

Hong Kong Green Label Scheme
Product Environmental Criteria for
Copying Machines, Printers, Fax Machines
and Multifunctional Devices (GL-006-003)



BACKGROUND

The Hong Kong Green Label Scheme (HKGLS) is an independent and voluntary scheme, which aims to identify products that are, based on life cycle analysis consideration, more environmentally preferable than other similar products with the same function. The Scheme is organized by the Green Council (GC) with contributions from the HKGLS Advisory Committee and a number of supporting organizations.

The prime objectives of HKGLS are:

- For Consumers: assist in making purchases of products that are less harmful to the environment;
- For Industry: stimulate development and production of environmentally preferable alternatives.

This specification sets out the requirements that Copying Machines, Printers, Fax Machines and Multifunctional Devices (MFDs) [herein after the “machines”] will be required to meet in order to be licensed to use the HKGLS label. The requirements include environmental criteria and product characteristics. The specification also defines the testing and other means to be used to verify conformance with the criteria and product characteristics.

POTENTIAL ENVIRONMENTAL IMPACTS

The impact on the environment of the machines comes about throughout the entire product life cycle stages, including the consumption of natural resources, the production of raw materials, the production of electronic and other components, the assembly into a finished product, the use of products, the transport and maintenance services, and finally the waste disposal.

In the product-use stage, unlike computers and monitors that the energy consumption is an important environmental factor, there are other environmental factors for printers such as emissions of ozone, noise and volatile organic compounds (VOCs). Consumption of ink cartridge or toner is also another significant environment impact.

The packaging of these products also contributes to solid waste generation.

LABEL OBJECTIVE

The aims of the environmental criteria developed for the machines are to:

- Reduce the material types and the use of the environmentally harmful substances;
- Reduce energy consumption and promote energy-saving;
- Promote improved durability and recyclability; and
- Minimize waste production by reducing the amount of primary packaging and promotion its reusability and/or recyclability.

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PRODUCT DEFINITION

This document and all product environmental criteria therein apply to the machines with the following definitions:

Copying Machine refers to a commercial reprographic imaging unit whose sole function is the production of duplicates from a hard copy original. The copying machines must include a marking system, an imaging system, and a paper-handling module.

Printer refers to a commercial available image or text reproducing unit for printing out on paper from single user or network linked computers. The printers can be based on various printing technologies including laser and ink-jet technology.

Fax Machine refers to a machine, manufactured as a standard model, whose primary function is reading hardcopy input and sending information to another fax machine via communication line, as well as receiving information from another fax machine via communication line and producing hardcopy output. This scheme covers plain paper fax machines (e.g., ink jet / bubble jet, laser / LED, and thermal transfer) capable of accepting A4-size hardcopy input and producing A4-size hardcopy output (and other paper sizes where appropriate), that are capable of being powered from a socket outlet, and are advertised and sold as fax machines.

Multifunctional Device (MFD) refers to a physically integrated device or a combination of functionally integrated components that produces hard copy duplicates from graphical hard copy originals as well as performing one or both of the core functions such as printing, faxing, scanning, etc. The device may be connected to a network, and may output black and white, grey scale, or colour images.

The main computer system unit and separate system components such as monitors, mouse, modem, memories and other accessories located outside the system units are not included in this product category.

The product criteria for the computer main systems and display monitors are available and presented in separate fact sheets of GL-006-001 and GL-006-002, respectively.

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PRODUCT ENVIRONMENTAL CRITERIA

The table below sets out the product environmental criteria for the copying machines, printers, fax machines and multifunctional devices (MFDs) (GL-006-003) under the HKGLS.

Criteria	Verification Method												
<p>1. Energy Consumption:</p> <p>1.1 Copying Machines The maximum allowable power rating and default times shall comply with the clauses 5.1 and 5.2 listed in Voluntary EELS for Photocopiers. Product certified with US EPA Energy Star Program is equivalent.</p> <p>1.2 Printers</p> <p><i>1.2.1 Laser Printers</i> The default time to sleep mode shall comply with clauses 5.1, 5.2 and 5.3 listed in Voluntary EELS for Laser Printer. The maximum power rating for sleep mode shall comply with the phase II specification listed in clause 5.1, 5.2 and 5.3 of Voluntary EELS for Laser Printer. Product certified with US EPA Energy Star Program is equivalent.</p> <p><i>1.2.2 Ink-jet Printers</i> The power ratings for sleep mode and default time to sleep mode shall comply with the limit in following table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Printing Speed (IPM)</th> <th>Default time to sleep mode (Min)</th> <th>Power Rating (W)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">≤ 10</td> <td style="text-align: center;">5</td> <td rowspan="4" style="text-align: center; vertical-align: middle;">3</td> </tr> <tr> <td style="text-align: center;">10-20</td> <td style="text-align: center;">15</td> </tr> <tr> <td style="text-align: center;">21-30</td> <td style="text-align: center;">30</td> </tr> <tr> <td style="text-align: center;">>30</td> <td style="text-align: center;">60</td> </tr> </tbody> </table> <p>Product certified with US EPA Energy Star Program is equivalent.</p> <p>1.3 Fax Machines The sleep mode power consumption and default times to sleep mode shall comply with the clauses 5.1, 5.2 and 5.3 listed in Voluntary EELS for Fax Machines. Product certified with US EPA Energy Star Program is equivalent.</p>	Printing Speed (IPM)	Default time to sleep mode (Min)	Power Rating (W)	≤ 10	5	3	10-20	15	21-30	30	>30	60	<p style="text-align: center;">A (Clause 6 of Voluntary EELS for Photocopiers), B,C</p> <p style="text-align: center;">A (Clause 6 of Voluntary EELS for Laser Printer), B,C</p> <p style="text-align: center;">A (ENERGY STAR Program Requirement for Imaging Equipment, Version 1.0), B, C</p> <p style="text-align: center;">A (Clause 6 of Voluntary EELS for Fax Machines), B,C</p>
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Criteria		Verification Method																																	
<p>1.4 Multifunctional Devices (MFDs)</p> <p>The default time to sleep mode shall comply with clause 5.5 listed in Voluntary EELS for Multifunction Device. The maximum allowable power rating shall comply with the phase II specification listed in clause 5.1-5.4 of Voluntary EELS for Multifunction Device. Product certified with US EPA Energy Star Program is equivalent.</p> <p>Documented user instructions on how to use this mode shall be included.</p>		<p align="center">A (Clause 6 of Voluntary EELS for Multifunction Device), B,C</p>																																	
<p>2. The emission of ozone, powder dust, volatile organic compounds (TVOC), styrene and benzene during the operation phase and ready phase shall meet the following threshold values:</p> <table border="1"> <thead> <tr> <th align="center" colspan="2" rowspan="2">Target Substances</th> <th align="center" colspan="2">Emission Rate (mg/h)</th> </tr> <tr> <th align="center">Monochrome</th> <th align="center">Colour</th> </tr> </thead> <tbody> <tr> <td align="center" colspan="2">Powder Dust</td> <td align="center" colspan="2">≤ 4.0</td> </tr> <tr> <td align="center" colspan="2">Ozone</td> <td align="center">≤ 1.5</td> <td align="center">≤ 3.0</td> </tr> <tr> <td align="center" rowspan="3">TVOC</td> <td align="center">Print Phase</td> <td align="center">≤ 10</td> <td align="center">≤ 18</td> </tr> <tr> <td align="center" rowspan="2">Ready Phase</td> <td align="center">Floor-mounted</td> <td align="center">-</td> </tr> <tr> <td align="center">Tabletop</td> <td align="center">≤ 1.0</td> <td align="center">-</td> </tr> <tr> <td align="center" colspan="2">Styrene</td> <td align="center">≤ 1.0</td> <td align="center">≤ 1.8</td> </tr> <tr> <td align="center" colspan="2">Benzene</td> <td align="center" colspan="2">≤ 0.05</td> </tr> </tbody> </table> <p>The requirements are not applicable to printer or copiers with printing speed over 60 impressions per minute (IPM), or to ink-jet, wire dot or thermosensitive printers.</p> <p>The emission test for color equipment during monochrome operation phase can be exempted when the emission rate during color operation phase is below the limits for monochrome phase.</p>				Target Substances		Emission Rate (mg/h)		Monochrome	Colour	Powder Dust		≤ 4.0		Ozone		≤ 1.5	≤ 3.0	TVOC	Print Phase	≤ 10	≤ 18	Ready Phase	Floor-mounted	-	Tabletop	≤ 1.0	-	Styrene		≤ 1.0	≤ 1.8	Benzene		≤ 0.05	
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<p>3. For different printing speeds (PS), the A-weighted maximum sound power levels, $L_{WA,d}$ in dB(A) during operation shall be determined by the following formula and not exceed 75dB(A).</p> <p>$L_{WA,d}: 0.35 \times PS + 59 \text{ dB(A)}$</p> <p>The PS is in term of IPM. The size of paper sheets shall be counted on an A4 basis. The requirement is not applicable for PS >71 IPM</p>		<p align="center">A (ISO 7779), C</p>																																	

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Criteria	Verification Method
4. The manufacturer shall offer a minimum of one-year guarantee on the printers.	C
5. The machine shall be able to print on recycled paper made of at least 50% recycled fibre. Documented information on this feature shall be included.	B,C
6. The following design-for-recycling features shall be incorporated into the casing of printer : <ul style="list-style-type: none"> • Plastic parts weighing over 25g and with an even surface of over 200mm, excluding extruded plastic materials, shall be marked for identification according to the ISO11469 Standard; • The recovery rate¹ of the plastic parts shall be more than 95%; • Plastic parts and metal parts shall be separable; • Plastic parts made of recyclable and non-recyclable materials shall be separable; and • Labels, if any, shall be detachable. 	B,C
7. Plastic additives and pigments shall have no lead ,cadmium or mercury added by the manufacturer and plastic parts weighing over 25g shall not contain flame retardants that contain organohalogen compounds and substances classified, in accordance with Annex 1 of EC Directive 67/548/EEC as: <ul style="list-style-type: none"> • Carcinogenic: EC Carc. Category 1-3 • Mutagenic: EC Mut. Category 1-3, or • Toxic Reproduction: EC Repr. Category 1-3 	B, C
8. Names and CAS numbers shall be reported for all flame retardants used in plastic parts weighing over 25g.	B, C
9. Mercury, lead, cadmium, chromium VI, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) shall not be used as constituent parts of product and its toner / ink cartridges provided, in accordance with the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment	B, C

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Criteria	Verification Method												
2002/95/EC (commonly referred to as the Restriction of Hazardous Substances Directive or RoHS).													
10. Mercury, lead, cadmium or chromium VI and nickel compounds shall not be used as constituent parts of toner / ink cartridge(s) provided in the machine.	B,C												
11. Chlorinated paraffins (a chain of 10-13 carbon atoms and a chlorine concentration of more than 50%) shall not be added to plastic parts and printed circuit boards.	B, C												
12. The machine shall have the duplex function in according to following table													
<table border="1"> <thead> <tr> <th>Monochrome PS (IPM)</th> <th>Colour PS (IPM)</th> <th>Duplex Function</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">≤ 24</td> <td style="text-align: center;">≤ 19</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td style="text-align: center;">25-44</td> <td style="text-align: center;">20-39</td> <td style="text-align: center;">Yes</td> </tr> <tr> <td style="text-align: center;">>44</td> <td style="text-align: center;">>39</td> <td style="text-align: center;">Yes</td> </tr> </tbody> </table>	Monochrome PS (IPM)	Colour PS (IPM)	Duplex Function	≤ 24	≤ 19	N/A	25-44	20-39	Yes	>44	>39	Yes	B,C
Monochrome PS (IPM)	Colour PS (IPM)	Duplex Function											
≤ 24	≤ 19	N/A											
25-44	20-39	Yes											
>44	>39	Yes											
13. For batteries equipped machines, the batteries shall not contain cadmium, mercury and lead.													
14. Packaging requirements:	B,C												
<ul style="list-style-type: none"> • Packaging materials shall not contain chlorine-based plastics; • CFCs and HCFCs shall not be used in the production of packaging. • The corrugated medium, which is used in packaging, shall contain at least 50% recycled pulp. 	B, C, D												

Legend :

A – Analytical testing shall be performed by laboratories that meet the requirement laid out in the EN45001 standards or any equivalent systems e.g. HOKLAS, IEC/ISO 17025

B – Inspection of product samples

C – Review of supporting information as required by the GC

D – Interviews with relevant personnel and/or site visits to relevant facilities

¹ **Recovery Rate:** means the mass rate of equipment 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

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subject to blast furnace reduction or conversion to chemical materials by a coke oven.