



Green Label Product Photocopiers (TGL-27-R4-15)

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Photocopier TGL-27-R4-15

1. Background

The photocopier is a high energy consuming electrical appliance, which generates heat on stand-by mode. Furthermore, when photocopier is in use, the chemical substances in toner and ink may disperse in the air causing negative impact on user's health and environment. Moreover, most photocopiers generate loud noise, which is the culprit of noise pollution.

Therefore, the Green Label for photocopier will focus on energy-saving, reducing dust and chemical substances emitted into the air as well as controlling noise emission for customer safety and energy conservation. In addition, the emphasis on plastic labeling will encourage recycling and reduces the burden for disposal.

2. Scope

This Green Label applies to all sizes of dry system copiers and multifunction copiers for both color and monochrome copies, which are operated manually and/or automatically. However, copiers without photoreceptor drum will not be included.

3. Definition

3.1 Photocopier refers to a machine that reproduces a document copy. There are 2 systems in the machine: analog and digital. The photocopier uses light to reproduce the image and causing the electric charge to attract the toner onto the photoreceptor drum. In other words, the reflection of image by light enters the circuit, which transformed the image into electric signal. The electric signal produces electric charges that attract the toner onto the photoreceptor drum and print out the original copy on paper or other materials.

3.2 Analog photocopier refers to a photocopier machine that uses light to reproduce an image and electric charge that attract the toner onto the photoreceptor drum to print the original copy on the paper or other materials.

3.3 Digital photocopier refers to a photocopier machine that uses light to reproduce an image, which enters the circuit and transformed the image into electric signal. The electric signal produces electric charges that attract the toner onto the photoreceptor drum and print out the original copy on paper or other materials.

3.4 Multifunction copier refers to a photocopier machine that reproduces a document copy by static electricity. Its main function is to produce a document copy with a toner, but it can also print document on the paper or receive and send data similar to printers, facsimile or scanner.

3.5 Photoreceptor drum refers to a receptor that, by static electricity, will attract the toner. The drum can be in cylinder shape or other shapes.

3.6 **Declaration letter** refers to a document issued by the applicant or the manufacturer to ensure compliance to product environmental requirements for respective products.

3.7 **Certificate** refers to a document issued by a certification body, which has been accredited by the International Accreditation Forum (IAF).

3.8 **Authorized director** refers to the person who has been authorized to sign on behalf of a juristic person under Civil and Commercial code.

4. General requirements

4.1 The product shall be certified or passed the safety standard under TIS 1561¹: Information technology equipment safety or IEC 60950 part 1²or EN 60950-1³: or other equivalent standards.

Verification Method

The applicant shall submit a certificate or test results for electrical safety of photocopier as required under TIS 1561 or IEC 60950 part 1 or EN 60950-1: Safety of Information Technology Equipment or other equivalent standards.

4.2 The product shall be certified or passed the Electromagnetic Compatibility (EMC) test under TIS 1956⁴; or CISPR 22⁵ Standard: Information technology equipment-Radio disturbance characteristics-Limits and methods of measurement; or EN 55022⁶: Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement; or other equivalent standard.

Verification Method

The applicant shall submit test results for Electromagnetic Compatibility (EMC) under TIS 1956, or CISPR 22, or EN 55022, or other equivalent standard.

Note: If the model code on the application does not match the code specified on the EMC test, the applicant shall submit documents and evidence to show how the model codes are related or show how the model code from the manufacturer and the commercial model name are related.

4.3 Manufacturing, transportation and post-industrial waste disposal shall comply with national laws and regulations or the manufacturer shall be accredited by ISO14001⁷.

¹ TIS.1561: มาตรฐานผลิตภัณฑ์อุตสาหกรรม บริษัทเทคโนโลยีสารสนเทศเฉพาะด้านความปลอดภัย

² IEC 60950 part 1: Information technology equipment -Safety - P.1: General requirements

³ EN 60950-1 : Information technology equipment - Safety - P.1: General requirements

⁴ TIS. 1956: มาตรฐานผลิตภัณฑ์อุตสาหกรรมบริษัทเทคโนโลยีสารสนเทศ: ซีตจำกัดสัญญาณรบกวนวิทยุ

⁵ CISPR 22: Information technology equipment-Radio disturbance characteristics-Limits and methods of measurement

⁶ EN 55022 : Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

⁷ ISO 14001: Environmental Management System

Verification Method

The applicant shall submit one of the following documents:

1. License or evidence to prove that manufacturing, transportation, and post-industrial waste disposal comply with national laws and regulations.
2. Certification of ISO14001 from the manufacturer.

5. Product environmental requirements

5.1 Power consumption shall comply with the latest version of the International Energy Star Program Requirements for Imaging Equipment.

Verification Method

The applicant shall submit one of the following documents:

1. Test results of power consumption of the photocopier under various conditions.
The test shall be conducted according to the latest version of International Energy Star Program for imaging equipment.
2. International Energy Star certificate
3. Other documents to ensure the applicable products are certified by International Energy Star Program.

5.2 The emission rate of dust, ozone, total volatile organic compounds (TVOC), styrene, and benzene during operation shall comply with Table 1⁸.

Table 1 Emission rate of dust, ozone, TVOC, styrene, and benzene during operation.

Type of pollutants		Emission rate (unit: milligram per hour)	
		Monochrome	Color
Dust		≤4.0	≤4.0
Ozone		≤1.5	≤3.0
TVOC	Print phase	≤10	≤18
	Ready phase	Floor-mounted	≤2.0
		Table top	≤1.0
Styrene		≤1.0	≤1.8
Benzene		≤0.05	≤0.05

Note: Test methods based on Appendix 2 of Germany Eco-Label RAL-UZ-171

Verification Method

The applicant shall submit the test results for emission rate of dust, ozone, volatile organic compounds, styrene and benzene based on Table 1, which is in accordance with Appendix 2 of Germany Eco-Label RAL-UZ-171.

⁸

Eco Mark No.155 "Imaging Equipment Such As Copiers, Printers, etc. Version 1.

5.3 Noise emissions from the product during its operation shall be within specified limits. The noise emission shall be calculated based on Table 2, however the A-weighted sound power level ($L_{WA,d}$) value shall not exceed 75 decibels (dB).

Table 2 Noise emission of photocopiers in operation

A-weighted sound power level: $L_{WA,d}$ (dB)	
Monochrome	Color
$\leq 0.35 * S_{bw} + 59$ and ≤ 75	parallel equipment : $\leq 0.3 * S_{co} + 61$ and ≤ 75 Serial equipment : Submit reference value for the equipment of $S_{co} < 0.5 S_{bw}$

Calculation method is in accordance with that of Germany Eco-Label RAL-UZ-171.

Note: S_{bw} = Operating speed in pages per minute for monochrome copying
 S_{co} = Operating speed in pages per minute during color copying

Verification Method

The applicant must submit the test results of noise emission according to test method under ISO 7779⁹: Acoustics-Measurement of airborne noise emitted by information technology and telecommunications equipment, and declare the A-weighted sound power level ($L_{WA,d}$) value in accordance with ISO 9296¹⁰: Acoustics-Declared noise emission value of computer and business equipment.

5.4 3R Design for product¹¹

5.4.1 Design of product shall follow 3R Design principle as specified in the check list for 3R Design.

Verification Method

The applicant shall submit a declaration letter ensuring that the photocopier has been designed based on the principle of 3R Design (specified in the check list for 3R Design, Appendix A).

5.4.2 Each individual plastic casing part weighing more than 25g shall be made of one single polymer or polymer blends. In addition, all plastic parts weighing more than 25 g shall be made of four or fewer types of mutually separable polymers or polymer blends.

Verification Method

The applicant shall submit a declaration letter ensuring requirement 5.4.2 has been met and shall declare the type of plastic used along with respective plastic labels.

5.5 Plastic parts

5.5.1 Plastic parts weighing more than 25 g shall not contain heavy metals, heavy metal compounds, and flame retardants. Heavy metals (lead, mercury, and

⁹ ISO 7779 : Acoustics-Measurement of airborne noise emitted by computer and business equipment

¹⁰ ISO 9296 : Acoustics-Declared noise emission value of computer and business equipment

¹¹ Eco Mark No.155 "Imaging Equipment such as Copiers, Printers, etc. Version 1.

chromium hexavalent) due to impurities or traces deriving from raw materials in plastic parts shall not exceed 0.1 % (1,000 mg/kg) by weight, for cadmium 0.01% (100 mg/kg) by weight, and for flame retardants (PBB and PBDE) 0.1 % (1,000 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 (Cr⁶⁺) shall be considered.

Verification procedure

Applicant shall submit one of the following documents:

- 1) If 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 metals and flame retardants in plastic parts are in accordance with IEC 62321³ or other equivalent standards.
- 2) If manufacturer doesn't have the Hazardous Substance Process Management system in place, the applicant shall submit test results for heavy metals and flame retardants in plastic parts weighing more than 25 g in accordance with IEC 62321⁶ or other equivalent standards.

5.5.2 Plastic casing part weighing more than 25 g shall not contain halogen-containing polymer. Exception is made for:

- Fluoroorganic additives used for improving the physical properties of plastics, which must not exceed 0.5% by weight.
- Fluorinated plastics such as Teflon and others
- Plastic parts which are installed in the direct vicinity of heating and fusing units.
- Large plastic casting parts made of reused plastic, which shall be marked according to ISO 1043¹² or ISO 11469¹³.

Verification Method

The applicant shall submit a declaration letter that requirement 5.5.2 has been met.

5.5.3 Flame retardants used for plastic casing parts that weights more than 25 g shall be listed with their CAS number according to ISO 1043-4¹⁴. Exception is made for large reused plastic casing parts weighing more than 25 g.

¹² ISO 1043: Plastics –Symbols and abbreviated terms

¹³ ISO 11469: Plastics –Generic identification and marking of plastic products

¹⁴ ISO 11469-4: Plastics - symbols and abbreviated terms - part 4: flame retardants

Verification Method

Applicant shall submit a declaration letter for flame retardant list and CAS number for plastic parts weighing more than 25 g, or declare the code number in accordance with ISO 1043-4. Exception is made for large reused plastic casing parts weighing more than 25 g.

5.5.4 Plastic part weighing more than or equal to 25 g shall not contain substances from categories in Table 3.2 Appendix VI of Regulation (EC) No.1272/2008 as follows¹⁵.

- Carcinogenic category 1 (Carc. 1)
- Carcinogenic category 2 (Carc. 2)
- Carcinogenic category 3 (Carc. 3)
- Mutagenic category 1 (Mut. 1)
- Mutagenic category 2 (Mut. 2)
- Mutagenic category 3 (Mut. 3)
- Toxic to reproduction category 1 (Repr. 1)
- Toxic to reproduction category 2 (Repr. 2)
- Toxic to reproduction category 3 (Repr. 3)

Verification Method

The applicant shall submit a declaration letter that requirement 5.5.4 has been met.

5.5.5 Plastic parts weighing more than 25 g per or has a plane surface of more than 200 square mm must be symbolized by plastic type under TIS 1310¹⁶ for recycling plastics or an abbreviation indicating the type of plastic according to ISO 1043 or ISO 11469.

Verification Method

The applicant shall submit a declaration letter ensuring that plastic parts weighing more than 25 g and has a plane surface of more than 200 square mm are clearly symbolized by plastic type under TIS 1310 or an abbreviation to indicate the type of plastic used according to ISO 1043 or ISO 11469.

5.6 Batteries (applicable to models containing back up battery in circuit board)

- Shall not contain lead and lead compounds
- Amount of Hg and Cd shall be in accordance with the latest version of EU directive
- Shall be replaced or removed without disassembling the printed circuit board.

¹⁵ Regulation (EC) No. 1272/2008 of the European Parliament and of the council of 16 December 2008 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 (หน้า L 353/923 เป็นต้นไป)

¹⁶ มอก.1310: มาตรฐานผลิตภัณฑ์อุตสาหกรรมสัญลักษณ์สำหรับพลาสติกแปรใช้ใหม่

Verification Method

The applicant shall submit a declaration letter ensuring requirement 5.6 has been met as well as a declaration letter from the battery manufacturer.

5.7 Toners

5.7.1 Toners shall not contain mercury, lead, cadmium, nickel and chromium (VI), except high molecular weight nickel coloring substance in toner.

5.7.2 Toners shall not contain Azo colorants (dye or pigment) in ink that can degenerate into one or more amines derivatives (test method shall be in accordance with Section 35 of the German Law on Foods and Sundries). Amines are shown in Table 3.

Table 3 Compounds of aromatic amine from decomposition of Azo groups¹⁷.

No.	Substances	CAS no.
1	Biphenyl-4-ylamine, 4-aminobiphenyl xenylamine	92-67-1
2	Benzidine	92-87-5
3	4-chloro- <i>o</i> -toluidine	95-69-2
4	2-naphthylamine	91-59-8
5	<i>o</i> -aminoazotoluene, 4-amino-2',3'- dimethylazobenzene, 4- <i>o</i> -tolylazo- <i>o</i> -toluidine	97-56-3
6	5-nitro- <i>o</i> -toluidine	99-55-8
7	4-chloroaniline	106-47-8
8	4-methoxy- <i>m</i> -phenylenediamine	615-05-4
9	4,4'-methylenedianiline 4,4'-diaminodiphenylmethane	101-77-9
10	3,3'-dichlorobenzidine 3,3'-dichlorobiphenyl-4,4'-ylenediamine	91-94-1
11	3,3'-dimethoxybenzidine <i>o</i> -dianisidine	119-90-4
12	3,3'-dimethylbenzidine 4,4'-bi- <i>o</i> -toluidine	119-93-7
13	4,4'-methylenedi- <i>o</i> -toluidine	838-88-0
14	6-methoxy- <i>m</i> -toluidine (<i>p</i> -cresidine)	120-71-8
15	4,4'-methylene-bis-(2-chloro-aniline) 2,2'-dichloro-4,4'-methylenedianiline	101-14-4
16	4,4'-oxydianiline	101-80-4
17	4,4'-thiodianiline	139-65-1
18	<i>o</i> -toluidine, 2-aminotoluene	95-53-4
19	4-methyl- <i>m</i> -phenylenediamine	95-80-7
20	2,4,5-trimethylaniline	137-17-7
21	<i>o</i> -Anisidine	90-04-0
22	4-Aminoazobenzene	60-09-3

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REACH Regulations: Annex XVII Appendix 8 Entry 43 – Azocolourants

Verification Method

The applicant shall submit a declaration letter ensuring that toners or ink does not contain Azo colorants (dye or pigment) or submit test results in accordance with Section 35 of the German Law on Foods and Sundries.

5.7.3 Toners shall not contain hazardous substances from categories in Table 3.1 of Appendix VI of EU regulation no.1272/2008/EC as follows:

- Carcinogenic according to categories 1A, 1B or 2
- Mutagenic according to categories 1A, 1B or 2
- toxic to reproduction according to categories 1A, 1B or 2

Verification Method

The applicant shall submit a letter of declaration ensuring requirement 5.7.3 has been met as well as a declaration letter from toner manufacturer.

5.8 Toner cartridges and toner containers

5.8.1 Plastic parts

See section 5.2.5 Requirements for plastic materials

5.8.2 Plastic part shall be made of one single polymer or polymer blends. All plastic parts shall be made of four or fewer types of mutually separable polymers or polymer blends.

Verification Method

The applicant shall submit declaration letter certifying that plastic parts are meeting the requirement 5.8.2.

5.9 The photocopier shall be capable of printing on 100% recycled paper.

Verification Method

The applicant shall submit a declaration letter ensuring that the photocopier is capable of printing on 100% recycled paper.

5.10 The availability of the spare parts supply shall be guaranteed for at least 5 years after the end of the production of the photocopier machine.

Verification Method

The applicant shall submit a declaration letter ensuring that requirement 5.10 has been met.

5.11 The photoconductor drums shall not contain cadmium, lead, mercury and selenium.

Verification Method

The applicant shall submit a declaration letter that requirement 5.11 has been met.

5.12 Double-sided copying or duplex unit

Photocopier shall have double-sided printing function in accordance with the criteria in Table 4. If the photocopier passed the test for double-sided printing on office paper under color printing condition, then it is not necessary to test in monochrome printing condition.

Table 4 The minimum criteria in copying paper for photocopier¹⁸.

Product speed (Pages Per Minute; PPM)		Minimum criteria for double-sided copying
Color	Monochrome	
≤19	≤24	The manual feeding paper shall be available for double-sided copying.
>19-39	>24-44	Double-sided copying equipment shall be installed and set as default, or shall be made as additional equipment.
>39	>44	Double-sided copying equipment shall be installed and set as default.

Verification Method

The applicant shall submit a declaration letter ensuring the photocopier has double-sided printing according to Table 4 and this information is also available in product document.

5.13 Substances listed in Table 5 shall not be used during production process; during end production stage of the photocopier and printed circuit board; or for cleansing the machine parts for reuse.

¹⁸

The blue angel RAL-UZ 171 Office Equipment with Printing Function (Printers, Copiers, Multifunction Devices) edition July 2012.

Table 5 The specific CFCs (five types), other CFCs, carbon tetrachloride, trichloroethane, and HCFCs.

CFC5s	Trichlorofluoromethane	HCFCs	Pentachlorofluoropropane
	Dichlorodifluoromethane		Tetrachlorodifluoropropane
	Trichlorotrifluoroethane		Trichlorotrifluoropropane
	Dichlorotetrafluoroethane		Dichlorotetrafluoropropane
	Chloropentafluoroethane		Chloropentafluoropropane
Other CFCs	Chlorotrifluoromethane		Tetrachlorofluoropropane
	Pentachlorofluoromethane		Trichlorodifluoropropane
	Tetrachlorodifluoroethane		Dichlorotrifluoropropane
	Heptachlorofluoropropane		Chlorotetrafluoropropane
	Hexachlorodifluoropropane		Trichlorofluoropropane
	Pentachlorotrifluoropropane		Dichlorodifluoropropane
	Tetrachlorotetrafluoropropane		Chlorotrifluoropropane
	Trichloropentafluoropropane		Dichlorofluoropropane
	Dichlorohexafluoropropane		Chlorodifluoropropane
	Chloroheptafluoropropane		Chlorofluoropropane
	Carbon Tetrachloride		
	1,1,1-Trichloroethane		
HCFCs	Dichlorofluoromethane		
	Chlorodifluoromethane		
	Chlorofluoroethane		
	Tetrachlorofluoroethane		
	Trichlorodifluoroethane		
	Dichlorotrifluoroethane		
	Chlorotetrafluoroethane		
	Trichlorofluoroethane		
	Dichlorodifluoroethane		
	Chlorotrifluoroethane		
	Dichlorofluoroethane		
	Chlorodifluoroethane		
	Chlorofluoroethane		
	Hexachlorofluoropropane		
	Pentachlorodifluoropropane		
	Tetrachlorotrifluoropropane		
	Trichlorotetrafluoropropane		
	Dichloropentafluoropropane		
Chlorohexafluoropropane			

Verification Method

The applicant shall submit a declaration letter ensuring substances listed in Table 5 has not been used during end production stage of the photocopier and printed circuit board; or for cleansing the machine parts for reuse.

5.14 Packaging

5.14.1 Plastic packaging

(1) Plastic packaging shall not contain substances listed in Table 5.

Verification Method

The applicant shall submit a declaration letter that substances listed in Table 5 has not been used in plastic packaging.

(2) Plastic package shall be free of halogens and organic halogenides.

Verification Method

The applicant shall submit a declaration letter ensuring that plastic packaging is free of halogens and organic halogenides.

(3) Plastic packaging shall be symbolized to indicate the type of plastic according to TIS 1310 for Recycling Plastic or an abbreviation to indicate the type of plastic according to ISO 1043 or ISO 11469.

Verification Method

The applicant shall submit a declaration letter ensuring that plastic packaging is symbolized to indicate the type of plastic used according to TIS 1310 or ISO 1043 or ISO 11469 and declare evidence such as sample of plastic packaging or a picture of symbolized plastic packaging.

5.15 The applicant shall have a take-back policy for used toner cartridge and photoreceptor drum. The information for take-back policy shall be indicated clearly on the photocopier, documents, or product manual or on the applicant's website.

Verification Method

The applicant shall submit the evidence ensuring that take-back policy for used toner cartridge and photoreceptor drum is available with clear information on the photocopier, documents, or product manual.

5.16 Reporting (in Thai language) of the following information in user manual or attached document for customers:

- (1) Instructions on the proper positioning of the machine
- (2) Instruction on how to return used products, packaging and consumables through the manufacturer's take-back service (if available) or disposed of as specified by law
- (3) Printing speed (pages per minute)
- (4) Information on energy saving mode by displaying Typical Electricity Consumption (TEC) under the latest version of Energy Star
- (5) Information on the use of double-sided copying
- (6) Recommendation that the machine be turned off when not in use
- (7) How frequently ozone filters, photoreceptor drums and heat rollers etc. must be replaced

- (8) Instruction for setting up the products with noise emission value of more than 63 decibels (dB) in a designated area instead of setting up around employee's work space.

Verification Method

The applicant shall submit evidence of user manual/product safety data sheet/attached document for customer with information listed in requirement 5.16.

6. Testing and certification

6.1 Testing

6.1.1 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).

6.3 In the event that referenced test methods or standards in this document have been modified, the latest version of test method or standard will be considered.

Appendix A

Checklist for 3R design of equipment/consumables

Equipment must be configured to be suitable for recycling, and must satisfy all Must (M) items of the requirements in the following groups.

A: Design and Joining Technique

B: Selection and Marking of Materials

C: Longevity

D: Resource Saving

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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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.

Requirement		Applicable scope	Category	Compliance	Remarks
A4	Can disassembly be done exclusively with general-purpose tools?	Casing, chassis, electric/electronic assemblies	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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.
A7	Can screw connections for fastening assemblies be released with no more than three tools?	Casing parts, chassis, electric/electronic assemblies	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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).
A9	Can the disassembly be performed by one person?	Entire unit	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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.
A11	Are casing parts free of electric/electronic	Casing parts	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	To facilitate the clean and fast removal and

Requirement		Applicable scope	Category	Compliance	Remarks
	assemblies?				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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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 (compatibilisation).
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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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.
B4	Has the coating of plastic parts been limited to a minimum?	Casing parts, modules for colourants	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	'Coating' refers to a layer of coating material, vapor-deposited layer, and print.

	Requirement	Applicable scope	Category	Compliance	Remarks
					<p>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</p>

Requirement		Applicable scope	Category	Compliance	Remarks
					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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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 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.
B8	Are parts and materials that fall under Appendix 1 of the EU WEEE Directive easy to remove?	Entire unit	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	
B9	selected according to B1 to B6 and has this been documented?	Casing parts, chassis, modules for colourants	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	
B10	Are plastic parts weighing 25 g or more and having a flat surface larger than	Entire unit (Plastic parts contained in reused complex	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	The marking of plastics shall enable all recycling companies to sort plastics

Requirement		Applicable scope	Category	Compliance	Remarks
	200 mm ² marked in accordance with ISO 11469, taking ISO 1043 into consideration?	assemblies are not included.)			by type.
B11	Do secondary batteries have identifications indicating a type?	Internal battery	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No use of internal battery	Secondary batteries need to be identified in order to promote collection and recycling there of
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			
C2	Is use of recycled assemblies or parts scheduled or permitted?	Entire unit	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> 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.
C4	Can modules for colourants be reused?	Modules for colourants	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> Not covered. (No use of modules for colourants)	Constructive measures shall not prevent reuse.
C5	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	<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No use of internal 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.	Products	M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No conventional machine	This results in weight reduction/volume reduction of equipment.

	Requirement	Applicable scope	Category	Compliance	Remarks
				having equivalent functionality is present.	
Are all “M” requirements satisfied and “Yes” answers given to them?			M	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	