts shall be more than 50 % of the overall cartridge weight (excluding toner). The recovery rate of collected toner and ink cartridges or toner containers shall be more than 95 % of the overall cartridge/container weight (excluding toner). Parts which cannot be recovered shall be processed or disposed by environmentally sound means (i.e. direct disposal to landfill should only be used where more environmentally benign options are not available).

e. Plastic parts of toner and ink cartridges, toner containers and ink ribbon cartridges shall consist of a single material which may be a homo-/copolymer or polymer blend (polymer alloy).

f. If labels, markings or stickers are difficult to remove they must be made of the same material as the part to which they are attached and/or must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling.

g. Toner cartridges and toner containers shall be sealed to prevent leakage of toner during storage.

Verification Required

Conformance with requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation including:**

- a completed Product Design checklist;
- identifying the plastic materials used, and whether polymers containing the prohibited substances in b) – c) have been used;
- details of the collection system;
- overall cartridge weight (excluding toner), how parts are reused, how parts are recycled, and the recovery system used;
- the recovery rate and any environmentally sound disposal systems used;
- photographs or samples showing labelling and sealing of the toner cartridge; and
- information from recyclers indicating that labelling of parts does not prevent recycling.

5.5 Batteries

Criteria

a. Cadmium, mercury, lead or their components shall not be intentionally added to batteries.

b. Batteries shall be able to be replaced or removed without removing the circuit board on which the battery is mounted.

c. All used batteries must be properly disposed of by the New Zealand supplier and/or distributor in accordance with local and national legislation.

Verification Required

Conformance with requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation:**

- from the applicant's battery supplier indicating that the prohibited metals are not included;
- photographs etc. which demonstrate that the batteries are easily removable; and
- information on procedures and methods for local disposal of used batteries.

5.6 Air Emissions

Criteria

a. The emission of powder dusts and ozone during the operation phase of monochrome equipment and colour equipment shall meet the limits in Table 4 below.

b. The emission of total volatile organic compounds (TVOC), styrene and benzene during the operation phase and ready phase of monochrome equipment, and the monochrome and colour operation phases of colour equipment shall meet the limits in Table 4.

The requirements in Table 4 are not applicable to printers or copiers which use rolls of paper and which print over 60 IPM, or to ink jet, wire dot or thermosensitive printers.

If the emission rate during the colour operation phase of colour equipment is below the limits for monochrome copying, emissions tests during the monochrome phase are not required.

Table 4 – Limits for Emissions (mg/h) of Powder Dust, Ozone and VOCs

			≤A3		A2≤ and ≤A0	>A0
			Monochrome Phase	Colour Phase	Monochrome /colour	Monochrome / colour
Powder Dust			≤ 4.0	≤ 4.0	≤ 16	≤ 22
Ozone			≤ 1.5	≤ 3.0	≤ 7.8	≤ 11
TVOC	Print Phase		≤ 10	≤ 18	≤ 39	≤ 55
	Ready Phase	Floor-mounted	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.8
		Tabletop	≤ 1.0	≤ 1.0	≤ 2.0	≤ 2.8
Styrene			≤ 1.0	≤ 1.8	≤ 4.7	≤ 6.6
Benzene			< 0.05	< 0.05	< 0.2	< 0.3

c. Records shall be kept as follows:

- For ink jet printers, wire dot printers and thermosensitive printers: TVOC emitted during operation
- For colour ink jet printers, wire dot printers and thermosensitive printers: TVOC during both colour printing and monochrome printing shall be recorded. If the emission rate during the colour printing is ≤ 10 mg/h, measurement during the monochrome phase is not required.
- For large-format copiers or copiers exceeding 70 IPM: dust, ozone and TVOC emissions

The measurement method used shall be based on that described in Appendix S-M of RAL-UZ-171 or RAL-UZ-205, and on the additional conditions in Table 5, below (if applicable).

Table 5 – Additional Measurement Conditions for Emissions Tests

Printer/Copier Type	Sheet	Test Text
Ink Jet Printers, Large format copiers	A4 or the largest size that can be printed by the product	Use A4 test text or enlarge/compress the A4 text into the largest size that can be printed by the product.
Wire Dot Printers	A4 or the widest size of the stack form	Use A4 test text or enlarge/compress into the size that complies with the widest stack form that can be printed by the product.

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by test reports from a laboratory competent to perform the test methods.**

Testing Method

RAL-UZ-171 is the Blue Angel criteria document for Office Equipment with Printing Function (Printers, Copiers, Multifunction Devices). The relevant test methods are set out in Appendix S-M of that document. Copies of RAL-UZ-171 can be obtained from the Blue Angel web site www.blauer.engel.de. For equipment that was tested before RAL-UZ171 was issued (July 2012), test results according to Appendix 2 of RAL-UZ122 are acceptable. RAL-UZ-205 is also acceptable.

5.7 Noise

Criteria

The noise from the equipment shall meet the limits set in Table 6a or Table 6b below:

Table 6a - Maximum Noise levels for Copiers, Printers, Scanners and MFDs.

Equipment Type	Declared A-weighted Sound Power Level (L_{WAd}) (B)	
	Monochrome	Colour
Electrophotographic, ink jet, or high performance ink jet copiers, printers, and MFD	$\leq 47+15 + \log(S_M+10)$	$\leq 47+15 + \log(S_F+10)$

S_M = paper feed speed at monochrome printing (sheet/min). S_F = paper feed speed at colour printing (sheet/min)

Table 6b – Maximum Noise levels for Copiers, Printers, Scanners and MFDs.

Equipment Type	Declared A-weighted Sound Power Level (L_{WAd}) (B)	
	Monochrome	Colour

Electrophotographic copiers, printers, and MFD	≤ 0.35 X Smo + 59 and ≤ 75	Parallel equipment: L_{WAd} ≤ 0.3 X Sco + 61 and ≤ 75. Serial equipment: Submit reference values for Sco < 0.5 Smo
Impact copiers, printers, and MFD	≤ 72	-
Ink Jet (except large format), high performance ink jet, direct thermal, dye sublimation, solid ink, or thermal transfer copiers, printers, and MFD	≤ 0.35 X Smo + 59 and ≤ 75	≤ 0.3 X Sco + 61 and ≤ 75
Ink jet (large format) printers and MFD	≤ 75	≤ 75
Scanners	≤ 0.35 X Smo + 59 and ≤ 75	≤ 0.3 X Sco + 61 and ≤ 75

Where: Sbw = Operating speed in IPM for monochrome copying/printing; Sco = Operating speed in IPM for colour copying/printing

This requirement is not applicable to products whose IPM>70 and ink jet Large Format Devices. However, as a reference value, the declared A-weighted sound power level L_{WAd} based on the same method shall be recorded.

Explanatory Notes

For Large Format Copiers/Printers, the IPM may be counted on an A4 basis. For ink jet and thermosensitive small format equipment, the IPM (monochrome and colour) may also be counted on an A4 basis.

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation of measurements made in accordance with ISO 7779 and declared according to ISO 9296.**

Testing Method

Table 6a: actual measurements obtained using the method in Blue Angel RAL-UZ205. For equipment on which measurements took place prior to December 2017, test results according to Blue Angel RAL-UZ171 shall also be acceptable.

Table 6b: actual measurements obtained using method in Blue Angel RAL-UZ171. For equipment on which measurements took place prior to April 2014, test results according to Blue Angel RAL-UZ122 shall also be acceptable.

For both Table 6a and Table 6b, the noise emissions shall be measured in accordance with the method specified in ISO 7779:2010 "Acoustics – Measurement of airborne noise emitted by information technology and telecommunications equipment", and the declared A-weighted sound power level, L_{WAd}, shall be determined in accordance with ISO 9296:1988 "Noise emitted by computer and business equipment, Part 3. Method of determining and verifying declared noise emission values". The mode of operation shall be single-sided printing/copying. These standards should be available through national standards agencies (in New Zealand, Standards New Zealand).

5.8 Energy Consumption

Criteria

The product shall conform to the Energy Star ® *Product Specification for Imaging Equipment; Eligibility Criteria* that is applicable at the time of the application and verification.

Verification Required

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be accompanied by documentation including:**

- documentation showing the Energy Star ® rating of each product.

5.9 Energy Management

Criteria

a. The licence applicant must have effective energy management policies and procedures and/or an energy management programme.

b. Licence holders must report annually to The Trust on their energy management, including:
   - total energy use;
   - breakdown of total energy use to types of energy used;
   - energy use related to distribution;
   - initiatives taken to reduce energy use and improve energy efficiency; and
   - initiatives taken to calculate and reduce CO_2 emissions associated with energy use.

The annual report shall also include information on energy management during production and/or whole of life energy use, where that information is available from the equipment manufacturer or supplier.

Verification Required

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be accompanied by documentation that:**

- describes the energy management policies, procedures and programmes; and
- includes annual reports on energy use and management.

5.10 Packaging Requirements

Criteria

a. Plastic materials used for packaging products shall not use the specific 5 main CFCs, other CFCs, carbon tetrachloride, trichloroethane, or HCFCs listed in Table 1 (see Clause 5.3.4 for Table 1).

b. Plastic materials used for packaging shall not be composed of halogen-containing polymers or organohalogen compounds.

c. When choosing packaging materials, consideration shall be given to resource conservation and ease of reuse or recycling.

d. Primary packaging must have a plastic resin identification code and be made of plastics that (as far as is possible) are able to be recycled in New Zealand.

e. Primary packaging must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. PVC sleeves, metallic labels).

Verification Required

Conformance with these criteria shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be supported with the following documentation and evidence.**

Conformance with criteria a) and b) shall be supported by documentation from the packaging manufacturer verifying that it does not contain any of the prohibited substances.

Conformance with criterion c) shall be supported by samples of packaging, details of resource conservation methods, and reuse and recycling considerations.

Conformance with criteria d) and e) shall be demonstrated by providing samples of all plastic packaging and component, and shall be supported by documentation from The Recycling Operators of New Zealand (RONZ) verifying the packaging is recyclable.

5.11 Repair and Maintenance Systems

Criteria

a. Repair subcontract systems shall be provided, and repairs carried out as requested by users.
b. Customers shall be provided with the following information:
   - Repair services are available; and
   - Details of services, repair time, costs and how services are provided to users, etc
c. Maintenance of equipment shall only be undertaken by persons who have undergone training or persons with the required technical expertise.
d. The applicant shall ensure that all spare parts are available for 5 years following the termination of production.

Verification Required

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be accompanied by documentation including:**

- details of the repair service offered;
- details of training or technical expertise required of repair technicians;
- sample training records, if applicable; and
- details of availability of spare parts.

5.12 Collection and Recycling Systems

Criteria

Systems must be available for collecting used products and consumables, and reusing parts and/or recycling materials.

Parts which cannot be reused or recycled shall be processed/disposed of in an environmentally sound manner (i.e. direct disposal to landfill should only be used where more environmentally benign options are not available).

Verification Required

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be accompanied by documentation including details of the collection and recycling systems used by the applicant.**

5.13 Waste Management

Criteria

a. The licence applicant must have effective waste management policies and procedures and/or a waste management programme covering their operations.

b. Licence holders must report annually to The Trust on waste management, including:
   - quantities and types of waste recovered for reuse internally and externally;
   - quantities and types of waste recycled internally and externally;
   - quantities and types of waste disposed of to landfill;
   - quantities and types of waste burned internally for energy recovery;
   - waste generation related to production; and
   - initiatives taken to reduce waste generation and improve recovery/recycling of waste.

Verification Required

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or other authorised representative of the applicant company. **This statement shall be accompanied by documentation that:**

- describes the waste management policies, procedures and programmes; and
- includes annual reports to Eco Choice Aotearoa on waste generation, minimisation and management.

6. PRODUCT CHARACTERISTICS

6.1 Duplex Copying/Printing

Criteria

Copiers, electrophotographic printers and MFDs must fulfil the following requirements for duplexing as shown in Table 7.

This requirement does not apply to any Large Format Printers/Copiers, printers that use stack form, or to thermosensitive, ink jet or wire dot printers. Equipment that does not permit duplex printing shall be able to reduce paper consumption by compressed printing, back-side printing, or otherwise.

Table 7 – Duplexing by Monochrome Equipment

Monochrome Product Speed (IPM)		Duplex requirement
Monochrome	Colour	
≤ 24 IPM	≤ 19 IPM	None required
25 < IPM ≤ 44	20 < IPM ≤ 39	Duplexing may be a standard or optional function
> 45 IPM	> 40 IPM	Duplexing must be a standard function

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be accompanied by relevant product specification information.**

6.2 Paper

Criteria

a. Copiers, printers, and MFDs must be able to use recycled paper made from 100% waste paper.

b. Use of recycled paper shall not void the unit's warranty.

These requirements do not apply printers supporting stack form, large format printers and printers accepting only photo paper/postcards

Verification Required

Conformance with this requirement shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by documentation demonstrating that use of recycled paper will not void the warranty.**

6.3 Consumer Information

Criteria

a. User information on the following shall be provided in the product documentation:

- instructions on the installation / positioning of the machine;
- how and where used and decommissioned products/parts can be returned for refilling, recycling and/or disposal;

- collection, reuse, material recycling, recovery or disposal of used OPC kit/photoconductor drums, toner containers and cartridges, ink and ink ribbon cartridges, and batteries;
- that used batteries should be disposed of in accordance with local legislation;
- print capacity (impressions per minute.
- functioning of the energy management system;
- use of duplex printing/copying. (For equipment that does not support duplex printing/copying information on the function(s) which enable paper consumption to be reduced should be provided).

b. The product documentation shall provide the following information in relation to toner cartridges, toner containers, ink cartridges or ink ribbon cartridges, as applicable:
   - a safety data sheet (SDS) for the toner or ink;
   - proper handling and use;
   - that toner modules should not be forced open;
   - measures to be taken if the toner or ink is accidently spilt on clothes or skin, ingested, or gets into eyes; and
   - that the toner module, ink cartridge or ink ribbon cartridge must be kept out of the reach of children.

c. Product information shall indicate that products satisfy the criteria in Clause 5.6 on powder dust, ozone, TVOC, styrene and benzene emissions. This shall include information on the test conditions (e.g. tested in accordance with Appendix S-M of RAL-UZ-171), and a statement that the test was performed during the copying phase, using a type of toner recommended by the manufacturer.

d. Product documentation shall contain information encouraging users to provide proper ventilation for long term use in poorly ventilated rooms or for mass copying. Similar wording to that below shall be used.

   "Extended use in poorly ventilated rooms or mass copying increases the odour of ozone, which may cause discomfort in the office environment. Furthermore, proper ventilation should be ensured during mass copying because chemical substances are emitted."

e. The user's manual must be available in English.

Verification Required

Conformance with these requirements shall be stated in writing and signed by the Chief Executive Officer or an authorised representative of the applicant company. **This statement shall be supported by copies of relevant sections from manuals and other information available by other means (web page, brochures, product specifications etc).**

7. REQUIREMENTS AND NOTES FOR LICENCE HOLDERS

Monitoring Compliance

Prior to granting a licence, The Trust will prepare a plan for monitoring ongoing compliance with these requirements. This plan will reflect the number and type of products covered by the licence and the level of sampling appropriate to provide confidence in ongoing compliance with criteria. This plan will be discussed with the licence applicant and when agreed will be a condition of the licence.

As part of the plan, The Trust will require access to relevant quality control and production records and the right of access to production facilities. Relevant records may include formal quality management or environmental management system documentation (for example, ISO 9001 or ISO 14001 or similar).

The monitoring plan will require the licence holder to advise The Trust immediately of any noncompliance with any requirements of this specification which may occur during the term of the licence. If a non-compliance occurs, the licence may be suspended or terminated as stipulated in the Eco Choice Aotearoa Licence Conditions. The licensee may appeal any such suspension.

The Trust will maintain the confidentiality of identified confidential information provided and accessed during verification and monitoring of licences.

Using the Eco Choice Aotearoa Label

The Label may appear on the wholesale and retail packaging for the product, provided that the product meets the requirements in this specification and in the Licence Conditions.

Wherever it appears, the Label must be accompanied by the Licence Number e.g. 'licence No1234'. It is optional to include the spec name.

The Label must be reproduced in accordance with:

- the licence conditions; and
- the ECA programme's brand kit which includes examples of keyline art for reproduction of the Label.

Any advertising must conform to the relevant requirements in this specification, in the Licence Conditions and in the keyline art.

Failure to meet these requirements for using the ECA Label and advertising could result in the Licence being withdrawn.

Appendix 1 – Cross reference of criteria in ECA and Eco Mark specifications

EC-24-17 Copying machines, printers, scanners and multifunctional devices		Eco Mark 155 v1.3
Introduction	1	
Background	2	
Interpretation	3	
Category Definition	4	
Legal Requirements	5.1	4-1-3 (28)
Design Requirements	5.2.1 a)	4-1-1 (1)
	5.2.1 b)	4-1-1 (3)
	5.2.1 c)	4-1-1 (3)
	5.2.1 d)	4-1-1 (1) Appx 1 (A1)
Design and recyclability of plastic and metal parts	5.2.2 a)	Appx 2(7) Appx 1 (B10)
	5.2.2 b)	4-1-1 (1) Appx 1 (A4)
	5.2.2 c)	4-1-1 (1) Appx 1 (B4)
	5.2.2 d)	N/E
Recycled or reused plastic parts	5.3.1 a)	4-1-1 (4)
	5.3.1 b)	4-1-1 (14) Appx 1 (B9, B12)
Additives in plastic casing parts	5.3.2 a)	4-1-3 (18)
	5.3.2 b)	4-1-3 (16)
	5.3.2 c)	4-1-3 (16)
	5.3.2 d)	4-1-3 (16)
	5.3.2 e)	4-1-3 (17), Table 2
	c) - e) do not apply to...	4-1-3 (16)
Photoconductor drums	5.3.3 a)	4-1-3 (22)
	5.3.3 b)	4-1-1 (13)
Chemicals during production	5.3.4 a)	4-1-3 (28)
	Table 1	*
	5.3.4 b)	4-1-3 (18), (30)
	Table 2	Table 3
Toner and Ink	5.4.1 a)	4-1-3 (25)
	5.4.1 b)	4-1-3 (24), Table 6
	5.4.1 c)	4-1-3 (26)
	Table 3	Table 8
	5.4.1 d)	4-1-3 (24)
Toner Cartridges, Toner Containers, Ink Cartridges and Ink Ribbon Cartridges	5.4.2 a)	4-1-1 (2)
	5.4.2 b)	4-1-3(18)
	5.4.2 c)	4-1-1 (5)
	5.4.2 d)	4-1-1 (6), (7)
	5.4.2 e)	4-1-1 (7)
	5.4.2 f)	4-1-1 (1) Appx 1 (B1)
	5.4.2 g)	4-1-3 (23)
Batteries	5.5 a)	4-1-3 (29)
	5.5 b)	4-1-1 (1) Appx 1 (C6)
	5.5 c)	*
Air Emissions	5.6 a)	4-1-3 (19)
	5.6 b)	4-1-3 (19)
	Table 4	Table 4
	5.6 c)	4-1-3 (19)
	Table 5	Table 4-1
Noise	5.7	4-1-3 (31)
	Tables 6a and 6b	Table 10
Energy Consumption	5.8	4-1-2 (15) requires conformance with ENERGY STAR
Energy Management	5.9 a)	N/E*
	5.9 b)	N/E*
Packaging Requirements	5.10 a)	4-1-1 (14) Appx 2 (8)

EC-24-17 Copying machines, printers, scanners and multifunctional devices		Eco Mark 155 v1.3
	5.10 b)	4-1-1 (14) Appx 2 (8)
	5.10 c)	4-1-1 (14) Appx 2 (5)
	5.10 d)	4-1-1(14) Appx 2 (7)
	5.10 e)	4-1-1(14) Appx 2 (5)
Repair and Maintenance Systems	5.11 a)	4-1-1 (10)
	5.11 b)	4-1-1 (10)a, b
	5.11 c)	4-1-1 (10)c
	5.11 d)	4-1-1 (11)
Collection and recycling systems	5.12	4-1-1 (5) 4-1-1 (13)
Waste Management	5.13 a)	*
	5.13 b)	*
Duplex Copying	6.1	4-1-1 (9)
	Table 7	Table 1
Paper	6.3	N/E
Consumer Information	6.4 a)	4-1-1 (32)
	6.4 b)	4-1-1 (32)
	6.4 c)	4-1-1 (32)
	6.4 d)	4-1-1 (32)
	6.4 e)	N/E
Appendices	Appx 1	N/E
	Appx 2	Appendix 1
	Appx 3	Reference to source document: Annex III RoHS Directive 2011/65/EU

N/E no equivalent criteria; * criteria common to ECA specifications or specific to the New Zealand market

Appendix 2 – Product Design Checklist (source: Eco Mark 155 Appendix 1)

■Intention of Product Design Checklist

Equipment must be easily recyclable. The "Product Design Checklist" includes indices for improving ease of recycling by reference to the Blue Angel RAL-UZ205 in Germany. The indices are based on the following design concepts:

[Structural Design and Joining Techniques]

- Non-use of any joint (e.g. glued or welded) that does not allow release of the joint between different materials unless it is technically required
- Use of easily detachable mechanical joints in equipment
- Easy disassembly of equipment which can be carried out by hand or by machine

[Material Selection]

- Casing parts: In order to limit the variety of materials, individual plastic casing parts (>25g) have to consist of one single polymer or a polymer blend. All plastic parts used in the plastic casings shall consist of up to four separable polymers or polymer blends.
- Large-sized plastic casing parts must be designed in a way that the contained plastics can be reused for the production of high-quality durable products by applying available re-cycling techniques.
- The use of coatings for parts is to be reduced to a minimum. If applied, an appropriate reason for this use is to be given. Galvanic coatings are not permissible.
- Devices shall use, or shall be permitted to use, recycled plastics.

[Utilization of used equipment]

- Parts and materials that may contain any hazardous substances shall be easily identifiable or removable (e.g., modules for colourants, mercury lamp for backlighting of liquid crystal displays, and liquid crystal display panels).
- Operators shall gather information on reutilization of parts used in equipment and take advantage of it in product designing (e.g., information on a disassembly method, reuse of parts, and recycling).

[Module for colourant/container for colourant]

For modules for colourants that the applicant includes as original supplies or use of which the applicant recommends for each of equipment in product documentation as well as containers for colourants such as toners, inks, gels, waxes, etc., the "Product Design Checklist" includes the indices that enable them to be reused or utilized as materials. The indices are based on the following design concept:

・ Equipment that does not allow reuse of a module for colourant must not be attached to the module.

■Items

1) Equipment must be configured to be suitable for recycling, and must satisfy all Must (M) items of the requirements in the following groups. In addition, it is desirable to satisfy the Should (S) items, although they are not requirements for certification.

A: Design and Joining Technique
B: Selection and Marking of Materials
C: Longevity
D: Resource Saving

2) Each requirement applies to specific assemblies listed in the column "Target": Casing, mechanical parts, electronic assemblies, modules for colourants, or containers for colourants

3) Terminology

Casing parts	Parts comprising external covers that protect equipment from environmental influences and that prevents users from contacting moving, light-emitting or high-voltage components.
Chassis	Parts with functions serving as a frame to support the main parts of machines.
Assembly	Unit composed of at least two components linked by power or design.
Electric/electronic assemblies and parts	Assemblies (parts) which include at least one electric or electronic component.
Colourant	Mixture in which dyes, pigments and other additives are dissolved or dispersed in a carrier material such as a polymer matrix (e.g. for toners), liquids (e.g. for inks), gels or waxes (e.g. for solid inks).
Module for Colourant	A complex module (of a printer, copier or a fax)which in addition to a container for colourants can include other components for transferring the colourant onto the print media (e.g. toner container, photoconductor, charging unit, cleaning unit and toner cartridge having waste toner container or ink print head with nozzle system and one or more integrated ink tanks).
Container for Colourant	Containers for colourants such as toners or inks etc.
Recycling	In this checklist, the term refers to utilization as materials for used (plastic) parts.
Mechanical parts	Parts not contained in an electric/electronic assembly with either mechanical or optical function (except for casing and chassis).
Reused parts	Parts that have previously been used, and reused.

4) Category classification

Any requirements are classified as either "M" or "S".

Must-Requirement (**M**)	Requirements which must be met
Should-Requirement (**S**)	Requirements which should be met

Requirement		Applicable scope	Category	Compliance	Remarks
A: Design and Joining Technique					
A1	Are assemblies made of mutually incompatible materials separable or connected by separation aids?	Casing parts, chassis, electric/electronic assemblies, modules for colourants	M	☐Yes/ ☐No	Connections between casing and chassis as well as between chassis and electric/electronic assemblies are important. Their separability is a prerequisite for separate reuse/recycling of assemblies and materials and for a quick and reliable separation of components containing hazardous substances. Glued nameplates (i.e. company logos and stickers) are also included. The term "separation aids" refers to predetermined breaking points, for example.
A2	Are electric/electronic assemblies easy to find and remove?	Entire unit, including lamps	M	☐Yes/ ☐No	The minimal strategy for recycling is to remove hazardous substances. For example, electric/electronic assemblies and components listed in Annex VII of the revised WEEE Directive (2012/19/EU Directive), such as batteries and condensers which have a risk of containing constituents having hazardous substances, as well as fluorescent lamps containing mercury, must be easy to find and separate.
A3	Are connections that must be detached easy to find?	Casing parts, chassis, modules for colourants	S	☐Yes/ ☐No	Connections that have to be detached during disassembly must be easy and quick to find. If they are hidden, this should be stated on the product (e.g. by laser labeling or injection moulding).
A4	Can disassembly be done exclusively with general-purpose tools?	Casing, chassis, electric/electronic assemblies	M	☐Yes/ ☐No	The term 'general-purpose tools' refers to widely used, commercially available tools. This requirement does not apply to connections where legal regulations have limited the choice of joining technique.
A5	Has consideration been given to the point of application and the work space required for disassembly?	Casing parts, chassis, electric/electronic assemblies	M	☐Yes/ ☐No	The point of application is where the force of the tool is to be transmitted to the connecting element. Then, in order to enable disassembly operation to be performed with the tool, there must be adequate work space. This requirement especially covers snap-on connections, which, in contrast to the assembly process, can often be loosened with the tool.
A6	Are all connecting elements that have to be disassembled for recycling axially accessible?	Casing parts, chassis, electric/electronic assemblies	S	☐Yes/ ☐No	If connections to be disassembled are difficult to access or not directly accessible, disassembly requires extra man-hours. For example, it takes time to release screw connections if they can be only accessible radially.
A7	Can screw connections for fastening assemblies be released with no more than three tools?	Casing parts, chassis, electric/electronic assemblies	M	☐Yes/ ☐No	Standardised and uniform connecting elements facilitate disassembly. The fewer tools needed are, the simpler assembly and disassembly are. A tool is

					characterised by its type of drive (e.g. Phillips-head screwdriver) and size of drive (wrench size).
A8	Are at least half of connections that have to be detached between plastic parts click/snap-on connections?	Casing parts	S	☐Yes/ ☐No	Based on the proportion of click and snap-on connections, determine whether joining techniques have been selected by considering ease of disassembly.
A9	Can the disassembly be performed by one person?	Entire unit	M	☐Yes/ ☐No	If the undercut angle is more than 90°, any number of snap-on connections in the same joining direction can be assembled simultaneously, whereas this may not hold for disassembly. It is considered that this requirement is not met if more than three snap-on connections have to be loosened at the same time.
A10	Can the supporting surface be maintained during the entire disassembly process?	Unit to be handled	S	☐Yes/ ☐No	The 'supporting surface' refers to the product surface for wrecking workers to work on. This requirement is to indirectly check whether or not the unit has a hierarchical structure. 'The unit to be handled' refers to the unit which exceeds 5 kg, or can be turned over in case of less than 5kg.
A11	Are casing parts free of electric/electronic assemblies?	Casing parts	M	☐Yes/ ☐No	To facilitate the clean and fast removal and separation of hazardous substances from the electronic components, all electric/electronic assemblies must be fastened to the chassis. The casing must not contain any electric/electronic assemblies. A control element fastened to the casing and casing parts at the same time fulfilling the function of the chassis are not considered as casing parts here.
A12	Has the manufacturer carried out a trial disassembly (e.g. in accordance with A1 to A11) and recorded it with a focus on weak spots?	Entire unit	M	☐Yes/ ☐No	
B: Selection and Marking of Materials					
B1	If labels, etc. to be attached to plastic casing parts are difficult to separate, they must be made of the same material as the plastic parts, or any material that does not prevent recycling.	Casing parts of 25g or more	M	☐Yes/ ☐No	In order to recycle as high-quality materials, labels, etc. must be easily separable from plastic parts to which they are attached, or it is desirable that they are made of same materials (compatibilization).
B2	Is the variety of materials used for plastic parts having similar functions limited to one kind?	Casing parts, chassis, and mechanical parts of 25 g or more	M	☐Yes/ ☐No	For instance, "similar functions" refer to functionality such as "impact resistance" and "abrasion resistance". The smaller the varieties of materials are, the more efficient the separation and recycling processes are. This requirement does not apply to parts that are demonstrably reused.

B3	Are parts made of the same plastic material colored uniformly or compatibly?	Casing parts, modules for colourants	S	☐Yes/ ☐No	Adoption of uniform colours for parts made of the same plastic material improves possibilities to introduce material cycles for recycling. 'Compatible colouring' refers to a same colour with different degrees of brightness (e.g. grey and anthracite). In addition, if different types of plastic materials have different colours, this "colour code" facilitates reliable type-specific sorting of the plastic materials. This requirement does not apply to control elements on the equipment.
B4	Has the coating of plastic parts been limited to a minimum?	Casing parts, modules for colourants	M	☐Yes/ ☐No	'Coating' refers to a layer of coating material, vapor-deposited layer, and print. Galvanic coatings are not permissible. Large-area coating layer, vapour-deposited layer and print on plastic parts require additional treatment for removal if the materials are to be recycled subsequently. Reasons must be given for coatings of special parts. Laser markings are not considered as prints referred to herein. This requirement does not apply to demonstrably reused parts. It is considered, however, that the product conforms to this item if the coating materials that do not prevent recycling are used, or coating works are conducted with consideration for occupational safety and health of coating workers and reduction of environmental burden. "Coating materials that do not prevent recycling" refers to the coating materials that have compatibility with materials of parts to be coated, and do not prevent high-level material recycling (horizontal recycling for in-house products). 'Considerations for occupational safety and health of coating workers' means that a coating workshop is ventilated/vented and workers wear protective gear. 'Considerations for reduction of environmental burden' includes the measures to control VOC emission into the air, such as the removal equipment, the devices in coating process, or replacement by low-VOC coating materials.
B5	Are recyclable materials and material composites used?	Casing parts, chassis, modules for colourants	M	☐Yes/ ☐No	'Recyclable material' means that recycled material identical to the original material (recycling at the original level) can be manufactured. This item asks the intention and goals upon designing and does

					not ask whether recycling is actually conducted.
B6	Is partial use of recycled plastic material permitted?	Casing parts, chassis, modules for colourants	M	☐Yes/ ☐No	'Permitted' means that a material that meets the requirements provided in the specifications may be used if it is available. 'Partial' means some available plastic components are appropriate. (This does not require all available components.) A closed cycle is realized only if the manufacturer has already used recycled materials, or if they announce the commitment to do so in the product specifications.
B7	Is the percentage of recycled material to the total plastic weight constantly 5% at a minimum?	Casing parts, casing parts of modules for colourants	S	☐Yes/ ☐No	'Total plastic weight' means the total weight of all applicable plastic parts. 'Recycled material' means recycled plastic pellets themselves, and not plastic parts that contain recycled plastics. The source of recycled pellets does not matter. In other words, the recycled plastic does not have to be recycled pellets obtained from parts in used printers or copiers; it may include recycled plastic from other product families on the market. Using appropriate recycled materials considerably contributes to resource saving and the use within the scope of availability is strongly desirable.
B8	Are parts and materials that fall under Appendix 1 of the EU WEEE Directive easy to remove?	Entire unit	M	☐Yes/ ☐No	
B9	selected according to B1 to B6 and has this been documented?	Casing parts, chassis, modules for colourants	M	☐Yes/ ☐No	
B10	Are plastic parts weighing 25 g or more and having a flat surface larger than 200 mm^2 marked in accordance with ISO 11469, taking ISO 1043 into consideration?	Entire unit (Plastic parts contained in reused complex assemblies are not included.)	M	☐Yes/ ☐No	The marking of plastics shall enable all recycling companies to sort plastics by type.
B11	Do secondary batteries have identifications indicating a type?	Internal battery	M	☐Yes/ ☐No ☐ No applicable battery y	Secondary batteries need to be identified in order to promote collection and recycling thereof.
B12	Is the percentage of post-consumer recycled plastics used in entire plastic (wt%) stated in the product information or data sheet, (indicated in intervals of 0-1%, 1-5%, 5-10%, 10-15%, 15-20%, and so on (in 5% intervals)?	All assemblies	M	☐Yes/ ☐No	The following parts may be excluded from the calculation of the recyclate share: printed circuit boards, cables, connectors, electronic components, optical components, electrostatic discharge (ESD) components, electromagnetic interference (EMI) components, and biobased plastic materials. Stating in Form 3 and submitting

					it to Eco Mark Office is acceptable.
C: Longevity					
C1	Are at least 50% or more of components of equipment, excluding standard parts, used as common parts to other models of the same generation and the same performance category of the same manufacturer?	Entire unit	**M**	☐Yes/ ☐No	
C2	Is use of recycled assemblies or parts scheduled or permitted?	Entire unit	**M**	☐Yes/ ☐No	This means that the manufacturer should be willing to reuse assemblies and components as spare parts or ETN (Equivalent To New) parts under his responsibility.
C3	Can modules or containers for colourants be replaced separately for each colour?	Modules for colourants, containers for colourants Not applied to portable equipment	**M**	☐Yes/ ☐No ☐Not covered. (No use of modules for colourants, containers for colourants, single-color machine, poetable equipment)	The separate replacement by color contributes to saving of materials. Portable devices means small and light-weight printers, etc. which include mobile printers.
C4	The design (structure, software or other) has not prevented the use of recycled colourant cartridges or colourant containers	Entire unit	**M**	☐Yes/ ☐No ☐Not covered. (No use of modules for colourants, containers for colourant)	This item is not to guarantee the use of all recycled coulorant cartridges and colourant containers sald by other companies, but to clarify that the design of equipment does not prevent the use of such by the special measures.
C5	Can modules for colourants be reused?	Modules for colourants	**M**	☐Yes/ ☐No ☐Not covered. (No use of modules for colourants)	Constructive measures shall not prevent reuse.
C6	When batteries installed in equipment reach the end of their life or are repaired, replacement or removal thereof shall be possible, without removing an entire printed circuit board, etc. on which the batteries are mounted.	Printed circuit board, etc.	**M**	☐Yes/ ☐No ☐ No applicable battery	A structure that allows easy replacement of batteries at the end of their life leads to avoidance of disposal of the equipment and to a longer life.
D. Resource Saving					
D1	Equipment shall be designed in consideration of weight reduction/volume reduction. Specifically, is a comparison with a conventional machine of a same type (or standard machine) made in terms of weight reduction or volume reduction rate, etc.? However, if no conventional machine having equivalent functionality is present, a comparison with a conventional machine does not apply. The equivalent functionality refers to an equipment configuration in	Products	**M**	☐Yes/ ☐No ☐No conventional machine having equivalent functionality is present. Comparison with equipment used in conventional machines Name of conventional machine Rate of weight reduction Rate of volume reduction Either the rate of weight reduction or rate of	This results in weight reduction/volume reduction of equipment.

		which the printing method, PIM, corresponding paper size, etc. are identical.			volume reduction may serve the purpose.	
Are all "M" requirements satisfied and "Yes" answers given to them?				**M**	☐Yes/ ☐No	

<For Your Reference> B8 Appendix 1

As a minimum, the following substances, mixtures, and components have to be removed from any separately collected waste electrical/electronic equipment.

(Annex VII of Revised WEEE Directive (2012/19/EU Directive))

- polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT),
- mercury containing components, such as switches or backlighting lamps,
- batteries,
- printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
- toner cartridges, liquid and paste, as well as colour toner,
- plastic containing brominated flame retardants,
- asbestos waste and components which contain asbestos,
- cathode ray tubes,
- chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC),
- gas discharge lamps,
- liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimetres and all those back-lighted with gas discharge lamps,
- external electric cables,
- components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances,
- components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation,
- electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).

These substances, mixtures and parts shall be disposed of or recovered in compliance with Directive 2008/98/EC.

Appendix 3 – Parts not required to comply with the limits in Table 2

1) Mercury in compact fluorescent lamps not exceeding 5 mg per lamp
2) Mercury in straight fluorescent lamps for general purposes not exceeding :
   - halophosphate 10 mg
   - triphosphate with normal lifetime 5 mg
   - triphosphate with long lifetime 8 mg
3) Mercury in straight fluorescent lamps for special purposes
4) Mercury in other lamps not specifically mentioned in this Annex B
5) Lead in glass of cathode ray tubes, electronic components and fluorescent tubes
6) Lead as an alloying element in steel containing up to 0.35 wt% lead, aluminium containing up to 0.4 wt% lead and as a copper alloy containing up to 4 wt% lead
7) Lead stated below :
   - Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85 % lead by weight)
   - Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission as well as network management for telecommunication
   - Lead in electronic ceramic parts (e.g. piezoelectronic devices)
8) Cadmium plating except for applications banned under Directive 91/338/EEC [2]) amending Directive 76/769/EEC [1]) relating to restrictions on the marketing and use of certain dangerous substances and preparations

NOTE [1]) For 76/769/EEC, see OJ L186, 12.7.1991, P.59 (OJ, Official Journal). Council Directive 91/339/EEC of 18 June 1991 amending for the 11th time Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations

NOTE [2]) For 91/338/EEC, see OJ L262, 27.9.1976, P.201 (OJ, Official Journal). Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations

9) Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators

10) Decabrominated diphenyl ether for the purpose of polymers

11) Lead as an alloying element of lead/bronze used for bearing-shells and bushes

12) Lead used for compliant-pin connector systems

13) Lead as a coating material for thermal conduction module C ring

14) Lead and cadmium in optical and filter glass

15) Lead in solders consisting of two or more elements for the connection between the pins and the package of microprocessors with a lead content of exceeding 80 wt% but less than 85 wt%

16) Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit package (Flip Chips)

17) Lead in tin whisker resistant coatings for the following applications :
    - lead included in plating of printed circuit board to be connected with a connector of a narrow pitch (not exceeding 1 mm)
    - Lead included in plating of electronic component having lead frame of a narrow pitch (not exceeding 1 mm)
    - Lead included in plating of lead-wire terminals of FPC, FFC and connector

18) Solder including lead or cadmium used for the following specific purposes :
    - Solder used for connection between alumina substrate and copper heat sink in high frequency power amplifier module of business radio system
    - Low-melting-point solder alloys used for thermal cut-off and thermal element of heat sensor

19) Hexavalent chromium passivation coatings for the following specific purpose :
    - Rust preventive treatment of non-electrolytic nickel plated components
    - Rust preventive treatment of black galvanized components

20) Lead included in lead-oxide glass for plasma display panel and SED flat panel

21) Lead included in rare earth magnetic garnet crystal used for such optical devices as optical isolator, optical circulator, optical switch

22) Lead included in sealing glass for moisture proof of sheathed heater

23) Cadmium included in sulphide photo cells

24) Lead and cadmium used for thermosensor of thermal fuses

25) Lead included in amalgam used for discharge lamps

Appendix 4: EC-24 criteria that are in addition to Eco Mark criteria

Licence applicants or holders of ECNZ licences for printers, copiers and MFDs that hold current Eco Mark 155 approvals must provide evidence to demonstrate compliance with the following criteria in this specification, in addition to evidence that an Eco Mark licence is current for the products:

No.	Requirement
5.3.2(c)	Flame retardants containing organohalogen compounds shall not be added to plastic casing parts. This criterion does not apply if: For copiers: - the collection rate is greater than 80% and at least 95% of the plastic casing parts collected, which contain brominated flame retardants, are recycled, AND - of the total mass of plastic casing parts in a product which contain brominated flame retardants, at least 15% is recycled or reused material collected as part of the manufacturer's take-back system. For printers and printer-based MFDs: - at least 95 % of the plastic casing parts collected, which contain brominated flame retardants, are recovered and at least 50% are recycled; AND - one or more of the plastic casing parts that are greater than 50 g and contain brominated flame retardants shall be a recycled plastic part and at least 10% of this part shall comprise recycled material collected as part of the manufacturer's take-back system. - There is no minimum collection rate for laser printers and MFDs whose main function is a printer, however, the collection rate achieved should be reported.
5.5(c)	All used batteries must be properly disposed of by the New Zealand supplier and/or distributor in accordance with local and national legislation.
5.9(a)	The licence applicant must have effective energy management policies and procedures and/or an energy management programme.
5.9(b)	Licence holders must report annually to The Trust on energy management, including: - total energy use; - breakdown of total energy use to types of energy used; - energy use related to distribution; - initiatives taken to reduce energy use and improve energy efficiency; and - initiatives taken to calculate and reduce CO2 emissions associated with energy use.
5.10(d)	Primary packaging must have a plastic resin identification code and be made of plastics that (as far as is possible) are able to be recycled in New Zealand.
5.10(e)	Primary packaging must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. PVC sleeves, metallic labels).
5.13(a)	The licence applicant must have effective waste management policies and procedures and/or a waste management programme covering their operations.
5.13(b)	Licence holders must report annually to The Trust on waste management, including: - quantities and types of waste recovered for reuse internally and externally; - quantities and types of waste recycled internally and externally; - quantities and types of waste disposed of to landfill; - quantities and types of waste burned internally for energy recovery; - waste generation related to production; and - initiatives taken to reduce waste generation and improve recovery/recycling of waste.
6.3(a)	Copiers, printers, and MFDs must be able to use recycled paper made from 100% waste paper.
6.3(b)	Use of recycled paper shall not void the unit's warranty.
6.4(e)	The user's manual must be available in English