

# CONSTRUCTION INDUSTRY COUNCIL

## CIC GREEN PRODUCT CERTIFICATION

### *Assessment Standard*

### *Technical Requirements*

### **Paint and Coating**



**CIC GREEN**  
PRODUCT CERTIFICATION

(Version 2)

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## Paint and Coating

### *Summary of Assessment Criteria*

#### CORE CRITERIA

Criteria	Requirements	Verification	Points		Index
			Basic	+Bonus	
Product Information	Provide following information with delivered products or made accessible to public: <ul style="list-style-type: none"> <li>• Chemical composition</li> <li>• Possible toxicity or health hazards imposed by the chemical components</li> <li>• Instructions for use</li> <li>• Recommendation on the amount of paint or coating per unit area</li> <li>• Instructions for cleaning equipment and waste proposal methods for the packaging and any remaining paint or coating</li> <li>• Methods of cleaning application equipment</li> </ul>	Documentation including, but not limited to, product catalogue, technical datasheet, and webpages	<b>5</b>	-	4.1.1
<b>ENVIRONMENT</b>					
Human Toxicity and Ecosystem Impact	Heavy Metals: Product shall limit the heavy metals concentration below the listed threshold: Concentration of heavy metals or their compounds shall be < 0.01% by weight of the product: <ul style="list-style-type: none"> <li>• Cadmium</li> <li>• Lead</li> <li>• Chromium VI</li> <li>• Mercury</li> </ul> Concentration of Barium (excluding barium sulphate) or its compounds shall be <0.1% by weight of the product.	Laboratory test report(s)	<b>10</b>	-	4.4.3.2
	Plasticisers: The concentration of phthalates in the product shall be less than 0.1% by weight of the product. The limited phthalates include the following types: <ul style="list-style-type: none"> <li>• Bis(2-ethylhexyl)phthalate (DEHP)</li> <li>• Dibutyl phthalate (DBP)</li> <li>• Benzylbutylphthalate (BBP)</li> <li>• Diisononylphthalate (DINP)</li> <li>• Diisodecylphthalate (DIDP)</li> <li>• Di-n-octylphthalate (DNOP)</li> </ul>	Laboratory test report(s)	<b>10</b>	-	4.4.3.3

Criteria	Requirements	Verification	Points		Index
			Basic	+Bonus	
Volatile Organic Compounds (VOC)	Formaldehyde: The formaldehyde content in the product shall be less than 0.01% (by weight of product); <i>OR</i> Formaldehyde shall not exceed the emission limits of 0.1 mg per m <sup>3</sup> per hour at 24 hours.	Laboratory test report(s)	10	-	4.4.4.1
	VOC Content: <b>For Paint &amp; Coating:</b> Achieve the limits of volatile organic compound as shown in Table 2 in Section 4.4.4.2 (10 basic).  Lower the concentration of VOCs in the product to the limit of volatile organic compounds as shown in Table 2 in Section 4.4.4.2 (10 basic +5 / +10 bonus).  <b>For Plastering &amp; Finishing:</b> VOC content ≤10 g/kg (10 basic) VOC content ≤5 g/kg (10 basic +10 bonus)	Laboratory test report(s)	10	+5/+10	4.4.4.2
<b>PERFORMANCE</b>					
Product Life	Serviceability: Carry out at least <b>FOUR</b> testing items to demonstrate quality and durability of the product. Relevant tests include the following: <b>For Paint &amp; Coating:</b> <ul style="list-style-type: none"> <li>• Adhesion Strength</li> <li>• Weather Resistance</li> <li>• Abrasion Resistance</li> <li>• Impact Resistance</li> <li>• Chemical Resistance</li> <li>• Water Resistance</li> <li>• Thermal Resistance</li> </ul> <b>For Plastering &amp; Finishing:</b> <ul style="list-style-type: none"> <li>• Bond Strength</li> <li>• Compressive Strength</li> <li>• Flexural Strength</li> <li>• Shrinkage</li> <li>• Water Absorption</li> <li>• Crack Resistance</li> <li>• Thermal Stability</li> </ul>	Laboratory test report(s) and any product documentation for all relevant quality and performance tests	5	-	4.5.1.2
		<b>Subtotal:</b>	<b>50</b>	+10	

## NON-CORE CRITERIA

Criteria	Requirements	Verification	Points	Index																		
			+Bonus																			
<b>CARBON</b>																						
CFP Quantification	Provide a 3 <sup>rd</sup> party endorsed life cycle assessment report with the carbon footprint of products (CFP), covering at least A1 to A3 OR provide an Environmental Product Declaration (EPD).	CFP quantification report <b>OR</b> Environmental Product Declaration (EPD)	+10	4.2.1																		
<b>RESOURCE</b>																						
Material Optimization	Raw Materials: The recycled content shall be higher than the following limits:	Material summary report	+5	4.3.1.1																		
	<table border="1"> <thead> <tr> <th>Product Type</th> <th>Recycled content limits</th> </tr> </thead> <tbody> <tr> <td>Water-Based Paints</td> <td>10%</td> </tr> <tr> <td>Solvent-Based Paints</td> <td>10%</td> </tr> <tr> <td>Inorganic Paints</td> <td>10%</td> </tr> <tr> <td>Waterproof Coatings</td> <td>10%</td> </tr> <tr> <td>Anti-Corrosive Coatings</td> <td>10%</td> </tr> <tr> <td>Gypsum Plaster</td> <td>30%</td> </tr> <tr> <td>Cement Plaster</td> <td>30%</td> </tr> <tr> <td>Diatomite Plaster</td> <td>10%</td> </tr> <tr> <td>Lime Plaster</td> <td>10%</td> </tr> <tr> <td>Specialty Finishing Plasters</td> <td>10%</td> </tr> </tbody> </table>				Product Type	Recycled content limits	Water-Based Paints	10%	Solvent-Based Paints	10%	Inorganic Paints	10%	Waterproof Coatings	10%	Anti-Corrosive Coatings	10%	Gypsum Plaster	30%	Cement Plaster	30%	Diatomite Plaster	10%
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Lime Plaster	10%																					
Specialty Finishing Plasters	10%																					
	Raw Material Utilization Rate: Raw material consumption per unit product ≤ 1.015 ton/ton	Material summary report	+5	4.3.1.2																		
Circularity	<p>Packaging Requirement: The packaging materials shall not contain halogenated plastics; <i>OR</i></p> <p>Shall be comprised of 100% recycled materials, readily recyclable materials, or decomposable materials; <i>OR</i></p> <p>Shall not be impregnated, labelled, coated, or otherwise treated in a manner which would prevent or significantly limit recycling.</p>	Documentation on packaging materials used	+5	4.3.2.1																		
Waste Management	Waste Management Plan: Implement effective Waste Management Plan detailing the policies, procedures, and/or a waste management program covering manufacturing operations.	Waste management plan	+5	4.3.3.1																		
Water Management	Option A: Water Consumption Reporting:	Water consumption report	+5/ +10	4.3.4.1																		

Criteria	Requirements	Verification	Points	Index
			+Bonus	
	Report both potable and non-potable water usage in the production process of the past year.			
	Water Recycling Program: Develop and implement a water recycling program during the manufacturing process.	Documentation on water recycling		4.3.4.2
	Option B: Water Management System: Process valid certificate under ISO 14046: Water Footprint Assessment.	ISO 14046 certificate issued by accredited certification body		4.3.4.3
Energy Management	Option A: Energy Management Plan: Implement effective energy management policies and procedures and/or an energy management programme.	Energy management plan	+5/ +10	4.3.5.1
	Option B: Energy Management System: Possess valid certificate under ISO 50001: Energy management systems.	ISO 50001 certificate issued by accredited certification body		4.3.5.2
<b>ENVIRONMENT</b>				
Environmental Management	Environmental Management System: Possess valid certificate under ISO 14001: Environmental management systems or EU Eco-Management and Audit Scheme (EMAS).	ISO 14001 or EMAS certificate issued by accredited certification body	+5	4.4.1.1
Regional Product	Regional Manufactured Product: Products that are manufactured within 800km radius of HKSAR by road transportation; within a 1,600km radius by rail transportation; or within a 4,000km radius by sea transportation.	Location map with distance between manufacturer and HKSAR	+5	4.4.2.1
Human Toxicity and Ecosystem Impact	Hazardous Substances: The following substances shall be less than 0.1% in the product: <ul style="list-style-type: none"> <li>• Isoaliphates</li> <li>• 1,3 butadiene</li> <li>• Bisphenol A</li> <li>• Toluene and toluene compounds</li> <li>• Epichlorohydrin</li> <li>• N-methyl pyrrolinone</li> <li>• Glycol ethers</li> <li>• Crystalline quartz silica</li> <li>• Alkyl phenolic compounds</li> </ul>	Laboratory test report(s) or self-declaration letter	+5	4.4.3.1
	Ozone Depleting Substances: Ozone depleting substances shall be less than 0.1% by weight of the product.	Laboratory test report(s)	+5	4.4.3.4

Criteria	Requirements	Verification	Points	Index
			+Bonus	
<b>PERFORMANCE</b>				
Product Life	Durability: The performance of product shall be maintained for at least 5 years (for interior use) or 10 years (for exterior use).	Documentation and test report(s) related to the product warranty or guarantee performance	+5	4.5.1.1
<b>INNOSMART</b>				
Innovations & Additions	Adopt new practice, technology, and strategy; OR Achieve exemplary performance.	Narrative with supporting documents	+5	4.6.1
		<b>Subtotal:</b>	+80	

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## 1. INTRODUCTION

### 1.1 PURPOSE

The CIC Green Product Certification (the “Scheme”) is a green product labelling scheme, owned by the Construction Industry Council (CIC) and implemented by the Hong Kong Green Building Council (HKGBC). The primary goal of the scheme is to support Hong Kong’s transition to a low-carbon economy by encouraging the adoption of environmentally friendly construction practices.

With the Green Product Certification, various stakeholders, including consumers, building professionals, construction practitioners, and policymakers, can easily and unequivocally identify environmentally preferable construction materials and building products. This certification serves as a reliable indicator of a product’s sustainability, helping to drive market demand for greener options.

To ensure the credibility and effectiveness of the certification, the CIC and the HKGBC has jointly developed this Technical Assessment Standards (the “Standard”), which sets out the assessment criteria and their benchmarks to govern the application and award of a grade under the Scheme. The comprehensive assessment evaluates the overall sustainability of construction materials and building products across multiple dimensions. These dimensions include environmental impact, resource efficiency, technical performance, and the use of smart manufacturing technologies.

The Standard is divided into two main parts:

- General Requirements (Refer to General Requirements provided in separate document). This part introduces Scheme's framework, outlines the application procedure, and details the grades.
- Technical Requirements (This document refers). This part defines the principles, requirements, and guides for quantifying and reporting the products’ carbon footprint (CFP), along with other sustainability assessment criteria and scoring standards.

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.

The Scheme is owned by the Construction Industry Council (CIC), 38/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon, Hong Kong; and operated by Hong Kong Green Building Council (HKGBC), 1/F, Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong, Phone: +852 3994 8888, Email: [cicgpc@hkgbc.org.hk](mailto:cicgpc@hkgbc.org.hk)

### 1.2 BACKGROUND

Paints, coatings, and plaster and finish products are widely utilized in buildings. They not only provide decorative benefits but also protect various surfaces, contributing to significant environmental advantages by minimizing the resource demands related to repair and maintenance. However, these products can have considerable impacts on the

environment and human health throughout their life cycle due to the presence of hazardous substances like heavy metals, solvents, volatile organic compounds (VOCs), and other toxins. Additionally, the manufacturing process can generate substantial hazardous waste and discharges while consuming significant amounts of energy and raw materials.

The purposes of the assessment criteria developed for paint and coating are, therefore, to minimise the use and subsequent release of harmful substances to the environment throughout the product’s life cycle, to conserve resources and energy consumption, and to encourage reuse, recycling, and responsible disposal of unwanted paint and coating, as well as packaging.

## **2. SCOPE**

### **2.1 Paint & Coating**

This Standard applies to paints and coatings used in building construction for interior and exterior surfaces.

#### Product Categories:

- **Water-Based Paints:** Includes paints where water is the primary solvent, such as primers and finishes.
- **Solvent-Based Paints:** Includes paints that use organic solvents for enhanced durability.
- **Inorganic Paints:** Encompasses mineral-based paints used in construction applications.
- **Waterproof Coatings:** Coatings formulated to provide water resistance on building surfaces.
- **Anti-Corrosive Coatings:** Coatings designed for protection of structural materials from corrosion.

### **2.2 Plastering & Finishing**

This Standard applies to plastering and finishing materials used on building surfaces for leveling and finishing in both internal and external applications.

#### Product Categories:

- **Gypsum Plaster:** Gypsum-based materials used for surface preparation and finishing.
- **Cement Plaster:** Cement-based materials used for building surfaces.
- **Diatomite Plaster:** Plasters containing diatomaceous earth.
- **Lime Plaster:** Lime-based plasters used for surface finishing.
- **Specialty Finishing Plasters:** Includes decorative plasters such as Venetian plaster and stucco.

Note:

The product category shall not be changed once the application is submitted.

The ingredient contains 1% or more (by weight) in the product shall be indicated in the documentation, such as product information or MSDS.

### 3. DEFINITIONS

*Applicant:* Organisation which applies for the label of the CIC Green Product Certification of the Construction Industry Council

*ASTM:* American Society for Testing and Materials

*BS:* British Standards

*CAS:* Chemical Abstract Service. Unique CAS numbers are assigned to chemical compounds as a means of identification

*CIC:* Construction Industry Council

*CNAS:* China National Accreditation Service for Conformity Assessment

*Coating:* A pigmented resin that is converted to a solid adherent film after application to a substrate as a thin layer having protective, decorative or specific technical properties (e.g. modifying light and heat radiation characteristics of the substrate)

*GB:* National Standards of China

*Halogenated solvent:* Any volatile organic compound incorporating halogens including fluorine, chlorine, bromine, and iodine

*HKAS:* Hong Kong Accreditation Service

*HKGBC:* The Hong Kong Green Building Council Limited

*HOKLAS:* The Hong Kong Laboratory Accreditation Scheme

*ISO:* International Organization for Standardization

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

*Ozone depleting substances:* The “scheduled substances” defined in Ozone Layer Protection Ordinance (Chapter 403)

*Paint:* A pigmented liquid that is designed for application in single or multiple layers on surfaces to form a continuous film with protective, decorative, or specific technical properties. It also includes varnishes and stains

*Plastering & Finishes:* Plastering refers to the process of applying a mixture of lime, cement, sand, and water to walls and ceilings to create a smooth, durable surface. It serves both functional and aesthetic purposes, providing insulation,

fire resistance, and a base for paint or other finishes.

Finishes encompass the final treatments applied to surfaces after plastering. This includes painting, wallpapering, tiling, or applying decorative elements. The purpose of finishes is to enhance the appearance and protect the underlying materials, contributing to the overall design and ambiance of a space.

- Stain:* A transparent, semitransparent or opaque mixture of colouring matter (dyes and/or pigments) designed to colour and/or protect a surface by penetration, leaving practically no surface film
- TCECS* Technical Code of Engineering Construction Standardization
- Third-party:* An entity without any financial interest or stake in the sales of the product or service being evaluated or other conflict of interest
- Varnish:* A liquid composition that is converted to a transparent or translucent, continuous film after application
- VOC:* Volatile organic compounds refer to any organic compound (compound which contains carbon) with either a boiling point below 250°C measured at 101.3 kPa or a vapour pressure of more than 0.1 mm Hg measured at 25°C

#### 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) grade under the Scheme. Bonus points may be awarded if the product meets the “Non-core Criteria”. “Bronze”, “Silver”, “Gold”, or “Platinum” grade will be awarded according to the total points accumulated, as shown in Table 1.

*Table 1: Benchmarks for grading*

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

All submissions and documentations shall be endorsed by the Chief Executive Officer or other authorised persons of the Applicant to demonstrate conformance to the assessment criteria. All certification, laboratory reports, and documentation must be valid during the assessment process and labelling period. The date of issue of all laboratory reports and documentation shall be within 5 years from the first application submission date.

If the certification expires during the labelling period or upon renewal, the applicant is required to provide an updated and valid certification. Failure to resubmit the required certification will result in the revocation of CIC Green Product Certificate without compensation.

The chemical tests should be conducted by either a third party or the manufacturer, providing that they have obtained ISO 17025 certification or relevant national accreditations, such as HOKLAS or CNAS.

## **4.1 BASIC INFORMATION**

### ***4.1.1 Product Information - Core Criteria***

*The Applicant is required to achieve 5 Basic Points under this section.*

#### Requirements

5 Basic Points for providing following information with the product or made available to the public to help the users to use the paint or coating products in a sustainable manner:

- Chemical composition
- Possible toxicity or health hazards imposed by the chemical components
- Instructions for use
- Recommendation on the amount of paint or coating per unit area
- Instructions for cleaning equipment and waste proposal methods for the packaging and any remaining paint or coating
- Methods of cleaning application equipment

#### Verification

Documentation showing the product information and instructions including, but not limited to, product catalogue, technical datasheet, webpages, and/or any other information freely accessible by customers.

## **4.2 CARBON**

### ***4.2.1 CFP Quantification – Non-core Criteria***

*The Applicant can achieve maximum 10 Bonus Points under this section.*

#### Requirements

10 Bonus Points for providing life cycle assessment report for quantifying and reporting the carbon footprint of products (CFP), covering at least A1 (raw material supply), A2 (transport), and A3 (manufacturing process). This can be achieved by either of the following:

Conduct CFP study report in accordance with ISO 14067:2018, GB/T 24067-2024 or equivalent.

**OR**

10 Bonus Points for providing the product's CFP value from a product level EPD issued in accordance with ISO 14025:2006, ISO 14067:2018, BS EN 15804:2012, ISO 21930:2017, GB/T 24025-2009 or GB/T 24067-2024.

Verification

Either of the following documents shall be provided for verification.

CFP quantification report endorsed by a third-party critical review, in accordance with ISO 14067:2018, GB/T 24067-2024 or equivalent

**OR**

Environmental Product Declaration issued by 3<sup>rd</sup> party fulfilling the above requirements.

### 4.3 RESOURCE

#### 4.3.1 *Material Optimization*

*The Applicant can achieve maximum 10 Bonus Points under this section.*

##### 4.3.1.1 *Raw Materials – Non-core Criteria*

Requirements

**For Water-Based Paints:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Solvent-Based Paints:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Inorganic Paints:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Waterproof Coatings:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Anti-Corrosive Coatings:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Gypsum Plaster:**

5 Bonus Points for at least 30% of gypsum comes from recycled content.

**For Cement Plaster:**

5 Bonus Points for at least 30% by weight cement plastering is recycled content.

**For Diatomite Plaster:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Lime Plaster:**

5 Bonus Points for raw materials containing at least 10% recycled content.

**For Specialty Finishing Plasters:**

5 Bonus Points for raw materials containing at least 10% recycled content.

Verification

Material summary with detailed breakdown of the raw materials used in the manufacturing process. The summary shall include at least the following information:

- Material type with quantity; and
- Source of recycled content, supported by purchase order, declaration letter from suppliers, or other equivalent documents; and
- Calculation of recycled materials percentage.

**4.3.1.2 Raw Material Utilization Rate – Non-core Criteria**

Requirements

5 Bonus Points for raw material consumption per unit product  $\leq$  1.015 ton/ton.

Verification

Material summary with detailed breakdown of the raw materials used in the manufacturing process. The summary shall include at least the following information:

- Quantity and source of raw materials, supported by purchase order, declaration letter from suppliers, or other equivalent documents; and
- Quantity of qualified products produced, supported by manufacturing record or other equivalent documents; and
- Calculation of utilization rate of raw materials.

**4.3.2 Circularity**

*The Applicant can achieve maximum 5 Bonus Points under this section.*

**4.3.2.1 Packaging Requirement – Non-core Criteria**

Requirements

5 Bonus Points for minimizing the wastage from all primary packaging materials. The packaging materials shall achieve either of the following:

The packaging materials shall not contain halogenated plastics

**OR**

The packaging materials shall be comprised of 100% recycled materials, readily recyclable materials, or decomposable materials

**OR**

The packaging shall not be impregnated, labelled, coated, or otherwise treated in a manner which would prevent or significantly limit recycling.

Verification

Documentation describing the packaging materials used as well as their chemical composition (if any and where applicable), treatment process, and recyclability.

**4.3.3 Waste Management**

*The Applicant can achieve maximum 5 Bonus Points under this section.*

**4.3.3.1 Waste Management Plan – Non-core Criteria**

Requirements

5 Bonus Points for implementing an effective waste management plan detailing the policies, procedures, and/or a waste management program covering manufacturing operations. The waste management plan should include, but should not be limited to the following information:

- Initiatives taken to reduce waste generation and improve recovery/recycling of waste; and
- 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 of waste management plan detailing the above, supported by organizational policy or other equivalent documents.

**4.3.4 Water Management**

*The Applicant can achieve maximum 10 Bonus Points under this section.*

*The Applicant can select one of the options below and comply with any or all the requirements under that option to achieve the associated points.*

**Option A:**

**4.3.4.1 Water Consumption Reporting – Non-core Criteria**

Requirements

5 Bonus Points for reporting both potable and non-potable water usage in the production process of the past year.

Verification

Water consumption report, supported by water usage data acquired from water meter, water sub-meter, water bill, or other equivalent documents.

#### **4.3.4.2 Water Recycling Program – Non-core Criteria**

##### Requirements

5 Bonus Points for developing and implementing water recycling program during the manufacturing process.

##### Verification

Documentation demonstrating the implementation of water recycling program, support by drawings, water usage data acquired from water sub-meter or other equivalent documents.

##### **Option B:**

#### **4.3.4.3 Water Management System – Non-core Criteria**

##### Requirements

10 Bonus Points for possessing valid certificate under ISO 14046: Environmental management – Water footprint – Principles, requirements and guidelines.

ISO 14046 is a framework for assessing the water footprint of products, processes, and organizations. It provides principles, requirements, and guidelines for conducting and reporting water footprint assessments. It helps organizations evaluate and improve their water management practices.

##### Verification

A valid ISO 14046 certificate issued by accredited certification body.

#### **4.3.5 Energy Management**

*The Applicant can achieve maximum 10 Bonus Points under this section.*

*The Applicants can select one of the options below and comply with any or all the requirements under that option to achieve the associated points.*

##### **Option A:**

#### **4.3.5.1 Energy Management Plan – Non-core Criteria**

##### Requirements

5 Bonus Points for implementing effective energy management policies and procedures and/or an energy management programme including, but not limited to, the following items:

- Energy efficiency initiatives: Manufacturer should undertake specific initiatives to reduce energy use and improve energy efficiency throughout their operations. This could include upgrading to more efficient equipment, optimizing production processes, or implementing energy-saving technologies; and

- Supplier requirements: Manufacturers should extend their energy management efforts to their supply chain by establishing requirements or initiatives for suppliers and contract manufacturers to improve their energy performance where possible.

#### Verification

Documentation of Energy Management Plan detailing the above, supported by organizational policy or other equivalent documents.

#### ***Option B:***

### ***4.3.5.2 Energy Management System – Non-core Criteria***

#### Requirements

10 Bonus Points for possessing valid certificate under ISO 50001: Energy management systems — Requirements with guidance for use.

ISO 50001 provides a framework for organizations to establish, implement, maintain, and improve an Energy Management System. The goal is to help organizations improve their energy performance, increase energy efficiency, and reduce energy costs and greenhouse gas emissions. By achieving ISO 50001 certification, manufacturers can demonstrate their commitment to energy efficiency and sustainability.

#### Verification

A valid ISO 50001 certificate issued by accredited certification body.

## **4.4 ENVIRONMENT**

### ***4.4.1 Environmental Management***

*The Applicant can achieve maximum 5 Bonus Points under this section.*

#### ***4.4.1.1 Environmental Management System – Non-core Criteria***

#### Requirements

5 Bonus Points for possessing valid certificate under ISO 14001: Environmental management systems — Requirements with guidance for use or EU Eco-Management and Audit Scheme (EMAS).

The target of the environmental management system shall be set to reduce the environmental impacts during the manufacturing process which include, but are not limited to, the reduction of hazardous substance emissions, energy consumption, CO<sub>2</sub> emissions, secondary environmental load, waste management, water management, etc.

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.

### Verification

A valid ISO14001 or EMAS certificate issued by accredited certification body.

## **4.4.2 Regional Product**

*The Applicant can achieve maximum 5 Bonus Points under this section.*

### **4.4.2.1 Regional Manufactured Product – Non-core Criteria**

#### Requirements

5 Bonus Points for products that are manufactured within 800km radius of HKSAR by road transportation; within a 1,600km radius by rail transportation; or within a 4,000km radius by sea transportation. The distance is measured by the direct distance, not by actual travel distance.

#### Verification

Documents demonstrating the location of the manufacturer and a map showing the distance between the manufacturer and HKSAR.

## **4.4.3 Human Toxicity and Ecosystem Impact**

*The Applicant can achieve maximum 30 Points under this section.*

*The Applicant is required to achieve 20 Basic Points under this section. Additionally, the Applicant can achieve maximum 10 Bonus Points under this section.*

### **4.4.3.1 Hazardous Substances – Non-core Criteria**

#### Requirements

5 Bonus Points for demonstrating that the product shall NOT contain the following hazardous substances which are equal to or less than 0.1% by weight of product:

- Isoaliphates
- 1,3 butadiene
- Bisphenol A
- Toluene and toluene compounds
- Epichlorohydrin
- N-methyl pyrrolinone
- Glycol ethers
- Crystalline quartz silica
- Alkyl phenolic compounds

#### Verification

Laboratory test report(s) or self-declaration letter. The tests shall be performed in accordance with relevant international standards.

#### **4.4.3.2 Heavy Metals – Core Criteria**

##### Requirements

10 Basic Points for demonstrating that the heavy metal element content of the product needs to meet the following requirements:

Product shall not contain the following heavy metals or their compounds.

Concentration of heavy metals or their compounds shall be less than 0.01% by weight of the product:

- Cadmium
- Lead
- Chromium VI
- Mercury

Concentration of Barium (excluding barium sulphate) or its compounds shall be less than 0.1% by weight of the product.

##### Verification

Laboratory test report(s). Test report(s) shall be compiled according to the National and International test methods including but not limited to ISO 3856-1 or ASTM D3335 for lead, ISO 3856-4 or ASTM D3335 for cadmium, ISO 3856-5 for hexavalent chromium, ISO 3856-7 or ASTM D3624 for mercury, and ISO 3856-3 for barium.

#### **4.4.3.3 Plasticisers – Core Criteria**

##### Requirements

10 Basic Points for demonstrating that the concentration of phthalates in the product shall be less than 0.1% by weight of the product. The limited phthalates include the following types:

- Bis(2-ethylhexyl)phthalate (DEHP)
- Dibutyl phthalate (DBP)
- benzylbutylphthalate (BBP)
- Diisononylphthalate (DINP)
- Diisodecylphthalate (DIDP)
- Di-n-octylphthalate (DNOP)

##### Verification

Laboratory test report(s). Test report(s) shall be compiled according to the National and International test methods, including but not limited to Standard Operating Procedure for Determination of Phthalates (CPSC-CH-C1001-09.3), GB 24613-2002 or equivalent.

#### **4.4.3.4 Ozone Depleting Substances – Non-core Criteria**

##### Requirements

5 Bonus Points for demonstrating that any ozone depleting substances regulated in “the Montreal Protocol on Substances that Deplete the Ozone Layer” shall not be contained in the product and shall not exceed 0.1% by weight of the product.

##### Verification

Laboratory test report(s). The test shall be performed by “Gas chromatography–mass spectrometry (GC-MS)” testing method in accordance with, but not limited to, ISO 17895, ISO 11890, and ASTM 17895.

#### **4.4.4 Volatile Organic Compounds (VOC)**

*The Applicant can achieve maximum 30 Points under this section.*

*The Applicant is required to achieve 20 Basic Points under this section. Additionally, the Applicant can achieve maximum 10 Bonus Points under this section.*

##### **4.4.4.1 Formaldehyde – Core Criteria**

##### Requirements

10 Basic Points for demonstrating that formaldehyde meets one of the following requirements:

- The formaldehyde content in the product shall be less than 0.01% (by weight of product). The chemical shall be analysed according to National or International standards including but not limited to ASTM D5910

##### **OR**

- The formaldehyde emission shall not exceed 0.1 mg per m<sup>3</sup> per hour at 24 hours. The testing shall be conducted according to National or International standards including but not limited to GB 50325 Appendix B Measurement of content of formaldehyde and VOC emission using environmental test chamber.

##### Verification

Laboratory test report(s) meeting the above requirements.

##### **4.4.4.2 VOC Content – Core Criteria**

##### Requirements

##### **For Paint & Coating**

10 Basic Points for the total content of volatile organic compounds (VOC) in the product not exceeding the levels stated in Table 2. These amounts include water and tints / colourants.

5 – 10 Bonus Points will be awarded if more stringent limits on VOC is achieved.

Table 2: Limits of volatile organic compounds and associated points

	Points			Points		
	10 Basic	+5 Bonus	+10 Bonus	10 Basic	+5 Bonus	+10 Bonus
Paint & Coating	Interior			Exterior		
	VOC limit (g/L) (include water and tints/colourants)					
Matt (≤ 10 gloss units)	50	25	10	50	30	15
Low sheen (10 – 15 gloss units)	60	30	10	60	30	15
Semi-gloss / gloss (≥ 15 gloss units)	80	40	10	100	50	20
Fillers / primers	80	40	15	80	40	15
Sealers / undercoats	90	60	30	100	60	30
Stains / varnishes	100	60	30	100	60	30

Note: (i) where a paint/coating may fit into more than one category (e.g. sealer-primer), it shall comply with the category with the lower VOC limit (e.g. primer); (ii) where a coating may be for interior or exterior use, it shall comply with the interior VOC limit.

### For Plastering & Finishing

10 Basic points for demonstration that the VOC content (excluding water and solvents) shall not exceed 10 g/kg.

10 Bonus points for demonstration that the VOC content (excluding water and solvents) shall not exceed 5 g/kg.

#### Verification

Laboratory test report(s). Products shall be tested in accordance including but not limited to ISO 11890-1. Other related testing methods are also acceptable with justification provided by the applicant.

## 4.5 PERFORMANCE

### 4.5.1 Product Life

*The Applicant can achieve maximum 10 Points under this section.*

*The Applicant is required to achieve 5 Basic Points under this section. Additionally, the Applicant can achieve maximum 5 Bonus Points under this section.*

#### 4.5.1.1 Durability – Non-Core Criteria

##### Requirement

5 Bonus Points for demonstrating that the performance of product shall be maintained for at least 5 years (for interior use) or 10 years (for exterior use).

Verification

Documentation related to the product warranty or guarantee performance shall be submitted including, but not limited to, product catalogue and self-declaration.

**4.5.1.2 Serviceability – Core Criteria**

Requirement

5 Basic Points for demonstrating the product quality and durability through at least **FOUR** testing items which may include, but are not limited to, the following:

**For Paint & Coating:**

- Adhesion Strength
- Weather Resistance
- Abrasion Resistance
- Impact Resistance
- Chemical Resistance
- Water Resistance
- Thermal Resistance

**For Plastering & Finishing:**

- Bond Strength
- Compressive Strength
- Flexural Strength
- Shrinkage
- Water Absorption
- Crack Resistance
- Thermal Stability

*Table 3: Standards for Paint & Coating*

Testing items	Standards
• Adhesion Strength	ASTM D3359, GB/T 9286, GB/T 35602-2017, TCECS 10039-2019
• Weather Resistance	ASTM G154, GB/T 23987, GB/T 35602-2017, TCECS 10039-2019
• Abrasion Resistance	ASTM D4060, GB/T 1768, GB/T 35602-2017, TCECS 10039-2019
• Impact Resistance	ASTM D2794, GB/T 1732, GB/T 35602-2017, TCECS 10039-2019
• Chemical Resistance	ASTM D1308, GB/T 9274, GB/T 35602-2017, TCECS 10039-2019

• Water Resistance	ASTM D870, GB/T 35602-2017, TCECS 10039-2019
• Thermal Resistance	ASTM D2485, GB/T 9278, GB/T 35602-2017, TCECS 10039-2019

*Table 4 Plastering & Finishing*

Testing items	Standards
• Bond Strength	ASTM C952, GB/T 25181, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019
• Compressive Strength	ASTM C472, GB/T 17671, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019
• Flexural Strength	ASTM C348, GB/T 17671, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019
• Shrinkage	ASTM C472, GB/T 17671, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019
• Water Absorption	ASTM C472, GB/T 17671, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019
• Crack Resistance	ASTM C472, GB/T 17671, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019
• Thermal Stability	ASTM C472, GB/T 17671, GB/T 44177, GB/T 35602-2017, TCECS 10039-2019

#### Verification

Laboratory test report(s) and any production documentation for all relevant quality, durability performance tests.

## **4.6 INNOSMART**

### **4.6.1 Innovations & Additions – Non-core Criteria**

*The Applicant can achieve maximum 5 Bonus Points under this section.*

#### Requirements

5 Bonus Points for achieving significant, measurable environmental performance using new practices, technology, and strategy not addressed in this Standard.

#### **OR**

Demonstrating exemplary performance in any of the existing assessment criteria.

The benefits of environmental performance can be achieved throughout the lifecycle of the products, covering the product, construction process, use, and end of life stage. Examples of innovative and smart technologies are shown below:

- Adopt Smart technology at manufacturing facility, such as automation and robotics, to enhance the efficiency of production process.
- Deploy digital platforms to enhance the production, logistics, and management of the manufacture, enabling data-driven decision making and optimization.

- Implement systems, such as IoT devices, for real-time hazard detection and to monitor the health and safety of workers.

### Verification

Report with a maximum length of 1,000 words, outline the objectives, solution, and evaluation of the performance achieved by the proposed Smart and Innovative Technologies; and

Include attachments that provide evidence of implementation, along with relevant technical specifications that support the claims made in the report.

## 5. SCORING

The points for meeting each criterion stated in this Standard are summarized below.

*Table 5: Points to be awarded under the assessment criteria of this Standard*

Label	Evaluation Criteria		Points		Related BEAM Plus Credits	
			Basic	+Bonus		
	Product Information [CORE]		5	-		
Carbon	CFP Quantification		-	+10		
Resource	Material Optimization	Raw Materials	-	+5	MW 6	
		Raw Material Utilization Rate	-	+5		
	Circularity	Packaging Requirement	-	+5		
	Waste Management	Waste Management Plan	-	+5		
	Water Management	Water Consumption Reporting	-	+5/+10		
		Water Recycling Program				
		Water Management System				
Energy Management	Energy Management Plan	-	+5/+10			
	Energy Management System					
Environment	Environmental Management	Environmental Management System	-	+5		
	Regional Product	Regional Manufactured Product	-	+5	MW 8	
	Human Toxicity and Ecosystem Impact	Hazardous Substances		-	+5	
		Heavy Metals [CORE]		10	-	
		Plasticisers [CORE]		10	-	
		Ozone Depleting Substances		-	+5	MW 7
	Volatile Organic Compounds (VOC)	Formaldehyde [CORE]		10	-	
VOC Content [CORE]		10	+5/+10	HWB 8		
Performance	Product Life	Durability	-	+5	MW 4	
		Serviceability [CORE]	5	-		
InnoSmart	Innovations & Additions		-	+5	IA	
<b>Total:</b>			<b>50</b>	<b>+90</b>		

Related BEAM Plus Credits refer to these relevant credits under BEAM Plus New Buildings Version 2.0, as listed below:

- MW 4: Design for Durability and Resilience
- MW 6: Recycled Materials
- MW 7: Ozone Depleting Substances
- MW 8: Regional Materials
- MW 9: Use of Green Products
- HWB 8: Indoor Air Quality
- Innovations and Additions