

## **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 products using recycled materials 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.

The Product Environmental Criteria are based primarily on the ecolabelling criteria from the Australian Ecolabel Programme GECA 19-2007, Japan EcoMark No.103 ver 2.4, Korea Eco-Label EL311-1997/5/2002-219, Taiwan Green Mark No. 44 ver. 1.0.0, and European Union's ecolabel for textile products in accordance with the European Commission's Decision 2002/371/EC of 15 May 2002.

## **POTENTIAL ENVIRONMENTAL IMPACTS**

Textile products have the potential to create significant environmental and human health impacts. These range from agricultural practices such as the use of biocidal agents in the production of natural textile fibers, to oxygen depleting substances emitted to waterways during manufacturing processes, to skin irritation during use and environmental damage caused by final disposal problems resulting from non-biodegradability, non-recyclability or toxic chemicals contained within finished products.

## **LABEL OBJECTIVE**

This Product Standard identifies the key environmental loads of textile products and specifies limits on the major loads during the product life cycle. Products which comply with this Product Standard will have considerably lower adverse environmental impacts and human health risks compared with products which cannot meet the standard.

The aim of the product environmental criteria developed for “Textile Products Using Recycled Materials” is to:

- Protect the global environment. The relevant influence of the textile industry to the green house effect results of the use of fossil fuels.
- Reduce the adsorbable organic halogen (AOX) emission. Being poorly biodegradable and toxic, halogenated organic compounds can contaminate water for many years. Most important sources for AOX in textile production are bleaching processes with chlorine containing substances like sodium chlorite or sodium hypochlorite. A replacement with peroxide should be achieved.
- Help reducing water pollution throughout the textile manufacturing chain. Wet treatment, which includes but not limited to processes like desizing, dyeing, printing, washing, bleaching, scouring and finishing, is one of the main source of water contaminants discharged by the textile manufacturing chain.

## **PRODUCT DEFINITION**

The Product Criteria shall therein apply to the following textile products that are made of recycled materials. The range of product includes but does not limit to the following:

- (1) Clothing, bedding and accessories (e.g. handkerchiefs, scarves, bags, shopping bags, rucksacks, belts, etc.);
- (2) Textiles for interior decoration (e.g. textile lamp shades, window blinds, furniture, etc.); and
- (3) Fibers, yarns and fabrics intended for use in clothing, bedding, interior decoration or similar applications.

## **INTERPRETATIONS**

“Recycled textile fibers” refers to any type of textile fibers made from pre-consumer materials and/or post-consumer materials.

“Pre-consumer materials” refers to materials diverted from the waste stream in the manufacturing process, which excludes wastes that are recycled in the same process (plant).

“Post-consumer materials” refers to materials which are disposed after use.

“Textile fiber” refers to acrylic, cotton and other natural cellulosic seed fibers, elastane, flax and other bast fibers, greasy wool and other keratin fibers, man-made cellulose fibers, polyamide, polyester and polypropylene. Fibers not listed above are also allowed, with the exception of mineral fibers, glass fibers, metal fibers, carbon fibers and other inorganic fibers.

“Polymer fiber” refers to fibers made of recycled resins using recovered flakes, or pellets, etc. of post-consumer and pre-consumer materials. The fibers can also consist of polymers obtained through polymerization using monomers as raw materials, which are obtained by depolymerizing the pre-consumer and post-consumer polymer products (e.g., nylon, polyester, etc.)

“Other fiber” refers to any fibers other than polymer type. They include but not limited to cotton linters, used clothing, lint, cut lint, etc.

“Chemical Oxygen Demand” (COD) refers to the mass concentration of oxygen equivalent to the amount dichromate consumed by dissolved and suspended matter when a water sample is treated with that oxidant under defined conditions.

“Biochemical Oxygen Demand” (BOD) refers to the mass of dissolved oxygen which is required for the biochemical degradation of organic material and for the oxidation of inorganic material in a unit volume of water sample when the sample is incubated under specified conditions for a period of five days.

“Absorbable Organic Halogen” (AOX) refers to the standard measurement of organic halogens used for indication of the environmental influence of bleach plant effluents. Halogen refers to all the five elements fluorine, chlorine, bromine, iodine and astatine. In practice it is a measure of organically bound chlorine.

“VOCs” (volatile organic compounds) means any volatile compound of carbon, with a boiling point of 250 °C or lower under a pressure of 101.3 kPa, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates, ammonium carbonate and exempt compounds.

## PRODUCT CRITERIA

The products are required to meet or exceed applicable and accepted quality standard in its target market. The product can demonstrate sufficient quality by providing testing reports from an independent organization or case studies demonstrating market suitability and quality. In addition, the products are required to meet the Product Environmental Criteria for the product category of “Textile Products Using Recycled Materials” (GL-005-007) set out in the ensuing table:

Product Environmental Criteria	Verification Method(s)*
<p>1 The percentage of recycled textile fiber(s) in the product shall meet the following:</p> <ul style="list-style-type: none"> <li>• Polymer fiber (which mean fiber made of resin): not less than 50%.</li> <li>• Other fiber (which mean fiber other than polymer fiber): not less than 10%.</li> <li>• Mixed fiber (which comprise of both polymer fiber and other fiber): no less than 30%</li> </ul>	<p>✓ Inspection of product samples; AND</p> <p>✓ Review of supporting information; AND</p> <p>✓ Performance of on-site factory visit.</p> <p>The gross weight of the textile product shall be specified in weight.</p> <p>Source(s) of recycled raw material and the recycled content shall be reported in details.</p>
<p>2 At least 95 % (by dry weight) of the component substances of any sizing preparation applied to yarns shall be sufficiently biodegradable or eliminable in wastewater treatment plants, or else shall be recycled.</p>	<p>✓ Review of laboratory test report(s)<sup>1</sup>; AND</p> <p>✓ Review of supporting information.</p> <p>A written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the</p>

**Hong Kong Green Label Scheme**  
**Product Environmental Criteria for**  
**Textile Products Using Recycled Materials (GL-005-007)**



Product Environmental Criteria	Verification Method(s)*																														
At least 90 % (by dry weight) of the spinning solution additives, spinning additives and preparation agents for primary spinning (including carding oils, spin finishes and lubricants) shall be sufficiently biodegradable or eliminable in waste water treatment plants <sup>a</sup>	applicant company shall be provided. The statement shall be supported with appropriate documentation, safety data sheets, test reports and/or declarations indicating the test methods and results as above, and showing compliance with the criteria.																														
<p>3 The following substances shall not be part of any preparations or formulations used:</p> <ul style="list-style-type: none"> <li>• Alkylphenolethoxylates (APEOs)</li> <li>• Linear alkylbenzene sulfonates (LAS)</li> <li>• Bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC)</li> <li>• Distearyl dimethyl ammonium chloride (DSDMAC)</li> <li>• Di(hardened tallow) dimethyl ammonium chloride (DHTDMAC)</li> <li>• Ethylene diamine tetra acetate (EDTA) or ethylene diamine tetra acetic acid</li> <li>• Diethylene triamine penta acetate (DTPA)</li> <li>• Chrome mordant dyeing</li> </ul>	<p>✓ Review of supporting information; AND</p> <p>✓ Performance of on-site factory visit.</p> <p>The applicant shall provide relevant production documentation and a <i>declaration</i> of conformity of the product with the requirements.</p>																														
<p>4 Harmful elements shall not be used as an ingredient of the product (whether as a substance or as part of any preparation). The levels of the harmful elements shall not exceed the following:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Elements</th> <th style="text-align: center;">Children's products</th> <th style="text-align: center;">Other<sup>b</sup></th> </tr> </thead> <tbody> <tr> <td>Antimony</td> <td style="text-align: center;">5.0 ppm</td> <td style="text-align: center;">10 ppm</td> </tr> <tr> <td>Arsenic</td> <td style="text-align: center;">0.2 ppm</td> <td style="text-align: center;">1.0 ppm</td> </tr> <tr> <td>Cadmium</td> <td style="text-align: center;">0.1 ppm</td> <td style="text-align: center;">0.1 ppm</td> </tr> <tr> <td>Total Chromium</td> <td style="text-align: center;">1.0 ppm</td> <td style="text-align: center;">2.0 ppm</td> </tr> <tr> <td>Cobalt</td> <td style="text-align: center;">1.0 ppm</td> <td style="text-align: center;">4.0 ppm</td> </tr> <tr> <td>Copper</td> <td style="text-align: center;">25 ppm</td> <td style="text-align: center;">50 ppm</td> </tr> <tr> <td>Lead</td> <td style="text-align: center;">0.2 ppm</td> <td style="text-align: center;">1.0 ppm</td> </tr> <tr> <td>Mercury</td> <td style="text-align: center;">0.02 ppm</td> <td style="text-align: center;">0.02 ppm</td> </tr> <tr> <td>Nickel</td> <td style="text-align: center;">1.0 ppm</td> <td style="text-align: center;">4.0 ppm</td> </tr> </tbody> </table>	Elements	Children's products	Other <sup>b</sup>	Antimony	5.0 ppm	10 ppm	Arsenic	0.2 ppm	1.0 ppm	Cadmium	0.1 ppm	0.1 ppm	Total Chromium	1.0 ppm	2.0 ppm	Cobalt	1.0 ppm	4.0 ppm	Copper	25 ppm	50 ppm	Lead	0.2 ppm	1.0 ppm	Mercury	0.02 ppm	0.02 ppm	Nickel	1.0 ppm	4.0 ppm	<p>✓ Review of laboratory test report(s)<sup>2</sup>.</p>
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<p>5 The levels of formaldehyde for products shall not exceed the following:</p> <ul style="list-style-type: none"> <li>• Baby products: 20 ppm</li> <li>• Other direct skin contact products: 75 ppm</li> <li>• No direct skin contact products: 300 ppm</li> </ul>	<p>✓ Review of laboratory test report(s)<sup>3</sup>.</p>																														
<p>6 The product shall not contain azo dyes that may cleave to aromatic amines listed as below:</p> <ul style="list-style-type: none"> <li>• 4-aminodiphenyl (CAS No. 92-67-1)</li> <li>• Benzidine (CAS No. 92-87-5)</li> </ul>	<p>✓ Review of laboratory test report(s)<sup>4</sup> AND</p> <p>✓ Performance of on-site factory visit.</p>																														

<sup>a</sup> This requirement does not apply to preparation agents for secondary spinning (spinning lubricants, conditioning agents), coning oils, warping and twisting oils, waxes, knitting oils, silicone oils and inorganic substances. The sum of each component is taken into account.

<sup>b</sup> Refer to products other than children's products.

**Hong Kong Green Label Scheme**  
**Product Environmental Criteria for**  
**Textile Products Using Recycled Materials (GL-005-007)**



Product Environmental Criteria	Verification Method(s)*
<ul style="list-style-type: none"> <li>• 4-chloro-o-toluidine (CAS No. 95-69-2)</li> <li>• 2-naphthylamine (CAS No. 91-59-8)</li> <li>• o-amino-azotoluene (CAS No. 97-56-3)</li> <li>• 2-amino-4-nitrotoluene (CAS No. 99-55-8)</li> <li>• p-chloroaniline (CAS No. 106-47-8)</li> <li>• 2,4-diaminoanisole (CAS No. 615-05-4)</li> <li>• 4,4'-diaminodiphenylmethane (CAS No. 101-77-9)</li> <li>• 3,3'-dichlorobenzidine (CAS No. 91-94-1)</li> <li>• 3,3'-dimethoxybenzidine (CAS No. 119-90-4)</li> <li>• 3,3'-dimethylbenzidine (CAS No. 119-93-7)</li> <li>• 3,3'-dimethyl-4,4'-diaminodiphenylmethane (CAS No. 838-88-0)</li> <li>• p-cresidine (CAS No. 120-71-8)</li> <li>• 4,4'-methylene-bis-(2-chloroaniline) (CAS No. 101-14-4)</li> <li>• 4,4'-oxydianiline (CAS No. 101-80-4)</li> <li>• 4,4'-thiodianiline (CAS No. 139-65-1)</li> <li>• o-toluidine (CAS No. 95-53-4)</li> <li>• 2,4-diaminotoluene (CAS No. 95-80-7)</li> <li>• 2,4,5-trimethylaniline (CAS No. 137-17-7)</li> <li>• 4-aminoazobenzene (CAS No. 60-09-3)</li> <li>• o-anisidine (CAS No. 90-04-0)</li> </ul>	<p>The applicant shall provide relevant production documentation and a <i>declaration</i> of conformity of the product with the requirements.</p>
<p>7 The following carcinogenic, mutagenic or toxic to reproduction substances shall not be used.</p> <p>7.1 The following dye shall not be used</p> <ul style="list-style-type: none"> <li>• C.I. Basic Red 9</li> <li>• C.I. Disperse Blue 1</li> <li>• C.I. Acid Red 26</li> <li>• C.I. Basic Violet 14</li> <li>• C.I. Disperse Orange 11</li> <li>• C. I. Direct Black 38</li> <li>• C. I. Direct Blue 6</li> <li>• C. I. Direct Red 28</li> <li>• C. I. Disperse Yellow 3</li> </ul> <p>7.2 No use is allowed of dye substance or of dye preparations containing more than 0.1% by weight of substances that are assigned or may be assigned at the time of application any of the following risk phrases:</p> <ul style="list-style-type: none"> <li>• R 40 limited evidence of carcinogenic effect</li> <li>• R 45 may cause cancer</li> <li>• R 46 may cause heritable genetic damage</li> <li>• R 49 may cause cancer by inhalation</li> <li>• R 60 may impair fertility</li> <li>• R 61 may cause harm to the unborn child</li> <li>• R 62 possible risk of impaired fertility</li> <li>• R 63 possible risk of harm to the unborn child</li> <li>• R 68 possible risk of irreversible effects.</li> </ul>	<p>✓ Review of supporting information; AND</p> <p>✓ Performance of on-site factory visit.</p> <p>The applicant shall provide MSDS of all dye used, relevant production documentation and a <i>declaration</i> of conformity of the product with the requirements.</p>

**Hong Kong Green Label Scheme**  
**Product Environmental Criteria for**  
**Textile Products Using Recycled Materials (GL-005-007)**



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as laid down in the European Union Council Directive 67/548/EEC on the regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances, and its subsequent amendments.	
8 Halogenated shrink-resist substances or preparation shall not be used.	<ul style="list-style-type: none"> <li>✓ Review of supporting information; AND</li> <li>✓ Performance of on-site factory visit.</li> </ul> <p>The applicant shall provide MSDS of the shrink-resist substances, relevant production documentation and a <i>declaration</i> of conformity of the product with the requirements.</p>
9 The following coatings, laminates and membranes shall not be produced by plasticizers or solvents as laid down in the European Union Council Directive 67/548/EEC on the regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances, and its subsequent amendments.. <ul style="list-style-type: none"> <li>• R 40 limited evidence of carcinogenic effect</li> <li>• R 45 may cause cancer</li> <li>• R 46 may cause heritable genetic damage</li> <li>• R 49 may cause cancer by inhalation</li> <li>• R 50 very toxic to aquatic organisms</li> <li>• R51 toxic to aquatic organisms</li> <li>• R 52 harmful to aquatic organisms</li> <li>• R 53 may cause long-term adverse effects in the aquatic environment</li> <li>• R 60 may impair fertility</li> <li>• R 61 may cause harm to the unborn child</li> <li>• R 62 possible risk of impaired fertility</li> <li>• R 63 possible risk of harm to the unborn child</li> <li>• R 68 possible risk of irreversible effects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Review of supporting information; AND</li> <li>✓ Performance of on-site factory visit.</li> </ul> <p>The applicant shall provide MSDS of the plasticizers or solvents, relevant production documentation and a <i>declaration</i> of conformity of the product with the requirements.</p>
10 The use of pesticide during transportation or storage shall comply with following: <ul style="list-style-type: none"> <li>• Organic tin compounds (TBT)<sup>c</sup> ≤1ppm</li> <li>• Chlorophenols<sup>d</sup> ≤0.05ppm for under 36 months baby products and ≤0.5ppm for other.</li> <li>• Total enriched pesticide residue<sup>e</sup> ≤0.5ppm For under 36 months baby products and ≤1ppm for other.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Review of laboratory test report(s)<sup>5</sup>; AND</li> <li>✓ Review of supporting information.</li> </ul> <p>Test report(s) shall be submitted by the applicant to show compliance with the requirements.</p>

<sup>c</sup> Apply to synthetic fiber only which include Dibutyltin (DBT), Tributyltin (TBT) and Triphenyltin (TPhT).

<sup>d</sup> Include PCP (pentachlorophenol) and TeCP (2,3,5,6-tetrachlorophenol).

<sup>e</sup> Apply to natural fibers only which include 2,4,5-T, 2,4-D, Aldrin, Carbaryl, DDD, DDE, DDT, Deldrin,  $\alpha$ -Endosulfan,  $\beta$ -Endosulfan, Endrine, Heptachlor, Heptachloroepoxide, Heptachlorobenzene,  $\alpha$ -,  $\beta$ -,  $\gamma$ -Hexachlorocyclohexane, Methoxychlor, mirex, Toxaphene, trifuralin

**Hong Kong Green Label Scheme**  
**Product Environmental Criteria for**  
**Textile Products Using Recycled Materials (GL-005-007)**



Product Environmental Criteria	Verification Method(s)*
11 Production processes shall conform to relevant national or local environmental regulations on preventing air pollution (e.g. emission of acrylonitrile, aromatic diisocyanates, VOC and NOx, etc.) and water contamination (e.g. level of AOX, COD, pH, temperature, etc.).	✓ Review of supporting information.  A written statement on compliance, signed by the Chief Executive Officer or other authorised representative of the applicant company shall be provided and showing compliance with the criteria
12 General packaging requirement <ul style="list-style-type: none"> <li>• Packaging materials shall not contain chlorine-based plastics;</li> <li>• Product of package shall bear a label reading “Made of XX% Recycled Textile Fiber”</li> </ul>	✓ Inspection of product samples; AND ✓ Review of supporting information; AND ✓ Interview with relevant personnel.  Information shall be provided from the manufacturer.

\*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.

<sup>1</sup> **Test method for biodegradability:**

1. OECD 301 A, OECD 301 E, ISO 7827, OECD 302 A, ISO 9887, OECD 302 B, or ISO 9888 it shows a percentage degradation of at least 70 % within 28 days,  
or
2. OECD 301 B, ISO 9439, OECD 301 C, OECD 302 C, OECD 301 D, ISO 10707, OECD 301 F, ISO 9408, ISO 10708 or ISO 14593 it shows a percentage degradation of at least 60 % within 28 days  
or
3. OECD 303 or ISO 11733 it shows a percentage degradation of at least 80 % within 28 days  
or
4. For substances, which above three test methods are inapplicable, the applicant shall provide appropriate documentation, safety data sheets, test reports and/or declarations, indicating the all sizeing preparations used have an equivalent level of biodegradation is presented

<sup>2</sup> **Test method:** EN ISO 105-E04 / ICP-MS or equivalent

<sup>3</sup> **Test method:** EN ISO 14184-1 or equivalent

<sup>4</sup> **Test method:** European Directive 2002/61/EC (Natural fibers: EN 14362-1 / Synthetic fibers: EN 14362-2 / Natural leather: ISO 17234) or German method B-82.02 or French method XP G 08-014 or equivalent.

<sup>5</sup> **Test method:**

- Organo-chlorine pesticides: USEPA 8081 A or equivalent
- Chlorinated herbicides: USEPA 8151 A or equivalent
- Organophosphorus compounds: 8141 A or equivalent
- Semi-volatile organic compounds: 8270 C or equivalent
- Organic tin compounds (TBT): ISO 17353 or GC/MS-SIM or equivalent
- Chlorophenols: GC-ECD, HPLC or equivalent