CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

Assessment Standard

Panel Board

(Version 2.0)

PANEL BOARD

Summary of Assessment Criteria

CORE CRITERIA

Criteria	Requirements	Verification	Point		Index
			Basic	+Bonus	
Product Information	Provide the following product information: • 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; and • Technical data sheets	Documentation including but not limited to product catalogue, technical datasheet, webpages	**5**	-	4.1.1
RESOURCE					
Material Optimization	Raw Material: 10 Basic: Panel boards contain at least 10% of raw materials or components (by weight) from recycle. +5 Bonus: **i. Gypsum-Based Panel Board:** • Gypsum board must have ≥ 70% recycled gypsum. **ii. Solid Wood Panel Board:** • 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 Fibreboards:** • Cement fibreboards 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%.	Documentation including but not limited to product catalogue, MSDS, test reports and written declaration	**10**	+5	4.3.1.1

<table>
<tr><th rowspan="2">Criteria</th><th rowspan="2">Requirements</th><th rowspan="2">Verification</th><th colspan="2">Point</th><th rowspan="2">Index</th></tr>
<tr><th>Basic</th><th>+Bonus</th></tr>
<tr><td colspan="6">ENVIRONMENT</td></tr>
<tr><td rowspan="2">Human Toxicity and Ecosystem Impact</td><td>Heavy Metals:
The product shall not contain heavy metals exceeding the limits listed below:
<table><tr><th></th><th>5 basic</th><th>+5 bonus</th></tr><tr><th>Metal</th><th colspan="2">Concentration Limit (mg/kg)</th></tr><tr><td>Arsenic</td><td>17</td><td>8.5</td></tr><tr><td>Cadmium</td><td>0.8</td><td>0.4</td></tr><tr><td>Chromium (III)</td><td>290</td><td>145</td></tr><tr><td>Chromium (VI)</td><td>N.D^</td><td>N.D</td></tr><tr><td>Lead</td><td>160</td><td>80</td></tr><tr><td>Mercury</td><td>200</td><td>100</td></tr></table>^N.D.: not detected</td><td>Laboratory test report(s)</td><td>5</td><td>+5</td><td>4.4.3.2</td></tr>
<tr><td>Flame Retardants:
Following chemicals shall not be employed ⩾ 0.1% by weight in the product:
• Polybrominated diphenyl ether (PBDEs)
• Polybrominated biphenyls (PBBs)
• Short-chained chlorinated paraffin (SCCPs)</td><td>Laboratory test report(s)</td><td>10</td><td>-</td><td>4.4.3.5</td></tr>
<tr><td rowspan="2">Volatile Organic Compounds (VOC)</td><td>Formaldehyde:
The emission limit of Formaldehyde from the product shall be:
• ⩽ 1.0 mg/L (Desiccator method); or
• ⩽ 0.02 mg/m^3 (Chamber method)

OR

Product shall not contain formaldehyde content in the product</td><td>Laboratory test report(s)</td><td>10</td><td>-</td><td>4.4.4.1</td></tr>
<tr><td>VOC Content:
The emission limit of the following substances from the product shall be:
• TVOC: ≤ 0.25 mg/m^3

OR

Product shall not contain volatile organic compounds.</td><td>Laboratory test report(s)</td><td>10</td><td>-</td><td>4.4.4.2</td></tr>
<tr><td></td><td></td><td>Subtotal:</td><td>50</td><td>+10</td><td></td></tr>
</table>

NON-CORE CRITERIA

Criteria	Requirements	Verification	Points +Bonus	Index
CARBON				
CFP quantification	Provide a life cycle assessment report with the carbon footprint of products (CFP), covering at least A1 to A3 by a third-party critical review *OR* provide an Environmental Product Declaration (EPD).	CFP quantification report **OR** Environmental Product Declaration (EPD)	+5/+10	4.2.1
RESOURCE				
Circularity	Recyclability: Developed a recycling plan for the product and declared options for reuse, recycling, recovery and disposal. The plan shall include the following and made available to public.	Recycling Plan	+5	4.3.2.1
	Packaging Requirement: The packaging materials shall not contain halogenated plastics; *OR* Shall be comprised of 100% recycled materials, readily recyclable materials or decomposable materials; *OR* 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 programme	+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 +Bonus	Index
	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
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 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	+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) or self-declaration letter	+5	4.4.3.1
	Radioactivity: External Hazard Index, H_{ex}: ≤ 1.2 Internal Hazard Index, H_{in}: ≤ 0.9	Laboratory test report(s)	+5	4.4.3.3
	Plasticisers: Concentration of phthalate in the product below 0.1% by weight of the product. The limited phthalates including the following types: • Bis(2- Bis(2-ethylhexyl)phthalate (DEHP) • Dibutyl phthalate (DBP) • Benzylbutylphthalate (BBP) • Diisononylphthalate (DINP) • Diisodecylphthalate (DIDP) • Di-n-octylphthalate (DNOP)	Laboratory test report(s)	+5	4.4.3.4
PERFORMANCE				
Product Life	Serviceability: A product's durability, impact resistance, moisture resistance, dimensional stability, fire resistance, surface abrasion resistance, and chemical resistance must be demonstrated through at least **FIVE** relevant test items.	Laboratory test report(s) for all relevant quality and performance tests	+5	4.5.1.1
INNOSMART				
Innovations & Additions	Adopt new practice, technology and strategy. *OR* Achieve exemplary performance	Narrative with supporting	+5	4.6.1
		Subtotal:	+80	

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1. INTRODUCTION

1.1 PURPOSE

The CIC Green Product Certification Scheme (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 label 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.

1.2 BACKGROUND

Panel board is common building product which is often used as interior partition, 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 through the use of environmentally friendly materials and processes in the manufacturing process of panel board. The purposes of the assessment criteria developed for panel board are to minimise the subsequent release of harmful substances to the environment and human throughout the life cycle of the products. In addition, the criteria aim to conserve resources, encourage reuse and recycling in order 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

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
BS:	British Standards
CFC:	Chlorofluorocarbons
CIC:	Construction Industry Council
CNAS:	China National Accreditation Service for Conformity Assessment

EMAS:	Eco-Management and Audit Scheme (EMAS) is an environmental management tool which enables organisations to assess, manage and continuously improve their environmental performance.
FDG Gypsum:	Gypsum produced by the process of forced oxidation of flue gas desulphurisation (FGD)
Fibreboards:	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
Gypsum:	Hydrous calcium sulphate (CaSO4. 2H2O)
Gypsum plasterboard:	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
HKAS:	Hong Kong Accreditation Service
HKGBC:	The Hong Kong Green Building Council Limited
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
Phosphogypsum:	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
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) Label under the Scheme. Bonus points may be awarded if the product meets the "Non-core Criteria". "Bronze", "Silver", "Gold" or "Platinum" Label 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 label

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 report and documentation must be valid during the assessment process and labelling period. The validity of all laboratory report 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, 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; and
- Technical data sheets

Verification

Documentation related to the product labels, instructions and other information provided with the product, material safety data sheets(MSDS), web pages and any other information shall be freely available to customers or the public.

4.2 CARBON

4.2.1 CFP quantification – Non-core Criteria

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

Requirements

5 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).

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, ISO 21930:2017, GB/T 24067-2024 or BS EN 15804:2012.

Verification

Either of the following documents shall be provided for verification.

CFP quantification report endorsed by third-party critical review, in accordance with ISO 14067:2018 or equivalent

OR

Environmental Product Declaration fulfilling the above requirements

4.3 RESOURCE

4.3.1 Material Optimization

The Applicant is required to achieve 10 Basic Points under this section.

4.3.1.1 Raw Material – 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.

ii) Solid Wood Panel Board:

- Wood must not come from protected areas, regions with unclear ownership or use rights, or genetically modified sources.
- 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 fiber used in the composite should be FSC or PEFC certified.

Verification

Documentation including but not limited to product catalogue, MSDS, test reports and written declaration.

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 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.
- Identify potential partners for product reuse, recycling, recovery in accordance with the intended cycling pathway(s).
- 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).
- 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 minimizing the wastage from all primary packaging materials. The packaging materials shall achieve either of the followings.

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.

The packaging requirements are relevant to all primary packaging materials, i.e. those being used to envelop the product and hold it. The primary packaging materials are usually in direct contact with the contents and shall be in the minimal amount of distribution and /or use as they may eventually be disposed by the consumers.

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 effective waste management plan detailing the policies, procedures and/or a waste management program covering manufacturing operations. The waste management plan 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 of waste management programme

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 associated points. Each option is eligible for a maximum 10 Bonus 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, support 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 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

- 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 certificates 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 not limited to the reduction of hazardous substance emissions, energy consumption, CO_2 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 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 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 contain 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 less than 0.1% by weight of the product.

Verification

Laboratory test report(s) or self-declaration letter. The 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

4.4.3.2 Heavy Metals – Core Criteria

Requirements

5 Basic 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 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. The detection limit is based on the equipment of Laboratory

Verification

Laboratory test report(s). The tests in laboratories shall be performed in accordance with relevant international standards.

4.4.3.3 Radioactivity – Non-core Criteria

Requirements

5 Bonus Points for 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 $\leqslant$ 1.2 and H_{in} shall be $\leqslant$ 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.

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

Verification

A detailed laboratory report(s) shall be provided.

4.4.3.4 Plasticisers – Non-core Criteria

Requirements

5 Bonus Points for concentration of phthalate in the product below 0.1% by weight of the product. The limited phthalates including 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.

4.4.3.5 Flame Retardant – 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 including the following types:

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

Verification

Laboratory test report(s).

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 (Desiccator method); or
- ≤ 0.02 mg/m^3 within 48 hours (Chamber method)

Option B

Product shall not contain formaldehyde content.

4.4.4.2 VOC Content – Core Criteria

Requirements

10 Basic Points for meeting the requirement on VOC 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/m^3 within 24 hours.

Option B
Product shall not contain volatile organic compounds content.

Verification for 4.4.4.1 and 4.4.4.2

Option A
The emission tests in laboratories shall be conducted in accordance to including but not limited to *AS/NZS 4266.16 Reconstituted Wood-based Panels – Methods of Test – Formaldehyde Emission – Desiccator Method* or *ASTM D 5116-10: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials*. Other related testing methods are also acceptable with justification provided by the applicant. The length of testing time is not restricted but depends on the testing standard used.

Option B
Product shall be tested in accordance to *CARB Method 310*. Other related testing methods are also acceptable with justification provided by the applicant. The detection limit is based on the equipment of Laboratory.

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 not limited to the followings:

- 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) for all relevant quality and performance tests that related to the label and relevant information.

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, outline the objectives, solution and evaluation of the performance achieved by proposed Smart and Innovative Technologies.

AND

Include attachments that provide evidence of implementation, along with relevant technical specification 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		-	+5/+10	MW 10
Resource	Material Optimization	Raw Material [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 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	-	HWB 8
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.
- MW 10: Life Cycle Assessment
- HWB 8: Indoor Air Quality
- Innovations & Additions