

TGL-27-R2-09

Photocopiers

The photocopier is a high energy consumption electric appliance. When switched on but not operated, it consumes energy and generates heat in the office. Furthermore, chemical substances, toner and ozone, which are emitted to ambient indoor air during its routine operation, affect the user's health and environment. Most photocopiers also generate loud noises, which may create noise pollution.

Thus, to develop the green label criteria for a photocopier shall require the followings: an ability to switch into a low power mode, certified test on dust and chemical substances concentration emitted to ambient air and noise test in order to ensure energy saving and users' safety, as well as labeling of plastic type in order to promote recycling and resource conservation.

1. Scope of Category

This category applies to all sizes of dry system copiers and multi-function copiers for both color and monochrome copies, which are operated manually and/or automatically but does not include copiers without photoreceptor drum components.

2. Definition

Photocopier is a machine to reproduce a document copy. There are 2 systems of its function technology: analog and digital. The photocopier functions by the light system producing a reflection of image and electric charge that will suck the toner onto the photoreceptor drum. In other words, the reflection of image and light will be made into the circuit in order that the image signal will be transformed into electric signal. The electric signal will produce electric charge that sucks the toner onto the photoreceptor drum and make a print of the original copy onto the paper or other materials.

Analog photocopier is a machine to reproduce a document copy by lighting system. The light system will produce a reflection of image and electric charge that will

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suck the toner onto the photoreceptor drum and make a print of the original copy onto the paper or other materials.

Digital photocopier is a machine to reproduce a document copy by light system. The light system will produce a reflection of image and light into the circuit in order to transform the image signal into electric signal. The electric signal will then be transformed into electric charge that will suck the toner onto the photoreceptor drum and make a print of the original copy onto the paper or other materials.

Multifunction copier is a machine to reproduce a document copy by static electricity. Its main function is to produce a document copy but it can also make a print onto the paper or receive and send the data similar to the printer or facsimile or scanner.

Photoreceptor drum is a receptor that, by static electricity, will suck the toner. The drum has a cylinder shape or others.

3. Green Label Requirements

To be authorized to carry the Green Label, a product must meet both the general and specific requirements listed below;

4. General Requirements

1. The product's safety standard must be certified as required by TIS 1561: Information Technology Equipment Safety or IEC 60950: Safety of Information Technology Equipment or it meets the safety criteria, the testing of which is specified in that product standard.
2. It must be manufactured, transported and disposed in a manner as specified by laws and regulations of the government.

5. Product Specific Requirements

- 5.1 The energy consumption of the product shall comply with The International Energy Star Program.
- 5.2 The emission of dust, ozone, total volatile organic compound (TVOC), styrene, and benzene during operation shall comply with Table 1.

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Table 1

Permissible maximum emission rate

Substance		Emission rate Print phase (mg/h)	
		Monochrome	Color
Dust		≤ 4.0	≤ 4.0
Ozone		≤ 1.5	≤ 3.0
TVOC	Printing + Standby	≤ 10	≤ 18
	Standby	Floor mounted equipment (>250 L)	≤ 2.0
		Desktop product	≤ 1.0
Styrene		≤ 1.0	≤ 1.8
Benzene		≤ 0.05	≤ 0.05

Remark: Reference to Appendix 2 of Blue Angel RAL-UZ-122:2006

5.3 The product, during its operation, shall meet the requirement on limitation of noise exposure level but may generally not exceed 75.0 dB (A) as noted in Table 2.

Table 2: Noise Level of Photocopiers per minute

Noise level (dB(A))	
Monochrome	Color
$59 + (0.35 \times S_{bw})$	$61 + (0.30 \times S_{co})$

Remark: S_{bw} = Operation speed for monochrome printer in pages per minute

S_{co} = Operation speed for color printer in pages per minute

Reference to Appendix 2 of Blue Angel RAL-UZ-122:2006 (3.5)

5.4 The fire-resistant plastic components of the photocopier must not contain Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) and Chloroparaffins, whose chain is between 10 and 13 carbon atoms and a chlorine concentration of 50% or more.

5.5 The product's safety must be certified by Electromagnetic Compatibility (EMC) tests as required in CISPR 22 Standard: Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement, or certified by the equivalent test.

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5.6 The photocopier shall be able to print on 100% recycled paper.

5.7 The producers shall have a take-back policy for used toner cartridge and photoreceptor drum. The policy shall be noted clearly in an instruction manual.

5.8 Plastic components with a weight in excess of 25 grams and a flat surface in excess of 200 mm² (excluding re-used plastic parts) must comply with the followings :

- 1) Plastic in the housing and chassis must be recyclable at least 90% by weight.
- 2) Must be identifiable in accordance with ISO 11469 or Thai Industrial Standards 1310 (TIS 1310), both prior and after the product parts are disassembled.

5.9 Total metal components with a weight in excess of 25 grams and a flat surface in excess of 200 mm² must be recyclable at least 90% by weight.

5.10 The photoconductor drums must not contain cadmium, lead, mercury or selenium

5.11. During the production process of the copier machine, circuit board and packaging, following chemical substances, as regulated in the Montreal Protocol, shall not be used; CFCs, HCFCs, 1.1.1 trichloro-ethane, and carbon tetrachloride.

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

5.13 The toner used in the products must not contain following substances as constituent parts.

- 1) Mercury, lead, cadmium and chromium VI compounds
- 2) Substances classified in the Directive 67/548/EEC on the approximation of laws and regulations and administrative provision relating to the classification, packaging and labeling of dangerous substance, obliged to be marked with the R number according to Annex 1 of the said Directive.
 - R 40 (limited evidence of a carcinogenic effect)
 - R 45 (may cause cancer)
 - R 46 (may cause genetic damage)
 - R 49 (may cause cancer when inhaled)
 - R 60 (may impair the reproductiveness)
 - R 61 (may be harmful to the reproductiveness)

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R 62 (may possibly impair the reproductiveness)

R 63 (may possibly be harmful to the embryo)

R 68 (Possible risk of irreversible effects)

- 3) Substances classified as carcinogenic, mutagenic or toxic to reproduction in the recommendation on allowable concentration by TRGS 905 standard. However, carbon black shall be excluded.
- 4) Substances required to be marked with hazard symbol on the whole product pursuant to Annex II, in the Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances.
- 5) Substances requiring the marking of R 43 number (possible irritability when in contact with skin). Substances pursuant to Annex III in the Directive 67/548/EEC shall not be included.

5.14 Packaging

- 1) Plastic polymers containing halogens as constituent parts shall not be utilized in the packaging of the product and toner.
- 2) Packaging made from resin plastic must be recyclable.
- 3) Packaging must not be coated, labeled or varnished in such a way that reduces the recyclability of the material.

5.15 The content of cadmium, mercury and lead in batteries must not exceed 5, 5 and 15 ppm, respectively.

5.16 The following technical information must be specified in the user's manual / attached paper to consumers:

- 1) Instructions on the positioning of the machine.
- 2) Take back information about where used products and all parts can be deposited in order to reduce use of resources through recycling and disposal as specified by laws.
- 3) Print capacity (copies per minute and copying volume per month or per year)
- 4) Information on the functioning of the energy management system.
- 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 changed.

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6. Submission of quality test results

6.1 The applicant must submit a certification or testing results of electrical safety of photocopier as required in TIS 1561 or IEC 60950: Safety of Information Technology Equipment.

6.2 The applicant must submit the testing results of electricity consumption of the photocopier under diverse circumstances. The test must be conducted by the International Energy Star's particular method for photocopier, and is authorized to affix a certification mark on the machine, such as International Energy Star sticker.

6.3 The applicant must submit the testing results of the concentration level of dust, ozone, volatile organic compound, styrene and benzene as noted in Table 1, which is in accordance with Appendix 2 of Blue Angel RAL-UZ-122:2006.

6.4 The applicant must submit the testing results of noise level. The test must be conducted as specified in ISO 7779:2001 (Acoustics-Measurement of airborne noise emitted by information technology and telecommunications equipment) or RAL-UZ-122:2006 (No 3.5) or ISO 9262:1998.

6.5 The applicant must submit evidence certifying that no PBB, PBDE or Chloroparaffins is used as constituent parts of fire-resistant plastic in the machine, and the evidence is signed by managing director or the recognized authorities within the company.

6.6 The applicant must submit the testing results of Electromagnetic Compatibility (EMC) as specified in the CISPR 22 Standard: Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement, or EN 55014: Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus, or results of the equivalent test.

6.7 The applicant must submit certification document stating that the machine is able to print with 100% recycled paper, and is signed by managing director or the recognized authorities within the company.

6.8 The applicant must submit evidence certifying that the characteristics of the plastic components are meeting the specifications in requirement 5.8, and is signed by managing director or the recognized authorities within the company.

6.9 The applicant must submit evidence certifying that metal components are meeting the specifications in requirement 5.9, and is signed by managing director or the recognized authorities within the company.

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6.10 The applicant must submit evidence certifying that photoreceptor drums are meeting the specifications in requirement 5.10, and is signed by managing director or the recognized authorities within the company.

6.11 The applicant must submit evidence certifying no use of chemical substances as specified in requirement 5.11, and is signed by managing director or the recognized authorities within the company. The submission shall include the certification document from the producer of circuit boards and packaging.

6.12 The applicant must submit evidence certifying the availability of spare parts and equipment for use and repair purposes as specified in requirement 5.12, which is signed by managing director or the recognized authorities within the company of the producer.

6.13 The applicant must submit evidence certifying that toner is meeting the specifications in requirement 5.13, which is signed by managing director or the recognized authorities within the company. The submission shall include the certification document from the toner producer.

6.14 The applicant must submit evidence certifying that the package is meeting the requirement 5.14, which is signed by managing director or the recognized authorities within the company. The submission shall include the certification document from the package producer.

6.15 The applicant must submit evidence certifying that the battery is meeting the requirement 5.15, which is signed by managing director or the recognized authorities within the company. The submission shall include certification document and testing results from the battery producer and accompanied by the evidence explaining about the battery model in use and illustrating the connection between the applicant and the battery producer.

6.16 The applicant must submit instruction manual/attached documents given to consumers, the detail of which must be identified according to requirement 5.7 and 5.16

Remarks:

1. Test must be conducted in the laboratory of the state sector or independent private sector laboratory certified with Thai Industrial Standards pursuant to the general requirements on the capability of calibration laboratory and laboratory as specified in TIS 17025 (ISO/IEC 17025 or laboratory of the product producer signed by recognized authorities of the company.

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2. Testing result/certification document attached with the submission for green label criteria for photocopier shall not exceed 3 years' duration.
3. In case the testing methods or the criteria as referenced by this requirement are modified, the results of the test that meet the latest criteria shall be considered for certification until the modification is made.
4. Requirements 4.1, 5.1 and 5.5 are applicable to the results of the type test.

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