

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 the printing paper 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 environmental criteria and product characteristics.

POTENTIAL ENVIRONMENTAL IMPACTS

Though production of printing paper uses some recycled paper as raw materials, primary paper production relies heavily on forest resources. The use of paper has and continues to be the subject of considerable community concern with respect to its impact upon the environment, particularly the sourcing of wood pulp from virgin or unsustainably managed native forests, use of chemicals, and production emissions. Process effluents can contain high concentrations of natural organic materials which deplete oxygen from receiving water bodies, adversely affecting the ecosystems. Sulphur, organochlorines and other hazardous substances used in or resulting from the manufacturing process (e.g. from bleaching or for cleaning of equipment) can be persistent. These anthropogenic and non-biodegradable chemicals can potentially accumulate and have toxic effects on the environment if discharged in effluents or emitted to the atmosphere.

LABEL OBJECTIVE

The aim of the environmental criteria developed for printing paper is to:

- reduce toxicity of process effluent generated from pulp production, minimize the environmental loading of the receiving water bodies,
- reduce environmental damage or risks related to the use of energy (global warming, acidification, ozone depletion, depletion of non-renewable resources) by reducing energy consumption and related emissions to air,

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Product Environmental Criteria	Verification Methods*
hazardous materials.	personnel. The applicant shall <i>declare</i> compliance with the requirement together with appropriate documentation (e.g. ISO14001 certificate)
3. The paper pulp shall be bleached with elemental chlorine free or totally chlorine free agents.	✓ Review of supporting information. The applicant shall <i>declare</i> compliance with the requirement.
4. The processing of paper pulp shall not contain azo colorants (dyes and pigments) which may cleave to any of the amines listed in Table 1.	✓ Review of supporting information. The applicant shall submit <i>supporting document and declaration</i> to prove compliance with the requirement.
<u>Optional Requirements</u>	
5. The water discharge from the production of each pulp shall comply with the followings: <ul style="list-style-type: none"> • The Chemical Oxygen Demand (COD) emissions from the production of each pulp shall not exceed 25 kg per air dried tonne of paper produced (ADT). • The phosphorus (P) emissions from the production of each pulp shall not exceed 0.04 kg per ADT. • The Absorbable Organic Halogen (AOX) emissions from the production of each pulp shall not exceed 0.25 kg per ADT. 	✓ Review of laboratory test report(s). Note II ISO 6878/1 or authorized method ISO9562 or DIN38409 part 14. EN1485 or authorized method
6. The air emission from the production of each pulp shall comply with the followings: <ul style="list-style-type: none"> • The sulphur (S) emissions from the production of each pulp shall not exceed 1.5 kg per ADT. • The nitrogen oxides (NO_x) emissions from the production of each pulp shall not exceed 3.0 kg per ADT. 	✓ Review of laboratory test report(s); AND ✓ Review of supporting information; AND ✓ Interview with relevant personnel.

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<ul style="list-style-type: none"> • The carbon dioxide (CO₂) emissions from non-renewable sources shall not exceed 1,500 kg per ADT, including emissions from the production of electricity (on-site or off-site). For paper produced using recycled fiber, the CO₂ emissions from non-renewable sources shall not exceed 1,700 kg per ADT 	<p style="text-align: center;">Note III</p> <p style="text-align: center;">ISO 11564 or authorized method</p> <p>✓ Performance of on-site factory visit.</p> <p>The applicant shall provide detailed calculations showing compliance with related supporting documents</p>
<p>7. The levels of ionic impurities in the dyestuffs used shall not exceed the following: Ag 100ppm, As 50 ppm, Ba 100 ppm, Cd 20 ppm, Co 500 ppm, Cr 100 ppm, Cu 250 ppm, Fe 2500 ppm, Hg 4 ppm, Mn 1000 ppm, Ni 200 ppm, Pb 100 ppm, Se 20 ppm, Sb 50 ppm, Sn 250 ppm, Zn 1500 ppm.</p>	<p>✓ Review of laboratory test report(s); AND</p> <p>✓ Review of supporting information.</p>
<p>8. During the manufacturing process, the pulp should not contain more than 0.1% by wet weight of the complexing agents (particularly ethylenediamine tetraacetic acid, EDTA) shall be used.</p>	<p>✓ Review of laboratory test report(s)</p> <p style="text-align: center;">Note IV</p>
<p>9. During the manufacturing process, biocides used shall not be potentially bioaccumulative.</p>	<p>✓ Review of laboratory test report(s)</p> <p style="text-align: center;">Note V</p>
<p>10. Where surfactants and/or foam inhibitors are used in the manufacturing process, such as for the de-inking of pulp, these surfactants and/or foam inhibitors shall be readily biodegradable.</p>	<p>✓ Review of laboratory test report(s)</p> <p style="text-align: center;">Note VI</p>
<p>11. During the manufacturing process, halogenated hydrocarbons, alkylphenol ethoxylates (APEOs) or other alkylphenol derivatives must not be deliberately added to production.</p>	<p>✓ Review of supporting information.</p> <p>The applicant shall <i>declare</i> compliance with the requirement.</p>
<p>12. The content of residual monomers (with risk phrases R45,</p>	<p>✓ Review of laboratory test</p>

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<p>R46, R49, R50/53, R51/53, R52/53, R60 and R61 according to EU Directive 67/548/EEC) and acrylamide in the paper shall not exceed 100 ppm by weight.</p> <p>13. Packaging requirements: General packaging requirements (Refer to criteria for packaging materials: GL-Packaging)</p>	<p>report(s); AND</p> <p>✓ Review of supporting information.</p> <p>The applicant shall <i>declare</i> compliance with the requirement together with appropriate documentation (e.g. MSDSs)</p> <p>✓ Inspection of product samples; AND</p> <p>✓ Review of supporting information; AND</p> <p>✓ Interview with relevant personnel.</p>

*Analytical testing should be accredited and performed by laboratories that meet the requirement laid out in the IEC/ISO 17025 or EN45001 standards or any equivalent systems e.g. HOKLAS, CNAS. Under special situation and with the approval from GC, test can be performed by in-house method by the accredited laboratory or manufacturer.

Note:

- I) Sustainable Certificate include: Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC), Canadian Standards Association (CSA) National Standard for Sustainable Forest Management, Sustainable Forestry Initiatives (SFI), Malaysian Timber Certification Council, Pan European Forest Certification Council, Lembaga Ekolabel Indonesia (LEI) and Finnish Forest Certification Scheme.
- II) ISO 6060, NS 4748 or SFS 3020, SFS 5504, SS 028142, DIN 38409 part 41, NFT 90101, ASTM D1252, or by means of a photometric method (using potassium dichromate as the oxidization agent and silver sulphate as the catalyst)
- III) Sulphur emissions must normally be measured at all emission points both as reduced and oxidized sulphur. Exceptions may be granted following an assessment of process conditions by an independent body. In the case of incineration plants, sulphur may be calculated on the basis of fuel.
 - Sulphur content of oil: ISO 8754 or ASTM D4294
 - Sulphur emissions (ox): EPA method no.8, ISO 7934, ISO 7935, (cont. measurements) ISO 11632 (cont. measurements) or DS/ISO 7534
 - Sulphur emissions (red): EPA no. 16A
 - Sulphur in coal: ISO 351
- IV) One of the methods described in below or other authorized methods.
 - 1) L. Rudling: "Simultaneous Determination of Nitrilotriacetic Acid, Ethylenediaminetetraacetic Acid and Diethylenetriaminepentaacetic Acid as their Methyl Ester Derivatives by GLC", Water Research Pergamon Press 1972. Vol. 6, pp. 871-876. or
 - 2) J. Virtapohja: "Determination of Chelating Agents (EDTA and DTPA) in Bleach Liquor", Pulp Pap. Can. 99 (10) (1998): T330- 332.
- V) The applicant shall provide a declaration of compliance with this criterion together with the relevant material safety data sheet or test report which shall indicate the test method, threshold and conclusion

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- stated, using the following test methods: OECD 107, 117 or 305 A-E
- VI) The applicant shall provide a declaration of compliance with this criterion together with the relevant material safety data sheet or test report for each surfactant which shall indicate the test method, threshold and conclusion stated, using one of the following test methods and pass levels: for ready biodegradability OECD 301 A-F (or equivalent ISO standards), with a percentage degradation within 28 days of at least 70% for 301 A and E, and of at least 60% for 301 B, C, D and F; for ultimate biodegradability OECD 302 A-C (or equivalent ISO standards), with a percentage degradation (including adsorption) within 28 days of at least 70% for 302 A and B, and of at least 60% for 302 C

Table 1

Chemical Substance	CAS No.	Chemical Substance	CAS No.
4-aminobiphenyl	92-67-1	3,3'-dimethylbenzidine	119-93-7
benzidine	92-87-5	3,3'-dimethyl-4,4'-diaminodiphenylmethane	838-88-0
4-chloro-o-toluidine	95-69-2	p-cresidine	120-71-8
2-naphthylamine	91-59-8	4,4'-methylene-bis-(2-chloroaniline)	101-14-4
o-aminoazotoluene	97-56-3	4,4'-oxydianiline	101-80-4
2-amino-4-nitrotoluene	99-55-8	4,4'-thiodianiline	139-65-1
p-chloroaniline	106-47-8	o-toluidine	95-53-4
2,4-diaminoanisole	615-05-4	2,4-diaminotoluene	95-80-7
4,4'-diaminodiphenylmethane	101-77-9	2,4,5-trimethylaniline	137-17-7
3,3'-dichlorobenzidine	91-94-1	4-aminoazobenzene	60-09-3
3,3'-dimethoxybenzidine	119-90-4	o-anisidine	90-04-0