



# EcoLogo®

Environmental Standard - Certification Criteria Document

## CCD-039: Printing Cartridges

October, 2011

First Published: 08/1995

Last Revised: 10/2011



A terrachoice company

Ottawa | Philadelphia  
T 1.800.478.0399 F 613.247.2228  
[info@ecologo.org](mailto:info@ecologo.org)  
[www.ecologo.org](http://www.ecologo.org)

# EcoLogo Standard: CCD 039 Printing Cartridges



## Table of Contents

Introduction .....	1
Notice .....	1
Notice of Intent.....	1
Definitions .....	2
Category Definition.....	3
General Requirements.....	3
Product Specific Requirements .....	6
Socially and Environmentally Responsible Manufacturing.....	8
Verification.....	8
Conditions for EcoLogo® Use .....	8

# EcoLogo Standard: CCD 039

## Printing Cartridges



### Introduction

The EcoLogo® Program is designed to support a continuing effort to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimizing the impacts of pollution generated by the production, use and disposal of goods and services.

EcoLogo® is a Government of Canada official mark used under license from Environment Canada. TerraChoice is not an agent of Environment Canada.

Printing cartridges are widely used in equipment such as photocopiers, facsimile machines, and laser printers. Most major manufacturers of print cartridges offer return and recycling programs available to customers free of charge and thus customers have the option to return the cartridge to the manufacturer for recycling and/or reuse. Moreover, manufacturers can reduce print cartridge environmental impact through product design such as the elimination of certain hazardous substances, design for recycling, minimization of packaging, and integration of recycled or reused parts in new cartridges.

The criteria in this product category are intended to address environmental impacts through different stages of the entire cartridge life cycle. These criteria aim to reduce waste sent to landfill, conserve resources, and reduce impacts to humans and environmental health.

The criteria for this product category was developed based on the findings of the "Common Core Criteria for Toner Cartridges" Report April 2003, prepared by the Thailand Environment Institute for the Global Eco-labelling Network (GEN) and criteria developed by the Environmental Choice New Zealand as well as other members of the GEN. Efforts were also made to harmonize certain sections of this standard with ISO/IEC 29142.

Life cycle review, standards development and revision are ongoing processes. As information and technology change, the product category requirements will be reviewed and possibly amended.

### Notice

Any reference to a standard means to the latest edition of that standard.

The EcoLogo® Program reserves the right to accept equivalent test data for the test methods specified in this document.

### Notice of Intent

It is the intent of the EcoLogo® Program to consider requirements for including original and remanufactured inkjet cartridges, both color and monochrome, as a subcategory of this standard in future versions.

## Definitions

1) In this standard:

**"ASTM"** means American Society for Testing and Materials;

**"Chronic Reference Exposure Level (CREL)"** means inhalation concentrations to which the general population, including sensitive individuals, may be exposed for long periods (10 years or more) without the likelihood of serious adverse systemic effects other than cancer;

**"ink cartridge"** means a replaceable unit filled with ink and is designed to be used in an ink printing system;

**"original cartridge"** means a cartridge and/or container which is marketed by the Original Equipment Manufacturer for which the cartridge and/or the container is intended;

**"recycling of cartridge"** means option which would allow recovery of raw material for use in new cartridges or other products, reuse of products in new cartridges, or reuse, refill, or remanufacture of end-of-life cartridges;

**"remanufactured printing cartridge"** means a printing cartridge to which the following service has been performed: the disassembly of the cartridge, inspection, cleaning and adjustment of all components, repair where necessary, replacement of worn or damaged parts, filled with new toner or ink, reassembled and tested;

**"remanufacturing"** means the disassembly of previously used printing cartridges into components and the assembly of the reusable parts into functioning printing cartridges introducing new or aftermarket parts or components only where expressly required (e.g. new toner or ink);

**"printing cartridge"** means an assembly used for printing, and can either be a toner cartridge or an ink cartridge;

**"toner cartridge"** means a replaceable module filled with toner and a drum and/or a developing unit (separable or non-separable), used in laser printers, computer printers, copying machines, fax machines and multifunctional copiers. In certain types of toner cartridges, the drum might be a separate unit;

**"toner container"** means a replaceable module that holds the toner and which fit onto/into or emptied into the product for which it is intended to be used;

**"total volatile organic compound" or "TVOC"** means the sum of the concentrations of identified VOC compounds and the concentrations of the converted areas of unidentified peaks using the toluene response factor;

# EcoLogo Standard: CCD 039

## Printing Cartridges



**“volatile organic compound” or “VOC”<sup>1</sup>** are compounds of carbon whose composition makes it possible for them to evaporate under normal indoor atmospheric conditions of temperature and pressures. VOC means compounds that elute between n-hexane and n-hexadecane, inclusive of these compounds, on a non-polar gas chromatographic column.

### Category Definition

- 2) This category includes all monochrome and colour toner cartridges as further defined in the subcategories in this section. The subcategories are:
  - (a) Original toner cartridges manufactured by the Original Equipment Manufacturer of the device:
    - CCD-039A, Original Toner Cartridges; and
  - (b) Remanufactured toner cartridges which have undergone disassembly of previously used toner cartridges, assembly of the reusable parts and introduction of new or aftermarket parts:
    - CCD-039 B, Remanufactured Toner Cartridges

Note: Other subcategories may be added at a later date. The EcoLogo® Program reserves the right to determine which subcategory will be assigned to a particular applicant.

### General Requirements

- 3) To be authorized to carry the EcoLogo®, ALL toner cartridges must:
  - (a) meet or exceed all applicable governmental and industrial safety and performance standards; and
  - (b) be manufactured/ re-manufactured and transported in such a manner that all steps of the process, including the disposal and recycling of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations.

#### Heavy Metals

- (c) not be manufactured/ re-manufactured with and/or contain intentionally added mercury, lead, cadmium or chromium (VI) as constituent parts of the toner.

#### Hazardous/ Toxic Substances

- (d) not be manufactured/ re-manufactured with and/or contain any hazardous substances in concentration that causes the toner being classified with the following risk phases according to Annex I of European Union Directive 67/548/EEC:

---

<sup>1</sup> In the indoor environment, all VOCs released into the air from the use of products and materials, including those exempted for regulation due to their negligible photochemical reactivity, are of concern due to their potential to adversely impact the health of people that are exposed.

# EcoLogo Standard: CCD 039

## Printing Cartridges



- carcinogenic effects- R 40, R 45 or R 49
- mutagenic effects- R 46 or R 68
- teratogenic effects- R 60, R 61, R 62, R 63 or R 64
- very toxic effects- R 26, R 27
- sensitising effects- R 42

- (e) not be manufactured/ re-manufactured with and/or contain the following inorganic pigments in the toner
- Pigment Yellow 34 (CAS RN 1344-37-2)
  - Pigment Red 104 (CAS RN 12656-85-8)

### Chemical Emissions<sup>2</sup>

- (f) be tested in a new printer for which cartridges are designed during the ready and printing phases to ensure that emissions from the combined printer and cartridge system shall meet the specified requirements for release of total volatile organic compounds (TVOC), the individual VOCs benzene and styrene and dust as defined in RAL-UZ 55 for print cartridges and determined in accordance with standard ISO/IEC 28360:2007, Information Technology – Office Equipment – Determination of chemical emission rates from electronic equipment following the installation, preparation, sampling and testing conditions specified under the RAL- UZ- 122 option.

Test chamber concentrations of VOCs and particulate matter (dust) emissions measured during the printing phase shall be converted to product specific emission rates, using the ISO/IEC 28360 RAL-UZ 122 option formulas and shall comply with the values in Table 1.0. In the ready phase, a maximum TVOC emission rate of 1mg/h for tabletop devices and 3mg/h for floor-mounted devices must not be exceeded.

Table 1.0: Maximum Allowable Values of Emission Rates Determined in Accordance with the Test Conditions Listed in the Basic Criteria of RAL-UZ 122:2009.

Substance	Emission Rate Printing Phase (mg/h)	
	MonoChrome	Color
TVOC	10	18
Benzene	< 0.05	< 0.05
Styrene	1.0	1.8
Dust	4.0	4.0

Testing shall be conducted by an ISO 17025 accredited laboratory, with the referenced test methods (ISO/IEC 28360 and RAL-UZ 122) within the scope of accreditation

### Packaging and Labeling

- (g) be packaged in materials, including primary and secondary packaging, that:
- (i) do not contain PVC or other types of chlorinated materials;

<sup>2</sup> The criteria has been amended to harmonize with the requirements of RAL-UZ 122 and RAL-UZ 55

# EcoLogo Standard: CCD 039

## Printing Cartridges



- (ii) do not contain intentionally added heavy metals of lead, mercury, cadmium and hexavalent chromium, excepting those added as result of using recycled content, the sum of which shall not exceed 100 ppm by weight;
  - (iii) contain a minimum post-consumer recycled content of 25%, or be comprised of a minimum of 75% by weight recyclable or compostable materials;
  - (iv) if plastic, are clearly marked either with appropriate Society of Plastics Industry recycling classification or ISO 11469 or DIN 6120 standards;
- (h) be accompanied with sufficient information on the product package that would enable the consumer:
- (i) to properly make use of the toner cartridge;
  - (ii) to be aware of the recovery method/ return policy once the toner cartridge can no longer be used; and
  - (iii) to be aware of after-sales service with contact information.

### Take-back Policy

- (i) the company placing the product on the market shall provide a product take-back policy and recycling program, which can be undertaken by the manufacturer/ remanufacturer or subcontracted to a licensed and approved third party.

### Energy Management and Policy

- (i) all manufacturers/ remanufacturers shall have an energy management plan with reduction targets and track their energy use.

### Azo-colorants

- (k) not contain azo-colorants (dyes or pigments) in toner formulation that might release the following carcinogenic aromatic amines.

Name	CAS No.
4-aminodiphenyl	92-67-1
4-aminoazobenzene	60-09-3
Benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-aminoazotoluene	97-56-3
2-amino-4-nitrotoluene	99-55-8
p-chloroaniline	106-47-8
2,4-diaminoanisole	615-05-4
4,4'-diaminodiphenylmethane	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'-daminodephenylmethane	838-88-0
p-cresidine	120-71-8

# EcoLogo Standard: CCD 039

## Printing Cartridges



4,4'-methylene-bis-(2-chloroaniline)	101-14-4
2-Naphthalenol, 1-[(4-methyl-2-nitrophenyl)]	2425-85-6
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
2,4-toluidinediamine	95-80-7
2,4,5-trimethylaniline	137-17-7
o-anisidine	90-04-0

### Product Specific Requirements

- 4) To be authorized to carry the EcoLogo<sup>®</sup>, the original toner cartridges, in addition to satisfying requirements under Section 3, must:
- (a) for plastic parts of the toner cartridge casing be made of a single homo/ co-polymer or polymer blend as long as the materials are easily separable.
  - (b) have their labels/markings/stickers be easily separable or made of the same material or material that does not interfere with the recyclability of the part.

#### Plastic Additives

- (c) not be manufactured with Polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs) or contain less than 1% by weight of chloroparaffins in the range of C<sub>10</sub> to C<sub>13</sub>.
- (d) not contain cadmium, lead or mercury, except in electrical or electronic components and wires or meet the requirements of EU RoHS (restriction-of-hazardous-substances) directive except for the reused parts.

#### Heavy Metals

- (e) in the case of photoreceptors, used in the product, not contain cadmium, lead, mercury or selenium as constituent parts.

#### Disassembly for recycling of cartridge

- (f) meet the following requirements:
  - (i) non-separable joints such as glued or welded joints between different materials may not be used (for case parts and chassis) unless required for technical, quality and costs reasons;
  - (ii) plastic parts greater than 25 g in weight and with smooth area greater than 200 mm<sup>2</sup> shall be marked with plastic resin codes in accordance with ISO 11469:2000 or ISO 1043 parts 1-4;
  - (iii) cartridge or container or integrated circuit chips or other devices or designs shall not be installed or implemented to specifically prevent re-use and recycling;

# EcoLogo Standard: CCD 039

## Printing Cartridges



- 5) To be authorized to carry the EcoLogo<sup>®</sup>, the remanufactured toner cartridges, in addition to satisfying requirements under Section 3, must:

### CFC or chlorinated organic solvents

- (a) not be manufactured in a facility which makes use of CFCs or chlorinated organic solvents in the washing process.

### Replacement parts

- (b) also meet requirements under Sections 4 (c), 4(d) and 4(e) if a new part is being used as replacement in the toner cartridge.
- (c) where applicable provide information on the chip reset.

### Labeling

- (d) clearly indicate the remanufacturing company's brand or company's name.

### Warranty

- (e) be accompanied by a warranty which shall provide for replacement, repair or refund of the purchase price of defective cartridges.

### Printing Quality and Capacity<sup>3</sup>

- (f) demonstrate a printing capacity of at least 90% of the original model as determined by either one of the following tests, as applicable, and/or equivalent acceptable tests:
- (i) either ISO/IEC 19752, or ISO/IEC 19798 or ISO/IEC 24712 as may be appropriate on randomly selected toner cartridges;

The results from the above tests shall be made available publicly and/or upon request

Please note that the EcoLogo<sup>®</sup> Program may request for re-submission of tests results if there are changes in the production processes and/or in the toner composition.

### Reusable Parts

- (g) comprise a minimum of 75% by weight of recycled parts prior to being refilled with toner.

---

<sup>3</sup> Amended to ensure adequacy of the requirement to meet the printing capacity criteria

## Socially and Environmentally Responsible Manufacturing

Socially and environmentally responsible manufacturing includes careful attention to both environmental management and working conditions. This section includes criteria for assessing and improving environmental and workplace management.

- 6) To be authorized to carry the EcoLogo<sup>®</sup>, the following requirements must be met:
  - a) Manufacturers must document compliance with local, regional and national environmental and occupational health and safety requirements. Violations must be reported along with plans for addressing noncompliance;
  - b) Manufacturing facilities must provide documentation that they have in place an effective environmental management system. Facilities that are certified to ISO 14001, EMAS, or another equivalent certification will be considered to have met this criterion. Manufacturing facilities that do not hold an EMS certification must provide written documentation of their environmental management system;
  - c) Material Safety Data Sheets should be available publicly and/or upon request

## Verification

- 7) To verify a claim that a product meets the criteria listed in the document, the EcoLogo<sup>®</sup> Program will require access, as is its normal practice, to relevant quality control and production records and the right of access to production facilities on an announced basis.
- 8) Compliance with sections 3(a) and 3(b) shall be attested to by a signed statement of the Chief Executive Officer or the equivalent officer of the manufacturer. The EcoLogo<sup>®</sup> Program shall be advised in writing immediately by the licensee of any non-compliance which may occur during the term of the license. On the occurrence of any non-compliance, the license may be suspended or terminated as stipulated in the license agreement.

## Conditions for EcoLogo<sup>®</sup> Use

- 9) The EcoLogo<sup>®</sup> may appear on wholesale or retail packaging, or on the product itself, provided that the product meets the requirements in this document.
- 10) It is required that a criteria statement appears with the EcoLogo<sup>®</sup> whenever the EcoLogo<sup>®</sup> is used in association with the printing cartridges. The intent of this statement is to provide clarification as to why the product was certified and to indicate constraints to which the certification is limited. This is to ensure no ambiguity over, or misrepresentation of, the reason(s) for certification.

The suggested criteria statement wording for this product type is "Printing Cartridges". The licensee may propose other wording for the criteria statement, but any such proposed wording must be approved by the EcoLogo<sup>®</sup> Program.

# EcoLogo Standard: CCD 039

## Printing Cartridges



- 11) All licensees and authorized users must comply with the Program's *Guide to Proper Use of the EcoLogo®* regarding the format and usage of the EcoLogo®.
- 12) Any accompanying advertising must conform with the relevant requirements stipulated in this document, the license agreement and the Program's *Guide to Proper Use of the EcoLogo®*.

For additional copies of this criteria document or for more information about the EcoLogo® Program, please contact:

Toll free: 1-800-478-0399, Telephone: (613) 247-1900, Email: [info@ecologo.org](mailto:info@ecologo.org)