



# **CONSTRUCTION INDUSTRY COUNCIL**

## **CIC GREEN PRODUCT CERTIFICATION**

### **PLANT-BASED FIBRE COMPOSITE**

#### ***Assessment Standard***

(Version 1.0a)

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Last updated: 11 June 2020

## **PLANT-BASED FIBRE COMPOSITE**

### *Summary of Assessment Criteria*

#### **CORE CRITERIA**

Criteria	Requirements	Verification	Points		Index															
			Basic	+Bonus																
Product Information	<ul style="list-style-type: none"><li>○ Provide the following product information on the packaging of the product and/or company website:<ul style="list-style-type: none"><li>▪ Product Composition</li><li>▪ Possible toxicity or health hazards imposed by the chemical components</li><li>▪ Instructions for installation and maintenance</li><li>▪ Instructions for disposal of the product and packaging</li></ul></li></ul>	Documentation related to the label and relevant information	5		4.1.2 (page 4)															
Raw Materials	<ul style="list-style-type: none"><li>○ The major raw materials of composite product shall be obtained any forest management certification, such as FSC, PEFC, SFI, or AFCS certified fibre; <i>OR</i></li><li>○ The major raw materials of composite product shall be any combination of recycled materials, wood waste, natural fibre materials or other waste fibre, with not less than the required percentages of recycled content / natural waste content / sustainable source (by weight of product) in below table.</li></ul> <table><tr><td></td><td colspan="2">Points</td></tr><tr><td></td><td>10 [basic]</td><td>+5 (bonus)</td></tr><tr><td>Recycled content</td><td>≥ 80%</td><td>≥ 90%</td></tr><tr><td>Natural waste materials</td><td>≥ 60%</td><td>≥ 70%</td></tr><tr><td>Sustainable source</td><td>≥ 60%</td><td>≥ 80%</td></tr></table>		Points			10 [basic]	+5 (bonus)	Recycled content	≥ 80%	≥ 90%	Natural waste materials	≥ 60%	≥ 70%	Sustainable source	≥ 60%	≥ 80%	Documentation with substantiation related to recycled content including but not limited to MSDS, production documentation, invoices / receipts	10	+5	4.2.2 (page 5)
	Points																			
	10 [basic]	+5 (bonus)																		
Recycled content	≥ 80%	≥ 90%																		
Natural waste materials	≥ 60%	≥ 70%																		
Sustainable source	≥ 60%	≥ 80%																		
Hazardous Substances	<ul style="list-style-type: none"><li>○ Hg, Pb, Cd, Cr(VI), As, Cu, B, toluene and xylene shall be contained &lt; 0.1% by weight of the product respectively</li></ul>	Laboratory test report(s), MSDS and production documentation	5		4.3.2 (page 6)															

Formaldehyde	<ul style="list-style-type: none"> <li>○ The emission limit of Formaldehyde from the product shall be: <ul style="list-style-type: none"> <li>▪ <math>\leq 1.0</math> mg/L (Desiccator method)</li> <li>▪ <math>\leq 0.02</math> mg/m<sup>3</sup> (Chamber method)</li> </ul> </li> <li>OR</li> <li>○ Product shall not contain formaldehyde content</li> </ul>	Laboratory test report(s), MSDS and production documentation	<b>10</b>		4.3.4 (page 6)
Volatile Organic Compounds	<ul style="list-style-type: none"> <li>○ The emission limit of TVOC from the product shall be: <math>&lt; 0.25</math> mg/m<sup>3</sup></li> <li>OR</li> <li>○ Product shall not contain VOC content</li> </ul>	Laboratory test report(s), MSDS and production documentation	<b>10</b>		4.3.5 (page 7)
Binding Agents	<ul style="list-style-type: none"> <li>○ Binding agents [10 basic]: <ul style="list-style-type: none"> <li>▪ shall not be formulated with alkylphenol ethoxylates, alkylphenols, azidrin, polyaziridins or halogenated solvents</li> <li>▪ shall contain free formaldehyde <math>\leq 0.5</math> % by weight of the adhesives used</li> </ul> </li> <li>○ Natural non-toxic binding agents or physical means (+5 bonus)</li> </ul>	Laboratory test report(s), MSDS and production documentation	<b>10</b>	+5	4.3.6 (page 8)
<b>Subtotal:</b>			<b>50</b>	<b>+10</b>	

## NON-CORE CRITERIA

<i>Criteria</i>	<i>Requirements</i>	<i>Verification</i>	<i>Points</i>	<i>Index</i>
			<i>+Bonus</i>	
Environmental Management System	<ul style="list-style-type: none"> <li>○ Valid certification of ISO14001 or the EU Eco-Management and Audit Scheme (EMAS)</li> </ul>	ISO14001 or EMAS certificate issued by accredited certification body	+5	4.1.1 (page 3)
Packaging Requirements	<ul style="list-style-type: none"> <li>○ Product packaging shall not contain PVC, chlorinated or halogenated plastics</li> <li>○ All packaging materials shall be either comprised of 100% recycled material or readily recyclable</li> </ul>	Documentation on the packaging materials used	+5	4.1.3 (page 4)
Energy Management	<ul style="list-style-type: none"> <li>○ The manufacturer of the product shall have effective energy management policies and procedures and / or an energy management programme, including: <ul style="list-style-type: none"> <li>▪ Initiatives taken to reduce energy use and improve energy efficiency;</li> <li>▪ Initiatives or requirements for suppliers or contract manufacturers.</li> </ul> </li> </ul>	Detailed plan(s) of energy consumption and reduction programme	+5	4.2.1 (page 5)

Carcinogenic Substances	○ Substances listed in IARC Group 1, 2A and 2B shall be < 0.1% by weight of the product	Laboratory test report(s), MSDS, self-declaration letter and production documentation	+10	4.3.1 (page 6)
Preservatives	○ Preservatives including fungicides, insecticides, tar oil / creosote shall be < 0.1% by weight of the product as prescription constituents	Laboratory test report(s), MSDS and any production documentation	+5	4.3.3 (page 6)
Waste Management	○ Manufacturer shall prepare a waste management plan for the manufacturing process	Documentation of waste management plan	+5	4.4.1 (page 8)
Water Management	○ Manufacturer shall prepare a water management plan for the manufacturing process	Documentation of water management plan	+5	4.4.2 (page 8)
<b>Subtotal:</b>			<b>+40</b>	

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## **1. INTRODUCTION**

### **1.1 PURPOSE**

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

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

### **1.2 BACKGROUND**

Plant-based fibre composite includes a range of plant-based derivative products which are manufactured by binding the strands, particles, fibres, veneers of wood or other plant-based fibre, together with binding agents, to form composite materials. These products are used in a variety of applications, from domestic and commercial buildings to industrial products. Since plant-based fibre composite products are typically made from recycled and recovered waste wood / fibre, they are environmentally friendly building materials.

The purposes of this assessment standard for composite wood products are, therefore, to minimise the use and subsequent release of harmful substances to the environment and human throughout the product’s life cycle, to conserve resources and energy, to reducing the amount of waste disposed in landfills. The development of the criteria includes the research and study on relevant eco-labelling schemes and life cycle assessment (LCA) reports.

## **2. SCOPE**

The criteria shall apply to plant-based fibre composite products, which is a family of engineered wood/fibre panels that includes particleboard, edge glued panel, fibreboard, hardboard, boards consist of wood powder/plant fibres (e.g. wood chips, palm, straw, bamboo, bagasse, jute stalks, cotton stalks, seed hull, etc.). This standard covers the products with more than 60% in mass (in the final product), made from wood, wood powder and/or wood/plant based material.

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. Fibre A – Binding Agent B is regarded as one application.

Subsequent application is available for the similar products with the same raw materials 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

*CIC:* Construction Industry Council

*CNAS:* China National Accreditation Service for Conformity Assessment

*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 Organization for Standardization

*Wood waste:* Wood waste means sawdust, timber offcuts, wooden crates, wooden packaging, wooden pallets, wood shavings and similar materials, and includes any mixture of those materials, but does not include wood treated with chemicals such as copper chrome arsenate (CCA), high temperature creosote (HTC), pigmented emulsified creosote (PEC) and light organic solvent preservative (LOSP)

*Raw materials:* Materials used in the manufacturing of plant-based fibre composite products

*FSC:* Forest Stewardship Council. <http://ic.fsc.org/>

*PEFC:* Programme for the Endorsement of Forest Certification schemes. [www.pefc.org/](http://www.pefc.org/)

*SFI:* Sustainable Forestry Initiative. <http://www.sfiprogram.org/>

*AFCS:* Australian Forest Certification Scheme. <http://www.forestrystandard.org.au/home>

*Particleboard:* Particleboard is made from small wood particles pressed together with glue under extreme heat and pressure to make a solid panel

*MDF and hardboard:* Medium density fibreboard and hardboard are made the same way as particleboard except that the wood particles are further refined into even smaller particles to provide a smooth edge to the panel

*MSDS:* Material safety data sheet. To qualify as suitable, MSDS and information therein must not be more than 5-years old

*VOC:* Volatile organic compounds. 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

*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.

## **4. EVALUATION CRITERIA**

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

### **4.1 GENERAL REQUIREMENTS**

#### ***4.1.1 Environmental Management System***

##### 5 Points (Non-Core Criterion)

Manufacturer of the product shall possess valid certificate of ISO14001 or the EU Eco-Management and Audit Scheme (EMAS). Targets 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<sub>2</sub> emissions, secondary environmental load, waste management, water management, etc.



Verification

A valid ISO14001 Certificate issued by local or overseas accredited certification bodies.

**4.1.2 Product Information**

5 Points (Core-Criterion)

The following information shall be supplied with the product or made available to the public to help users using the product in a sustainable manner:

- Product composition
- Possible toxicity or health hazards imposed by the chemical components
- Instructions for installation and maintenance
- Instructions for disposal of the product and packaging

Verification

Documentation related to the product labels, care 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.

**4.1.3 Packaging Requirements**

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.

5 Points (Non-Core Criterion)

PVC, chlorinated or halogenated plastics shall be avoided for packaging the product. In addition, the used package material shall be recyclable through the local recycling systems.

Verification

Documentation detailing the packaging materials, and confirming the packaging's ability to be recycled.

## 4.2 RESOURCE CONSUMPTION

### 4.2.1 *Energy Management*

#### 5 Points (Non-Core Criterion)

The Applicant shall have effective energy management policies and procedures and / or an energy management programme. The followings shall be submitted as support:

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

#### Verification

Detailed report(s) that describes the energy management policies, procedures and programmes that is written or signed by Chief Executive Officer or other authorised representative of the Applicant.

### 4.2.2 *Raw Materials*

#### 10 Basic + 5 Bonus Points (Core Criterion)

The major raw materials of composite product shall be obtained any forest management certification, such as FSC, PEFC, SFI, or AFCS certified fibre;

OR

The major raw materials of composite product shall be any combination of recycled materials, wood waste, natural fibre materials including palm, straw, bamboo, bagasse, cellulose fibre, seed hull, return fibre (i.e. postconsumer and preconsumer fibre), cotton fibre, cotton stalks, jute stalks, crop residue or other waste fibre, with not less than the required percentages of recycled content / natural waste content / sustainable source (by weight of product) in Table 1.

Bonus points will be awarded if the recycled content / natural waste content / sustainable source (by weight of product) is higher than the required percentages as illustrated in Table 1.

*Table 1: Requirements of raw materials for plant-based fibre composite and the associated points*

	<b><i>Points</i></b>	
	10 [basic]	+5 (bonus)
<b><i>Recycled content</i></b>	≥ 80%	≥ 90%
<b><i>Natural waste materials</i></b>	≥ 60%	≥ 70%
<b><i>Sustainable source</i></b>	≥ 60%	≥ 80%

Sustainable source under certification schemes used worldwide are listed above, but other schemes could be also accepted subjected to verification.

Verification

Detailed report(s) of the recycled content or the source of natural raw materials with relevant substantiations.

## **4.3 HUMAN TOXICITY**

### **4.3.1            *Carcinogenic Substances***

10 Points (Non-Core Criterion)

Hazardous substances listed in the International Agency for Research on Cancer's (IARC) Groups 1, 2A and 2B Classifications (details can be found in website: <http://monographs.iarc.fr/ENG/Classification/>) shall not be present in the final product. 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), MSDS, self-declaration letter and production documentation shall be provided.

### **4.3.2            *Hazardous Substances***

5 Points (Core Criterion)

- Mercury (Hg), Lead (Pb), Cadmium (Cd), Hexavalent Chromium (Cr(VI)), Arsenic (As), Copper (Cu), Boron (B), toluene and xylene shall be contained less than 0.1% by weight of the product

### **4.3.3            *Preservatives***

5 Points (Non-Core Criterion)

Preservatives including fungicides, insecticides, tar oil or creosote shall be < 0.1% by weight of the product as prescription constituents.

Verification for Section 4.3.2 and 4.3.3

The Applicant shall submit laboratory test report(s), MSDS and any relevant production documentation to demonstrate the conformance to the requirements stated above.

### **4.3.4            *Formaldehyde***

10 Points (Core Criterion)

**Option A**

The formaldehyde emissions from the plant-based composite product shall not exceed the following limits:

- $\leq 1.0$  mg/L (**Desiccator Method**); OR
- $\leq 0.02$  mg/m<sup>3</sup> within 48 hours<sup>^</sup> (**Chamber Method**)

**Option B**

Product shall not contain formaldehyde content<sup>#</sup>.

**4.3.5 Volatile Organic Compounds**

10 Points (Core Criterion)

**Option A**

The emission limit of total volatile organic compounds (TVOC) from the product shall be  $< 0.25$  mg/m<sup>3</sup> within 24 hours<sup>^</sup>.

**Option B**

Product shall not contain volatile organic compounds content<sup>#</sup>.

Verification for 4.3.4 and 4.3.5

**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.

**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.

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<sup>^</sup> The length of testing time is not restricted but depends on the testing standard used.

<sup>#</sup> The detection limit is based on the equipment of Laboratory.

**Note for section 4.3.4 and 4.3.5 verification**

The following procedures are recommended for sample collection:

- **Manufacturing Date**  
Date product comes off of final manufacturing line
- **Sample Collection**  
Same as Manufacturing Date
- **Shipment to Laboratory**  
Within 24 hours of sample collection
- **Arrival at Laboratory**  
Not to exceed 7 days of shipment date
- **Testing Date**  
Not to exceed 10 days after arrival and product acceptance at laboratory

**4.3.6      *Binding Agents***

**10 Basic + 5 Bonus Points (Core Criterion)**

Chemicals that are classified as toxic shall not be used in the plant-based composite product as binding agents. The agent shall not be formulated with alkylphenol ethoxylates, alkylphenols, azidirin, polyaziridins or halogenated solvents. The content of free formaldehyde shall not exceed 0.5% by weight of the adhesives used.

Bonus points will be award if the binding agent is natural and non-toxic, or binding through physical means without any binding agents.

**Verification**

Detailed report(s) identifying the binding agent used with relevant laboratory test report(s), MSDS and production documentation.

**4.4      ECOSYSTEM IMPACT**

**4.4.1    *Waste Management***

**5 Points (Non-Core Criterion)**

The Manufacturer shall report the waste generated during the production of plant-based fibre composite product including the following information, but not limited to:

- Types of waste recovered for reuse internally and externally, recycled internally and externally, disposed to landfill, burned internally for energy recovery; and
- Waste generation related to production.

**Verification**

Management plan on waste generated from the manufacturing process of the plant-based fibre composite product.

#### **4.4.2 Water Management**

##### 5 Points (Non-Core Criterion)

The Manufacturer shall monitor the water consumption for production. The followings shall be submitted as support:

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

##### Verification

Detailed water management plan.

## 5 SCORING AND GRADING

The points for meeting each criterion stated in Section 4 are summarised in Table 2.

*Table 2: Points to be awarded under the assessment criteria of this Standard*

<b><i>Evaluation criteria</i></b>	<b><i>Points</i></b>	
	<b><i>Basic</i></b>	<b><i>+Bonus</i></b>
4.1.1 Environmental Management System		+5
4.1.2 Product Information [CORE]	<b>5</b>	
4.1.3 Packaging Requirements		+5
4.2.1 Energy Management		+5
4.2.2 Raw Materials [CORE]	<b>10</b>	+5
4.3.1 Carcinogenic Substances		+10
4.3.2 Hazardous Substances [CORE]	<b>5</b>	
4.3.3 Preservatives		+5
4.3.4 Formaldehyde [CORE]	<b>10</b>	
4.3.5 Volatile Organic Compounds [CORE]	<b>10</b>	
4.3.6 Binding Agents [CORE]	<b>10</b>	+5
4.4.1 Waste Management		+5
4.4.2 Water Management		+5
<b>Total:</b>	<b>50</b>	<b>+50</b>
	<b>100</b>	

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

*Table 3: Benchmarks for grading composite wood product*

<b><i>Grade to be awarded</i></b>	<b><i>Points required</i></b>
Platinum	90 or above
Gold	80 - 89
Silver	70 - 79
Bronze	60 - 69
Green	50 - 59
No Label	Below 50