



CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

Assessment Standard

Technical Requirements

Panel Board



CIC GREEN
PRODUCT CERTIFICATION

(Version 2)

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PANEL BOARD

Summary of Assessment Criteria

CORE CRITERIA

Criteria	Requirements	Verification	Point		Index
			Basic	+Bonus	
Product Information	Provide the following product information: <ul style="list-style-type: none"> • The intended use of the product • Instructions for correct use and storage to maximise the lifetime of the product • Maintenance instructions • Recycling instruction for the end-of-life of the product • Technical data sheets, web pages and any other information shall be freely available to customers or the public 	Documentation including but not limited to product catalogue, technical datasheet, webpages	5	-	4.1.1
RESOURCE					
Material Optimisation	Raw Materials: 10 Basic: Panel board shall contain at least 10% of raw materials or components (by weight) from recycle. +5 Bonus: <ol style="list-style-type: none"> i. Gypsum-Based Panel Board: <ul style="list-style-type: none"> • Gypsum board must have $\geq 70\%$ recycled gypsum. • Paper content $\leq 30\%$ and recycled. • Wood must be FSC/PEFC certified, bleached without elemental chlorine ii. Solid Wood Panel Board: <ul style="list-style-type: none"> • At least 70% of wood used must have FSC certification or an equivalent internationally recognized sustainable forest certification • Alternatively, the panel can contain at least 30% reclaimed or recycled wood content iii. Metal-Based Panel Board: <ul style="list-style-type: none"> • Metal panels must contain a minimum of 20% recycled metal content iv. Cement Fibreboards: <ul style="list-style-type: none"> • Not be sourced from natural forests, • Originate from agricultural, domestic waste • Be derived from industrial fiber waste, • Consist of post-consumer or pre-consumer waste paper. 	Material safety data sheets (MSDS) and production documentation, invoices or receipts of the purchase of recycled materials and documentation with substantiation (template provided in the self-declaration form)	10	+5	4.3.1.1

Criteria	Requirements	Verification	Point		Index																								
			Basic	+Bonus																									
	<ul style="list-style-type: none"> Include at least 15% recycled content by weight <p>v. Wood-Plastic Composite Panel Board:</p> <ul style="list-style-type: none"> For vinyl-based products, the renewable or recycled raw material content should be at least 30% For polyolefin-based products, the renewable or recycled raw material content should be at least 85% Wood must be FSC/PEFC certified, bleached without elemental chlorine <p>vi. Other Panel Materials:</p> <ul style="list-style-type: none"> Panels in this category should contain at least 10% recycled material by weight 																												
ENVIRONMENT																													
Human Toxicity and Ecosystem Impact	<p>Heavy Metals: The product shall not contain heavy metals exceeding the limits listed below:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">5 basic points</th> <th style="text-align: center;">5 basic+5 bonus points</th> </tr> <tr> <th style="text-align: center;">Metal</th> <th colspan="2" style="text-align: center;">Concentration Limit (mg/kg)</th> </tr> </thead> <tbody> <tr> <td>Arsenic</td> <td style="text-align: center;">17</td> <td style="text-align: center;">8.5</td> </tr> <tr> <td>Cadmium</td> <td style="text-align: center;">0.8</td> <td style="text-align: center;">0.4</td> </tr> <tr> <td>Chromium (III)</td> <td style="text-align: center;">290</td> <td style="text-align: center;">145</td> </tr> <tr> <td>Chromium (VI)</td> <td style="text-align: center;">N.D.^</td> <td style="text-align: center;">N.D.</td> </tr> <tr> <td>Lead</td> <td style="text-align: center;">160</td> <td style="text-align: center;">80</td> </tr> <tr> <td>Mercury</td> <td style="text-align: center;">200</td> <td style="text-align: center;">100</td> </tr> </tbody> </table> <p>^N.D.: not detected</p>		5 basic points	5 basic+5 bonus points	Metal	Concentration Limit (mg/kg)		Arsenic	17	8.5	Cadmium	0.8	0.4	Chromium (III)	290	145	Chromium (VI)	N.D.^	N.D.	Lead	160	80	Mercury	200	100	Laboratory test report(s), MSDS and production documentation	5	+5	4.4.3.2
		5 basic points	5 basic+5 bonus points																										
Metal	Concentration Limit (mg/kg)																												
Arsenic	17	8.5																											
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Lead	160	80																											
Mercury	200	100																											
	<p>Flame Retardants: Concentration of the following flame retardants in the product shall be below 0.1% by weight of the product:</p> <ul style="list-style-type: none"> Polybrominated diphenyl ether Polybrominated biphenyls Short-chained chlorinated paraffin Hexabromocyclododecane 	Laboratory test report(s) and any relevant production documentation.	10	-	4.4.3.5																								
Volatile Organic Compounds (VOC)	<p>Formaldehyde: Option A The emission limit of formaldehyde from the product shall be:</p>	Laboratory test report(s), MSDS and any relevant	10	-	4.4.4.1																								

Criteria	Requirements	Verification	Point		Index
			Basic	+Bonus	
	<ul style="list-style-type: none"> • \leq 1.0 mg/L (Desiccator method); or • \leq 0.02 mg/m³ (Chamber method) <p>OR Option B Product shall not contain formaldehyde content in the product</p>	production documentation.			
	<p>VOC Content: Option A The emission limit of the following substances from the product shall be:</p> <ul style="list-style-type: none"> • TVOC: < 0.25 mg/m³ within 24 hours <p>OR Option B Product shall not contain volatile organic compounds.</p>	Laboratory test report(s), MSDS and any relevant production documentation.	10	-	4.4.4.2
		Subtotal:	50	+10	

NON-CORE CRITERIA

Criteria	Requirements	Verification	Points	Index
			+Bonus	
CARBON				
CFP Quantification	Provide a 3 rd 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 OR Environmental Product Declaration (EPD)	+10	4.2.1
RESOURCE				
Circularity	Recyclability: Developed a recycling plan for the product and declared options for reuse, recycling, recovery and disposal.	Documentation on recycling plan	+5	4.3.2.1
	Packaging Requirement: The packaging materials shall not contain halogenated plastics; <i>OR</i> Shall be comprised of 100% recycled materials, readily recyclable materials or decomposable materials; <i>OR</i> shall not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent or significantly limit recycling.	Documentation on packaging materials used	+5	4.3.2.2
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: Report both potable and non-potable water usage in the production process of the past year.	Water consumption report	+5/ +10	4.3.4.1
	Water Recycling Program: Develop and implement water recycling program during the manufacturing process.	Documentation on water recycling		4.3.4.2
	Option B: Water Management System: Process valid certificates 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

Criteria	Requirements	Verification	Points	Index
			+Bonus	
	Option B: Energy Management System: Possess valid certificates under ISO 50001: Energy management systems – Requirements with guidance for use.	ISO 50001 Certificate issued by accredited certification body		4.3.5.2
ENVIRONMENT				
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: Product shall not contain phosphogypsum, CFC, halons, and 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	+5	4.4.3.1
	Radioactivity: External Hazard Index, $H_{ex} \leq 1.2$ Internal Hazard Index, $H_{in} \leq 0.9$	Laboratory test report(s) and any production documentation	+5	4.4.3.3
	Plasticisers: Concentration of phthalate in the product below 0.1% by weight of the product. The limited phthalates include the following types: <ul style="list-style-type: none"> • Bis(2- Bis(2-ethylhexyl)phthalate (DEHP) • Dibutyl phthalate (DBP) • Benzylbutyl phthalate (BBP) • Diisononyl phthalate (DINP) • Diisodecyl phthalate (DIDP) • Di-n-octyl phthalate (DNOP) 	Laboratory test report(s)	+5	4.4.3.4
PERFORMANCE				
Product Life	Serviceability: Carry out at least FIVE of the testing items to demonstrate quality, durability and performance properties of the product. Relevant tests include but not limited to: <ul style="list-style-type: none"> • Durability • Impact Resistance • Moisture Resistance • Dimensional Stability • Fire Resistance • Surface Abrasion Resistance • Chemical Resistance 	Laboratory test report(s) for all relevant quality and performance tests	+5	4.5.1.1

Criteria	Requirements	Verification	Points	Index
			+Bonus	
INNOSMART				
Innovations & Additions	Adopt new practice, technology and strategy. <i>OR</i> Achieve exemplary performance	Narrative with supporting documents	+5	4.6.1
		Subtotal:	+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.

1.2 BACKGROUND

Panel board is a common building product which is often used as interior partitioning and wall and ceiling material due to its ease of assembly, low flammability and acoustic performance. Although panel board is a relatively inert material, when exposed to certain conditions, it can become an environmental concern (e.g. anaerobic decay of calcium sulphate may generate hydrogen sulphide gas which is a toxic substance). With its extensive use in building projects, significant reduction of environmental impact can be achieved using environmentally friendly materials and processes in the manufacturing process. The purposes of the assessment criteria developed for panel board are to minimise the subsequent release of harmful substances to the environment and humans throughout the life cycle of the products. In addition, the criteria aim to conserve resources and encourage reuse and recycling to reduce the environmental burden caused by the panel board.

2. SCOPE

The scope of this Standard includes all panel board products (e.g. mineral fibreboards, cement fibreboards and plasterboard) with material compositions such as plastic, mineral, cement, fibre, gypsum, solid wood and metals. The products shall be assessed with the intention to be used for interior uses but will not include the support structure or system of the panel board.

The types and ratio (formulation) of raw materials shall be specified clearly in each application. **ONE** application is only for **ONE** product series with same raw materials and ratio (formulation). All the related products have to be listed on the submitted documents.

E.g. Composition of cement fibre A plus binding agent B is regarded as one application.

Subsequent application is available for the similar products with the same raw materials i.e. cement and fibre of a labelled product series with different ratio (formulation), which is only eligible for applying within the validity period of the label.

3. DEFINITIONS

<i>Applicant:</i>	Organisations which apply for the label of the CIC Green Product Certification of the Construction Industry Council
<i>ASTM:</i>	American Society for Testing and Materials
<i>BS:</i>	British Standards
<i>CARB:</i>	California Air Resources Board
<i>CCA:</i>	Carbon Credit Accounting
<i>CFC:</i>	Chlorofluorocarbons
<i>CIC:</i>	Construction Industry Council

<i>CNAS:</i>	China National Accreditation Service for Conformity Assessment
<i>Chamber Method:</i>	Method to test VOC emissions by placing a material inside a sealed chamber with controlled temperature, humidity, and airflow. VOCs released from the material are measured in the chamber air over time to determine emission rates, helping evaluate the material's impact on indoor air quality.
<i>Desiccator Method:</i>	Method to measure the amount of volatile compounds in a sample by heating it to evaporate the VOCs, then cooling it in a desiccator to prevent moisture absorption before weighing. The weight loss after heating and cooling represents the total volatile content, helping to quantify VOC emissions from materials accurately.
<i>EMAS:</i>	Eco-Management and Audit Scheme (EMAS) is an environmental management tool which enables organisations to assess, manage and continuously improve their environmental performance
<i>FDG Gypsum:</i>	Gypsum produced by the process of forced oxidation of flue gas desulphurisation (FGD)
<i>Fibreboards:</i>	Boards-composed of plant fibres such as timber or chaffs. According to the density, they are categorised into insulation boards, medium density fibreboards or hardboards
<i>GB:</i>	National Standards of China
<i>Gypsum:</i>	Hydrous calcium sulphate (CaSO ₄ . 2H ₂ O)
<i>Gypsum plasterboard:</i>	Gypsum based core material sold in the form of sheets for finishing the interior surfaces of walls prior to the application of paint, wallpaper or other coatings. It includes paper-faced, water-resistant, noise-resistant and fire-resistant gypsum board
<i>HKAS:</i>	Hong Kong Accreditation Service
<i>HKGBC:</i>	The Hong Kong Green Building Council Limited
<i>HOKLAS:</i>	The Hong Kong Laboratory Accreditation Scheme
<i>IARC:</i>	International Agency for Research on Cancer
<i>ISO:</i>	International Organisation for Standardisation
<i>MSDS:</i>	Material Safety Data Sheet. To qualify as suitable, MSDS and information therein must not be more than 5-years old
<i>Phosphogypsum:</i>	Synthetic gypsum is a by-product of fertiliser manufacturing which is produced from phosphate rock treated with sulphuric acid to produce phosphoric acid by the wet process, liberating sulphur oxides which are converted to gypsum

Recycled paper: Materials derived from the waste stream during a manufacturing process. Excluded is re-utilisation of materials such as rework, or scrap generated in a process and capable of being reclaimed within the same process which generated it

SCCP (short chain chlorinated paraffins or alkanes, C10 – 13, chloro): SCCP (CAS No. 85535-84-8) refers to a class of organic compounds fall within a carbon number of 10 and 13 and contain chlorine in its structure

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

VOC: Volatile organic compounds refer to any organic compound (compound which contains carbon) with either a boiling point below 250°C measured at 101.3kPa or a vapour pressure of more than 0.1mm 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 delivered products or made accessible to public:

- The intended use of the product
- Instructions for correct use and storage to maximise the lifetime of the product
- Maintenance instructions
- Recycling instruction for the end-of-life of the product
- Technical data sheets, web pages and any other information shall be freely available to customers or the public.

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 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 a third-party party fulfilling the above requirements.

4.3 RESOURCE

4.3.1 Material Optimisation

The Applicant can achieve maximum 15 Points under this section.

The Applicant is required to achieve 10 Basic Points under this section. Additionally, the Applicant can achieve maximum 5 Bonus Points under this section.

4.3.1.1 Raw Materials – Core Criteria

Requirements

10 Basic Points for demonstration that panel board shall contain at least 10% of raw materials or components (by weight) from recycle.

5 Bonus Points for achieving the following requirements on raw materials:

i) Gypsum-Based Panel Board:

- The drywall core composition must contain at least 70% recycled gypsum or industrial by-products.
- Paper or cellulosic fibre content in gypsum board should not exceed 30% and should come from recycled sources.
- If wood-based materials are used, they must be FSC or PEFC certified, without using elemental chlorine in bleaching.

ii) Solid Wood Panel Board:

Wood must not come from protected areas, regions with unclear ownership or use rights, or genetically modified sources. Hence, it should:

- At least 70% of wood used must have FSC certification or an equivalent internationally recognized sustainable forest certification.
- Alternatively, the panel can contain at least 30% reclaimed or recycled wood content.

iii) Metal-Based Panel Board:

Metal panels must contain a minimum of 20% recycled metal content.

iv) Cement Fiberboards:

- Fiber used in cement fiberboards must either:
- Not be sourced from natural forests, or
- Originate from agricultural or domestic waste, or
- Be derived from industrial fiber waste, or
- Consist of post-consumer or pre-consumer waste paper.
- Cement fiberboards must include at least 15% recycled content by weight.

v) Wood-Plastic Composite Panel Board:

- For vinyl-based products, the renewable or recycled raw material content should be at least 30%.
- For polyolefin-based products, the renewable or recycled raw material content should be at least 85%.
- Any wood fibre used in the composite should be FSC or PEFC certified.

vi) Other Panel Materials:

Panels in this category should contain at least 10% recycled material by weight.

Verification

Material safety data sheets (MSDS) and production documentation, invoices or receipts of the purchase of recycled materials and documentation with substantiation (template provided in the self-declaration form).

4.3.2 Circularity

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

4.3.2.1 Recyclability – Non-core Criteria

Requirements

5 Bonus Points for demonstrating that the manufacturer has developed a recycling plan for the product and declared options for reuse, recycling, recovery and disposal. The plan shall include the following and be made available to public.

- Designate all homogeneous materials in the product as being intended for technical and/or biological cycles and define the intended cycling pathway(s) for each material; and
- Identify potential partners for product reuse, recycling, recovery in accordance with the intended cycling pathway(s); and
- For products and materials intended for municipal recycling, the product and/or material must be compatible for municipal cycling systems (e.g., painted plastics and plastic laminated paper are not currently compatible for municipal recycling); and

- Instructions for how to cycle the product shall be made publicly available.

Verification

Documentation of recycling plan, including, but not limited to product catalogue, MSDS, and written declaration.

4.3.2.2 Packaging Requirement – Non-core Criteria

Requirements

5 Bonus Points for minimising 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 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:

4.3.4.1 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, supported 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 certificates 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 bodies.

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 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, optimising 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 organisational policy or other equivalent documents.

Option B:

4.3.5.2 Energy Management System – Non-core Criteria

Requirements

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

ISO 50001 provides a framework for organisations to establish, implement, maintain, and improve an Energy Management System. The goal is to help organisations 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 bodies.

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, CO₂ 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 bodies.

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 35 Points under this section.

The Applicant is required to achieve 15 Basic Points under this section. Additionally, the Applicant can achieve maximum 20 Bonus Points under this section.

4.4.3.1 Hazardous Substances – Non-core Criteria

Requirements

5 Bonus Points for not containing phosphogypsum. In addition, CFC and halons shall not be used in the production of the panel board.

The product shall not contain any carcinogenic substances or chemicals that are classified as Group 1, 2A or 2B according to International Agency for Research on Cancer (IARC)¹. Any such carcinogens which are known to be present as contaminants shall be below 0.1% by weight of the product.

Verification

Laboratory test report(s), MSDS, self-declaration letter and production documentation. The tests shall be performed in accordance with relevant international standards.

4.4.3.2 Heavy Metals – Core Criteria

Requirements

5 Basic Points and 5 Bonus Points for meeting the limits of heavy metals contents including: arsenic (As), mercury (Hg), lead (Pb), cadmium (Cd), chromium (III), chromium (VI) as listed in Table 2.

Table 2: Limits for metal contents in the raw materials or product

	5 basic points	5 basic + 5 bonus points
Metal	Concentration Limit (mg/kg)	
Arsenic	17	8.5
Cadmium	0.8	0.4
Chromium (III)	290	145
Chromium (VI)	N.D.^	N.D.^
Lead	160	80
Mercury	200	100

^N.D.: not detected

Verification

Laboratory test report(s), MSDS and any relevant production documentation. Laboratory tests shall be performed in accordance with relevant international standards.

¹ [Agents Classified by the IARC Monographs, Volumes 1–137 – IARC Monographs on the Identification of Carcinogenic Hazards to Humans](#)

4.4.3.3 Radioactivity – Non-core Criteria

Requirements

5 Bonus Points for demonstrating the following:

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 requirements as stated in GB 6566-2010 (or latest version); other related testing methods are also acceptable with justification provided by the applicant.

GB 6566-2010 specifies the limits and natural radionuclides in building materials radionuclide radium-226, thorium-232, potassium-40 Test Method for radioactivity.

Verification

Laboratory report(s) meeting the above requirements.

4.4.3.4 Plasticisers – Non-core Criteria

Requirements

5 Bonus Points for limiting that the concentration of phthalate in the product to be below 0.1% by weight of the product.

The limited phthalates include the following types:

- Bis(2-ethylhexyl)phthalate (DEHP)
- Dibutyl phthalate (DBP)
- Benzylbutyl phthalate (BBP)
- Diisononyl phthalate (DINP)
- Diisodecyl phthalate (DIDP)
- Di-n-octyl phthalate (DNOP)

Verification

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

4.4.3.5 Flame Retardants – Core Criteria

Requirements

10 Basic Points for demonstrating that concentration of the flame retardants in the product shall be below 0.1% by weight of the product. The restricted flame retardants include the following types:

- Polybrominated diphenyl ether (PBDEs)
- Polybrominated biphenyls (PBBs)
- Short-chained chlorinated paraffin (SCCP)
- Hexabromocyclododecane (HBCD)

Product shall be tested based on the applicable requirement, such as BS EN 62321:2023 (or later version); other related testing methods are also acceptable with justification provided by the applicant.

Verification

Laboratory test report(s) meeting the above requirements.

4.4.4 Volatile Organic Compounds (VOC)

The Applicant is required to achieve 20 Basic Points under this section.

4.4.4.1 Formaldehyde – Core Criteria

Requirements

10 Basic Points for meeting the requirement on formaldehyde through one of the following options:

Option A

The emission of Formaldehyde from the product shall not exceed the following limits:

- ≤ 1.0 mg/L using the Desiccator Method; or
- ≤ 0.02 mg/m³ within 48 hours[^] using the Chamber Method

Option B

Product shall not contain formaldehyde content.

[^] The length of testing time is not restricted but depends on the testing standard used.

Verification

Laboratory testing report(s) on formaldehyde emissions according to international standard such as AMST 5197-03, ISO 16000 or an equivalent testing method.

4.4.4.2 VOC Content – Core Criteria

Requirements

10 Basic Points for meeting the requirement on VOC emission of the product through one of the following options:

Option A

The emission limit of total volatile organic compounds (TVOC) from the product shall be < 0.25 mg/m³ within 24 hours.

Option B

Product shall not contain volatile organic compounds content.

Verification

Laboratory testing report(s) on VOC emissions according to international standard such as AMST 5197-03, ISO 16000 or an equivalent testing method.

4.5 PERFORMANCE

4.5.1 Product Life

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

4.5.1.1 Serviceability – Non-core Criteria

Requirements

5 Bonus Points for demonstrating the product suitability, durability, and functionality through at least **FIVE** testing items which may include, but are not limited to, the following:

- Durability
- Impact Resistance
- Moisture Resistance
- Dimensional Stability
- Fire Resistance
- Surface Abrasion Resistance
- Chemical Resistance

Table 3: Standards for Panel Board

Testing items	Standards
Durability	ASTM D1037, GB/T 17657, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019
Impact Resistance	ASTM D5420, ASTM D1037, GB/T 17657, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019
Moisture Resistance	ASTM D1037, GB/T 17657, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019
Dimensional Stability	ASTM D3043, ASTM D1037, GB/T 17657, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019
Fire Resistance	ASTM E84, ASTM D1037, GB 8624, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019
Surface Abrasion Resistance	ASTM D4060, ASTM D1037, GB/T 4893.8, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019
Chemical Resistance	ASTM D1308, ASTM D1037, GB/T 9274, GB/T 35612-2017, GB/T 35601-2017, TCECS 10049-2019, TCECS 10035-2019, TCECS 10055-2019

Verification

Laboratory test report(s) and any production documentation for all relevant quality and 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:

- Implementing technologies that significantly reduce resource consumption across various aspects.

- Adopting intelligent production methods that leverage automation, data analytics, and innovative design techniques.

Verification

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

Including 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 4: 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 [CORE]	10	+5	MW 6	
		Circularity	Recyclability	-	+5	
	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]		5	+5	
		Radioactivity		-	+5	
		Plasticisers		-	+5	
		Flame Retardants [CORE]		10	-	
	Volatile Organic Compounds (VOC)	Formaldehyde [CORE]		10	-	
VOC Content [CORE]		10	-			
Performance	Product Life	Serviceability	-	+5	MW 4	
InnoSmart	Innovations & Additions		-	+5	IA	
Total:			50	+90		

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 8: Regional Materials
- MW 9: Use of Green Products
- Innovations and Additions