Green Label Product
Toner Cartridge
(TGL-30/1-R4-15)

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1.Background

The demand for toner cartridges has been on the rise from its uses with other office appliances such as laser printers, personal printers, photocopiers, facsimile machines and multifunction copiers. The major components of toner cartridges consists of materials made from plastic, electronic parts and toner. While handling or replacing new toner cartridges, the hazardous substances may disperse and put human health at risk from exposure. The empty toner cartridges and toners, which are discarded into the community may cause hazardous substances contamination to the environment.

Therefore, the Green Label for Toner Cartridge will focus on consumer safety, limiting the use of heavy metals in plastic parts for toner cartridge as well as marking of plastic packaging and existence of return policy of used toner cartridge to promote recycling and reduce environmental impact after use.

2.Scope

The Green Label for Toner Cartridge covers only toner cartridges.

3. Definition

3.1 Toner Cartridge (Powder Ink) refers to the cartridge that contains toner with or without the drum and developing unit for use with laser printers, personal printers, photocopiers, facimile machines and multifunction copiers.

3.2 Toner cartridge refers to the toner cartridge that is produced or assigned to be produced by the manufacturers of laser printers, personal printers, photocopiers, facimile machines and multifunction copiers.

4. General requirements

4.1 Toner cartridge shall have the quality and quantity as specified by the manufacturer and have cartridge yield value test in accordance with ISO/IEC 19752[1] or ISO/IEC 19798[2].

Note: Photocopier toner is exempt from requirement 4.1

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[1] ISO/IEC 19752: Method for the determination of toner cartridge yields for monochromatic electro photographic printers and multi-function devices that contain printer components.

[2] ISO/IEC 19798: Method for the determination of toner cartridge yield for colour printers and multi-function devices that contain printer components.

Verification Method

The applicant shall submit a declaration letter and test report from toner cartridge manufacturer on toner cartridge yield in accordance with ISO/IEC 19752 or ISO/IEC 19798.

4.2 The manufacturer shall be accredited by Quality Management System such as ISO9001[3] standard.

Verification Method

The applicant shall submit Quality Management System certificate as specified in requirement 4.2.

4.3 Manufacturing, transportation and post-industrial waste disposal shall comply with national laws and regulations or the manufacturer shall be accredited by ISO14001.

Verification Method

The applicant shall declare one of the following documents:

1. License or evidence ensuring the production, transportation and postindustrial-waste disposal comply with national laws and regulations.
2. Manufacturer's ISO14001 certificate

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[3] ISO 9001: Quality management.

5. Product environmental requirements

5.1 Return of used product system shall be provided as follows:

The manufacturer shall have an effective used-product return policy and system, which shall be declared in product document or on product packaging.

Verification Method

The applicant shall submit a document or evidence of used toner cartridge return policy and practice as well as specifying how this information is included in the product document or on product packaging. The applicant shall declare the process for returned toner cartridges disposal by licensed agency or present evidence the existence of transporting toner cartridges for disposal according to national laws and regulations.

5.2 The design of the toner cartridge body shall consider its recyclability and reuse as follows:

(1) The cartridge parts can be easily removed and disassembled from each other.

(2) The materials and components used are recyclable.

Verification Method

The applicant shall submit a declaration letter ensuring that toner cartridge design is in accordance with eco design or 3R design.

5.3 Separable plastic parts weighing more than or equal to 25 g or has a flat surface of more than or equal to 200 mm^2 shall be marked properly for plastic identification and symbol used shall be in accordance with TIS1310[4] or ISO1043[5] or ISO11469[6].

Verification Method

The applicant shall submit a declaration letter ensuring that separable plastic parts are marked properly for plastic identification in accordance with TIS1310 or ISO1043 or ISO11469 as well as submitting a picture of plastic symbol on the plastic parts for inspection.

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[4]TIS 1310: Symbol standard for recycling plastics

[5]ISO 1043: Plastics –Symbols and abbreviated terms

[6]ISO 11469: Plastics –Generic identification and marking of plastic products

[7] IEC 62321: Electro technical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominateddiphenyl ethers).

5.4 Each plastic casing part weighing more than 25g shall be made from one single polymer or polymer blends. Total plastic casing parts weighing more than 25g shall be made from four or fewer types of mutually separable polymers or polymer blends.

Verification Method
The applicant shall submit a declaration letter ensuring that plastic casing parts meets the requirement 5.4.

5.5 Plastic parts of toner cartridge weighing more than or equal to 25g shall not contain heavy metals, heavy metal compounds and flame retardants. Heavy metals (lead, mercury, and chromium hexavalent) due to impurities or traces deriving from raw materials in plastic parts shall not exceed 0.1 % (1000 mg/kg) by weight, for cadmium 0.01% (100 mg/kg) by weight, and for flame retardants (PBB and PBDE) 0.1 % (1000 mg/kg) by weight.

Note: If total chromium (Cr) content is less than or equal to 1,000 mg/kg, the criteria for chromium hexavalent (Cr^{6+}) content shall be considered.

Table 1 The regulatory standard for heavy metals, heavy metal compounds and flame retardants.

Substance	Heavy metals or heavy metal compounds				Flame retardants	
	Pb	Cd	Hg	Cr^{6+}**	PBB	PBDE
Content (mg/kg)	≤1000	≤100	≤1000	≤1000	≤1000	≤1000

Verification Method

The applicant shall submit one of the following documents:
1. If the product manufacturer has established the Hazardous Substance Process Management system, the applicant shall submit the following documents:
   1.1 Certification from product manufacturer to declare compliance with the requirement including the manual or evidence to confirm the existence of Hazardous Substance Process Management.
   1.2 Declaration letter and/or test results from part manufacturer confirming heavy metal and flame retardants in plastic parts are in accordance with IEC 62321[7] or other equivalent standard.
2. If manufacturer doesn't have the Hazardous Substance Process Management system in place, the applicant shall submit test results for heavy metal and flame retardants in plastic parts weighing more than or equal to 25 g in accordance with IEC 62321 or other equivalent standard.

5.6 The photoconductor drums shall not contain cadmium, lead, mercury, selenium and compound of these metals.

Verification Method
The applicant shall submit a declaration letter ensuring that the photoconductor drums meet the requirement 5.6.

5.7 Organic chlorinated compounds such as CFCs, listed in Table 2, shall not be used during cleaning of parts

Verification Method
The applicant shall submit a declaration letter ensuring the compliance with requirement 5.7.

Table 2 Groups of synthetic chemical compounds composed of chlorine.[8]

Specific CFCs (five types of CFCs)	*Trichlorofluoromethane*	*Dichlorotetrafluoroethane*
	Dichlorodifluoromethane	*Chloropentafluoroethane*
	Trichlorotrifluoroethane	
Other CFCs	*Chlorotrifluoromethane*	*Pentachlorotrifluoropropane*
	Pentachlorofluoromethane	*Tetrachlorotetrafluoropropane*
	Tetrachlorodifluoroethane	*Trichloropentafluoropropane*
	Heptachlorofluoropropane	*Dichlorohexafluoropropane*
	Hexachlorodifluorpropane	*Chloroheptafluoropropane*
	Carbon Tetrachloride	
	1,1,1-Trichloroethane	
CFC substitutes (HCFCs)	*Dichlorofluoromethane*	*Pentachlorofluoropropane*
	Chlorodifluoromethane	*Tetrachlorodifluoropropane*
	Chlorofluoroethane	*Trichlorotrifluoropropane*
	Tetrachlorofluoroethane	*Dichlorotetrafluoropropane*
	Trichlorodifluoroethane	*Chloropentafluoropropane*
	Dichlorotrifluoroethane	*Tetrachlorofluoropropane*
	Chlorotetrafluoroethane	*Trichlorodifluoropropane*
CFC substitutes	*Trichlorofluoroethane*	*Dichlorotrifluoropropane*

[8] Handbook for the Montreal Protocol on Substances that Deplete the Ozone Layer (2012)

Table 2 cont' Groups of synthetic chemical compounds composed of chlorine.[8]

(HCFCs)	*Dichlorodifluoroethane*	*Chlorotetrafluoropropane*
	Chlorotrifluoroethane	*Trichlorofluoropropane*
	Dichlorofluoroethane	*Dichlorodifluoropropane*
	Chlorodifluoroethane	*Chlorotrifluoropropane*
	Chlorofluroethane	*Dichlorofluoropropane*
	Hexachlorofluoropropane	*Chlorodifluoropropane*
	Pentachlorodifluorapropane	*Chlorofluoropropane*
	Tetrachlorotrifluoropropane	
	Trichlorotetrafluoropropane	
	Dichloropentafluoropropane	
	Chlorohexafluoropropane	

5.8 Operating instructions shall be provided clearly on the product packaging or in the product user manual with details as follows:

(1) Name of company (or trademark) with the product series

(2) Proper handling of product and toner cartridge applicable to the product series.

(3) After-sales service and contact information

(4) Clear instructions on returns of used toner cartridge and location for return available in user manual, the company's website or other channels.

(5) Safety handling shall include

- Proper package opening
- Suitable storage method and out-of-children's reach
- Measures for accidents or toner ingestion accident
- Measures when the toner adheres to clothing or hands, or enter eyes or mouth
- Caution to avoid toner inhalation or contact

Verification Method

The applicant shall submit a declaration letter as well as provide the product user manual or evidence certifying the compliance with requirement 5.8.

5.9 Toners

5.9.1Toners shall not contain the following heavy metals in the formula: mercury, lead, cadmium, hexavalent chromium, nickel and their compounds[9].

Verification Method

The applicant shall submit a declaration letter from toner cartridge manufacturer ensuring that toners meet requirement 5.9.1

5.9.2 The following substances shall not be used in toners formula:

(1) Substance required to be marked with hazard symbol "R" in accordance with Annex I of EC Directive 67/548/EEC or "H" in accordance with Appendix VI of Regulation (EC) No.1272/2008[10].

R40 or H351 (Limited evidence of a carcinogenic effect)
R45 or H350 (May cause cancer)
R46 or H340 (May cause heritable genetic damage)
R49 or H350i (May cause cancer by inhalation)
R60 or H360F (May impair fertility)
R61 or H360D (May cause harm to the unborn child)
R62 or H361f (Possible risk of impaired fertility)
R63 or H361d (Possible risk of harm to the unborn child)
R68 or H341 (Possible risk of irreversible effects)

Verification Method

The applicant shall submit a declaration letter from toner cartridge manufacturer ensuring that the substances specified in Annex I of EC Directive 67/548/EEC or Appendix VI of Regulation (EC) No.1272/2008 has not been used in toner formula and meet requirement 5.9.2 (1).

[9] Eco Mark. Toner Cartridge (A. Original toner cartridge). No.132 Version 1.9. Japan, 2013. [Online].

[10] List of chemical substances can refer at Regulation (EC) No. 1272/2008 of the European Parliament and of the council of 16 December2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006, annex VI harmonised classification and labeling – tables, table 3.2 :The list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC (page L 353/923 onward)

(2) Substances classified as carcinogenic, mutagenic and toxic to reproduction in TRGS905[11].

Verification Method
The applicant shall submit a declaration letter from toner cartridge manufacturer ensuring that substances classified as carcinogenic, mutagenic and toxic to reproduction in TRGS905 has not been used in toner.

(3) Substances required to be marked with hazard symbol on the whole product in accordance with Annex II of EC Directive 67/548/EEC and EC Directive 1999/45/EC.

Verification Method
The applicant shall submit a declaration letter from toner cartridge manufacturer ensuring that toner contains no substances required to be marked with hazard symbol on the whole product in accordance with Annex II of EC Directive 67/548/EEC and EC Directive 1999/45/EC.

(4) Substances required to be marked by R43 (possibly cause irritation when contact to skin) in accordance with Annex III of EC Directive 67/548/EEC.

Verification Method
The applicant shall submit a declaration letter from toner cartridge manufacturer ensuring that toner contains no substances required to be marked by R43 in accordance with Annex III of EC Directive 67/548/EEC.

5.9.3 Azo colorants that degenerates into one or more of the amines listed in Table 3 shall not be used.

Verification Method
The applicant shall submit a declaration letter from toner cartridge manufacturer ensuring that toners meet requirement 5.9.3

[11]The German Technical Rule for Hazardous substance

Table 3 Aromatic amines (According to EU Assembly/Council Directive 2002/61/EC)

No.	Chemical Substances	CAS No.
1	Biphenyl-4-ylamine, 4-aminobiphenyl xenylamine	92-67-1
2	Benzidine	92-87-5
3	4-chloro-*o*-toluidine	95-69-2
4	2-naphthylamine	91-59-8
5	*o*-aminoazotoluene, 4-amino-2',3-dimethylazobenzene, 4-*o*-tolylazo-*o*-toluidine	97-56-3
6	2-amino-4-nitrotoluene, 2-Methyl-5-nitroaniline, 5-Nitro-o-toluidine	99-55-8
7	*p*-chloroaniline, 4-chloroaniline	106-47-8
8	4-methoxy-*m*-phenylenediamine, 2,4-diaminoanisole	615-05-4
9	4,4'-methylenedianiline , 4,4’-diaminodiphenylmethane	101-77-9
10	3,3’-dichlorbenzidine, 3,3'-dichlorobiphenyl-4,4'-ylenediamine	91-94-1
11	3,3’-dimethoxybenzidine	119-90-4
12	3,3’-dimethylbenzidine	119-93-7
13	4,4’-diamino-3,3’ - dimethyldiphenylmethane	838-88-0
14	*p*-cresidine	120-71-8
15	4,4’-Methylene-bis - (2-Chloroaniline)	101-14-4
16	4,4’-oxydianiline	101-80-4
17	4,4'-thiodianiline	139-65-1
18	*o*-toluidine, 2-aminotoluene	95-53-4
19	4-methyl-*m*-phenylenediamine	95-80-7
20	2,4,5-trimethylaniline	137-17-7
21	*o*-anisidine	90-04-0
22	4-aminoazobenzene	60-09-3

5.10 Plastic packaging shall be symbolized to indicate the type of plastic according to TIS1310 for Recycling Plastic or an abbreviation to indicate the type of plastic according to ISO1043 or ISO11469.

Verification Method

The applicant shall submit a declaration letter ensuring that plastic packaging is symbolized to indicate the type of plastic used according to TIS1310 or ISO1043 or ISO11469 and declare evidence such as sample of plastic packaging or a picture of symbolized plastic packaging**.**

6. Testing and certification

6.1 Testing

6.1.1 Laboratory

6.1.1.1 The laboratory shall be operated by the government or under governmental control as defined by clause 5 of the Industrial Standard Act B.E. 2511 (and its addenda) or certified by TIS. 17025 or ISO/IEC 17025.

6.1.2 Test results

6.1.2.1 Test results shall comply with testing methods defined in this document. If "comparable test methods" are submitted, the following documents shall be submitted with the test results:

1) Declaration letter from the laboratory verifying that the test methods are comparable to the methods defined in this document.
2) Method validation documents which enable unequivocal scientific verification that the testing methods and requirements defined in this document have been met.

6.1.2.2 Test results shall have been issued no more than 3 years following the application date.

6.2 Declaration letter to verify compliance with Green Label requirements

6.2.1 Shall have been issued no more than 3 years following the Green Label application date.

6.2.2 Shall be signed by the authorized directors and have the company seal affixed (if relevant).