CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

Sanitary Ware – Ceramic Product

Assessment Standard

(Version 1.0a)

Last updated: 11 June 2020

Sanitary Ware – Ceramic Product

Summary of Assessment Criteria

CORE CRITERIA

Criteria	*Requirements*	*Verification*	*Points*	*Index*
Product Information	Applicant shall provide the following product information for compliance: • Basic product specifications • The intended use of the product • Instructions for correct use and storage to maximise the lifetime of the product • Recommended maintenance instructions for the product • Installation method • Instructions for consumer product disposal • Country of origin	Documentation including but not limited to product label, product catalogue, MSDS, and written declaration with date-stamped photographs.	5	*4.1.2 (page 4)*
Radioactivity	The effective concentration of potassium isotope K_{40} (C_K), radium isotope Ra_{226} (C_{Ra}) and thorium isotope Th_{232} (C_{Th}) shall satisfy the following requirements: External Hazard Index, H_{ex}: $$H_{ex} = \frac{C_K}{4200} + \frac{C_{Ra}}{370} + \frac{C_{Th}}{260}$$ Internal Hazard Index, H_{in}: $$H_{in} = \frac{C_{Ra}}{200}$$ where H_{ex} shall be ≤ 1.2 and H_{in} shall be ≤ 0.9.	Documentation including but not limited to product catalogue, MSDS and test report	15	*4.2.1 (page 4)*
Air Emission	Air emissions of total particulate matters during the whole manufacturing process shall not exceed 30 mg per m^3. Concentration of emission for SO_2 and NO_x for every sampling point shall not exceed the requirements as stated below: **Parameter** / **Limit (mg/m^3)** Nitrogen oxides (NO_x) — 300 Sulphur dioxide (SO_2) — 100	Documentation including but not limited to product catalogue, MSDS and test report	15	*4.2.2 (page 5)*

<table>
<tr><th>Criteria</th><th>Requirements</th><th>Verification</th><th>Points</th><th>Index</th></tr>
<tr><td>Discharge of Waste Water</td><td>Waste water discharged from the manufacturing plant shall be collected and tested. The related parameters in the waste water shall reach the limits as stated below:
<table>
<tr><th>Emission</th><th>Limit (mg/L)</th></tr>
<tr><td>Suspended solids</td><td>< 40</td></tr>
<tr><td>Cadmium</td><td>< 0.07</td></tr>
<tr><td>Chromium (VI)</td><td>< 0.10</td></tr>
<tr><td>Lead</td><td>< 0.30</td></tr>
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<tr><td></td><td></td><td>Subtotal:</td><td>50</td><td></td></tr>
</table>

NON-CORE CRITERIA

Criteria	*Requirements*	*Verification*	*Points +Bonus*	*Index*
Environmental Management System	Manufacturers shall possess valid certificates of ISO 14001, EU Eco-Management and Audit Scheme (EMAS) or Cradle-to-Cradle.	A valid certificate issued by local or overseas accredited certification bodies	+5	*4.1.1 (page 3)*
Carcinogenic Substances	Substances listed in IARC Group 1, 2A and 2B shall be < 0.1% by weight of the product.	Laboratory test report(s), MSDS, self-declaration letter and production documentation	+10	*4.2.4 (page 6)*
Reuse and Recyclability	Applicant shall provide information on recyclability of products including but not limited to the following items: • Product shall not be impregnated, labelled or coated or treated in a manner preventing post-consumer recycling. • Information related to the recyclability of products.	Documentation including but not limited to written declaration with date-stamped photographs.	+5	*4.3.1 (page 6)*

Criteria	*Requirements*	*Verification*	*Points +Bonus*	*Index*
Innovative Environmental Feature	**Option A (Basic: 10 points + Bonus 5 points)** For urinal, water consumption of urinal shall be less than the following limits: • 3.04 litres/flush (10 points) • 2.66 litres/flush (15 points) **Option B (15 points)** For other sanitary ware, the technology adopted shall enable the sanitary ware to reduce resources used in maintenance (e.g. self-cleaning / easy to clean, etc.) and improve the production process and quality.	**Option A** Documentation including but not limited to product catalogue, MSDS and test report **Option B** Documentation including but not limited to written declaration with date-stamped photographs.	+15	*4.3.2 (page 6)*
Waste Management	Manufacturers shall implement effective waste management policies, procedures and/or a waste management programs covering manufacturing operations. Documentation should include but not limited to the following information: • Initiatives taken to reduce waste generation and improve recovery/recycling of waste; • Initiatives implemented for recovery of post-consumer and/or pre-consumer waste that can be re-introduced into the manufacturing process; and • Other environmental benefits or constraints associated with waste minimisation objectives and processes.	Documentation including but not limited to detailed plan and report	+5	*4.3.3 (page 7)*
Energy Management	Manufacturers shall implement effective energy management policies and procedures and / or an energy management programme, including but not limited to the following items: • Initiatives taken to reduce energy use and improve energy efficiency; and • Initiatives or requirements for suppliers or contract manufacturers.	Documentation including but not limited to detailed plan and report	+5	*4.3.4 (page 7)*

Criteria	***Requirements***	***Verification***	***Points*** / ***+Bonus***	***Index***
Packaging Requirement	• All packaging shall be able to be reused/recycled in the country. • All plastic packaging (if applicable) shall be included plastic identification symbol and shall not contain halogenated plastics. • Packaging shall not be impregnated, labeled, coated or otherwise treated in a manner, which would prevent or significantly limit recycling (i.e. metallic labels).	Documentation including but not limited to written declaration with date-stamped photographs	+5	*4.4.1 (page 8)*
		Subtotal:	**+50**	

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1. INTRODUCTION

1.1 PURPOSE

The CIC Green Product Certification *(formerly known as HKGBC Green Product Accreditation and Standards [HK G-PASS])* (herein after referred as the "Scheme") is an environmental labelling scheme owned by the Construction Industry Council (CIC) and implemented by the Hong Kong Green Building Council (HKGBC) which aims to help consumers, building professionals and policy makers identify environmentally preferable building materials and products. This Assessment Standard (hereafter referred to as the "Standard") sets out the assessment criteria and their benchmarks for sanitary ware – ceramic product to govern the application and award of a label under the Scheme. The Standard also defines the verification methods to determine which labelling grade should be awarded to the product according to the assessment criteria.

This Standard neither modifies nor supersedes laws and regulations. Compliance with this Standard is not a substitute for, and does not assure, compliance with any applicable laws or regulations. Compliance with all applicable laws and regulations is a prerequisite for the manufacturing and marketing of the product.

1.2 BACKGROUND

The industrial and economic growth observed in more economically developed countries in recent years has brought a considerable increase in the generation of waste in sanitary ware industry. With the rapidly growth in the industry, sanitary ware becomes a significant burden on the environment, from raw material extraction to potential health hazards in the operational phase.

With increasing environmental claims of the pollutants generated in sanitary ware industry, a more comprehensive and systematic approach to assess the environmental impacts of the sanitary ware shall be developed. The aim of this Standard is to help designers and end-users choosing greener products by conserving resources, reducing the amount of waste disposal in landfills and reducing the impact to human health throughout the life cycle of sanitary ware. The development of the assessment criteria in this Standard has made references to worldwide relevant eco-labelling schemes and some existing life cycle assessment (LCA) studies.

2. SCOPE

ONE application is only eligible for **ONE** product series with same serial number up to **5 (FIVE)** models. All the related products have to be listed on the submitted documents.

Subsequent application is available for similar products with the same product serial number of a labelled product series, which is only eligible for applying within the validity period of the label.

Note:
Each application should specify the product code / serial number.

The CIC or an appointed third party will conduct a random check of the labelled product during the validity period of the label. One of the laboratory tests listed below will be selected and performed to verify the compliancy of the product with the criteria stated in the Standard. Applicant shall be responsible for the cost of the laboratory test.

3. DEFINITIONS

Applicant:	Organisations which apply for the label of the CIC Green Product Certification of the Construction Industry Council
ASTM:	American Society for Testing and Materials
GB:	Chinese National Standards
BS:	British Standards
CIC:	Construction Industry Council
CNAS:	China National Accreditation Service for Conformity Assessment
HKAS:	Hong Kong Accreditation Service
HKGBC:	Hong Kong Green Building Council
HOKLAS:	The Hong Kong Laboratory Accreditation Scheme
IARC:	International Agency for Research on Cancer

ISO: International Organisation for Standardisation

MSDS: Material Safety Data Sheet. To qualify as suitable, MSDS and information therein must not be more than 5-years old

4. EVALUATION CRITERIA

A product to be assessed shall meet all the minimum requirements of the "Core Criteria" in order to be awarded a "Green" (i.e. a "pass" grade) Label under the Scheme. Bonus points may be awarded if the product meets the "Non-core Criteria" and a "Bronze", "Silver", "Gold" or "Platinum" Label will be awarded according to the total points accumulated (see Section 5 for details). All submissions and documentation shall be endorsed by the Chief Executive Officer or other authorised persons of the Applicant to demonstrate conformance to the assessment criteria. All certifications, laboratory reports and documentations must be valid during the assessment process and labelling period. All laboratory reports and documentation shall be within 5 years from the date of issue. The chemical tests should be conducted by either a third party or the manufacturer who has received the ISO17025 certification or relevant national accreditation systems, e.g. HOKLAS, CNAS, etc. CIC or an appointed third party would conduct a random check of the labelled product during the period of validity of the label, through laboratory test to verify the compliance with the criteria as stated in the Standard. Applicant has to bear the cost of the laboratory test.

4.1 GENERAL REQUIREMENTS

4.1.1 Environmental Management System

5 Points (Non-core Criterion)
Manufactures shall possess valid certificates of ISO 14001, EU Eco-Management and Audit Scheme (EMAS) or Cradle-to-Cradle.

Note:
BS EN ISO 14001 is the international standard which provides an outline of how to meet the environmental policy and objectives for the business of the applicant.

Eco-Management and Audit Scheme (EMAS) is an environmental management tool which enables organisations to assess, manage and continuously improve their environmental performance.

Cradle-to-Cradle design is a biomimetic approach to the design of products and systems. It models human industry on nature's processes viewing materials as nutrients circulating in healthy, safe metabolisms.

Verification
A valid certificate issued by local or overseas accredited certification bodies.

4.1.2 Product Information

5 Points (Core Criterion)
Applicant shall provide the following product information for compliance:

- Basic product specifications
- The intended use of the product
- Instructions for correct use and storage to maximise the lifetime of the product
- Recommended maintenance instructions for the product
- Installation method
- Instructions for consumer product disposal
- Country of origin

Verification
Documentation including but not limited to product label, product catalogue, MSDS, and written declaration with date-stamped photographs.

4.2 HUMAN TOXICITY

4.2.1 Radioactivity

15 Points (Core Criterion)
The effective concentration of potassium isotope K_{40} (C_K), radium isotope Ra_{226} (C_{Ra}) and thorium isotope Th_{232} (C_{Th}) shall satisfy the following requirements:
External Hazard Index, H_{ex}:

$$H_{ex} = \frac{C_K}{4200} + \frac{C_{Ra}}{370} + \frac{C_{Th}}{260}$$

Internal Hazard Index, H_{in}:

$$H_{in} = \frac{C_{Ra}}{200}$$

where H_{ex} shall be ≤ 1.2 and H_{in} shall be ≤ 0.9

Products shall be tested based on the requirement as stated in GB 6566-2010 (or latest version); other related testing methods are also acceptable with justification provided by the applicant.

Note:
GB 6566-2010 specifies the limits and natural radionuclides in building materials radionuclide radium-226, thorium-232, potassium-40 Test Method for radioactivity. This standard applies to the radionuclide limits have required local non-metallic.

Verification
Documentation including but not limited to product catalogue, MSDS and test report issued by third party or the manufacturer who has received the ISO17025 certification or relevant national accreditation systems, e.g. HOKLAS, CNAS, etc.

4.2.2 Air Emission

15 Points (Core Criterion)
Air emissions of total particulate matters during the whole manufacturing process shall not exceed 30 mg per m^3. Products shall be tested based on the requirement as stated in BS EN 13284-1:2002 (or latest version); other related testing methods are also acceptable with justification provided by the applicant.

Concentration of emission for SO2 and NOx for every sampling point shall not exceed the following requirement. Products shall be tested based on the requirement as stated in BS EN 14791:2005 and BS EN 14792:2005 (or latest version); other related testing methods are also acceptable with justification provided by the applicant.

Parameter	**Limit (mg/m^3)**
Nitrogen oxides (NO_x)	180
Sulphur dioxide (SO_2)	50

Note:
BS EN 13284-1:2002 specifies a reference method for the measurement of low dust concentration in ducted gaseous streams in concentrations below 50 mg/m3 standard conditions. This method has been validated with special emphasis around 5 mg/m3 on an average half hour sampling time.

BS EN 14791:2005 specifies a manual method for sampling and determining SO_2 content in ducts and stacks emitting to the atmosphere.

BS EN 14792:2005 specifies a manual method for sampling and determining NO / NO_2 / NO_x content in ducts and stacks emitting to the atmosphere.

Verification

Documentation including but not limited to product catalogue, MSDS and test report issued by third party or the manufacturer who has received the ISO17025 certification or relevant national accreditation systems, e.g. HOKLAS, CNAS, etc.

4.2.3 Discharge of Waste Water

15 Points (Core Criterion)

Waste water discharged from the manufacturing plant shall be collected and tested. The related parameters in the waste water shall reach the following limits:

Limits of specific emissions in waste water

Emission	Limit (mg/L)
Suspended solids	< 40
Cadmium	< 0.07
Chromium (VI)	< 0.10
Lead	< 0.30

Waste water shall be tested based on the requirement as stated in GB 25464-2010 (or latest version); other related testing methods are also acceptable with justification provided by the applicant.

Note:

GB 25464-2010 specifies the ceramic industrial enterprise of water and atmospheric pollutants discharge limit, monitoring and control requirements.

Verification

Documentation including but not limited to product catalogue, MSDS and test report issued by third party or the manufacturer who has received the ISO17025 certification or relevant national accreditation systems, e.g. HOKLAS, CNAS, etc.

4.2.4 Carcinogenic Substance

10 Points (Non-core Criterion)

Substances listed in IARC Group 1, 2A and 2B shall be < 0.1% by weight of the product.

Verification

Laboratory test report(s), MSDS, self-declaration letter and production documentation.

4.3 RESOURCE CONSUMPTION

4.3.1 Reuse and Recyclability

5 Points (Non-core Criterion)

Applicant shall provide information on recyclability of products including but not limited to the following items:

- Product shall not be impregnated, labelled or coated or treated in a manner preventing post-consumer recycling.
- Information related to the recyclability of products.

Verification

Documentation including but not limited to written declaration with date-stamped photographs.

4.3.2 Innovative Environmental Feature

15 Points (Non-core Criterion)

Option A:

For urinal, water consumption of urinal shall be less than the following limits:

- 3.04 litres/flush (10 Points)
- 2.66 litres/flush (15 Points)

Verification

Documentation including but not limited to product catalogue, MSDS and test report issued by third party or the manufacturer who has received the ISO17025 certification or relevant national accreditation systems, e.g. HOKLAS, CNAS, etc.

Option B: (15 Points)

For other sanitary ware, the technology adopted shall enable the sanitary ware to reduce resources used in maintenance (e.g. self-cleaning / easy to clean, etc.) and improve the production process and quality.

Verification

Documentation including but not limited to written declaration with date-stamped photographs.

4.3.3 Waste Management

5 Points (Non-core Criterion)

Manufacturer shall implement effective waste management policies, procedures and/or a waste management programs covering manufacturing operations. Documentation should include but not limited to the following information:

- Initiatives taken to reduce waste generation and improve recovery/recycling of waste;
- Initiatives implemented for recovery of post-consumer and/or pre-consumer waste that can be re-introduced into the manufacturing process; and
- Other environmental benefits or constraints associated with waste minimisation objectives and processes.

Verification

Documentation including but not limited to detailed plan and report.

4.3.4 Energy Management

5 Points (Non-core Criterion)

Manufacturer shall implement effective energy management policies and procedures and / or an energy management programme, including but not limited to the following items:

- Initiatives taken to reduce energy use and improve energy efficiency; and
- Initiatives or requirements for suppliers or contract manufacturers.

Verification

Documentation including but not limited to detailed plan and report.

4.4 ECOSYSTEM IMPACT

4.4.1 Packaging Requirement

5 Points (Non-core Criterion)

- All packaging shall be able to be reused/recycled in the country.
- All plastic packaging (if applicable) shall be included plastic identification symbol and shall not contain halogenated plastics.
- Packaging shall not be impregnated, labeled, coated or otherwise treated in a manner, which would prevent or significantly limit recycling (i.e. metallic labels).

Verification

Documentation including but not limited to written declaration with date-stamped photographs.

5. SCORING AND GRADING

The points for meeting each criterion stated in Section 4 are summarised in Table 1.

Table 1: Points to be awarded under the assessment criteria of this Standard

Evaluation criteria	***Points***	
	Basic	***+Bonus***
4.1.1 Environmental Management System		+5
4.1.2 Product Information [CORE]	5	
4.2.1 Radioactivity [CORE]	15	
4.2.2 Air Emission [CORE]	15	
4.2.3 Discharge of Waste Water [CORE]	15	
4.2.4 Carcinogenic Substance		+10
4.3.1 Reuse and Recyclability		+5
4.3.2 Innovative Environmental Feature		+15
4.3.3 Waste Management		+5
4.3.4 Energy Management		+5
4.4.1 Packaging Requirement		+5
	50	**+50**
Total:	**100**	

The minimum requirement to be awarded a "Green" Label under this product category is to obtain 50 points by meeting all minimum requirements laid down in the "Core Criteria".

Table 2: Benchmarks for grading

Grade to be awarded	***Points required***
Platinum	90 or above
Gold	80 – 89
Silver	70 – 79
Bronze	60 – 69
Green	50 – 59
No Label	Below 50