CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

PANEL BOARD

Assessment Standard

(Version 1.0a)

Last updated: 11 June 2020

PANEL BOARD

Summary of Assessment Criteria

CORE CRITERIA

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<tr><th>Basic</th><th>+Bonus</th></tr>
<tr><td>Product Information</td><td>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
Technical data sheets, web pages and any other information</td><td>Copy of labels, care instructions and other information</td><td>5</td><td></td><td>4.1.2 (page 4)</td></tr>
<tr><td>Raw materials</td><td>o Raw materials or components of product (% by weight) shall be made from combination of recycled materials, waste materials and/or forest management certified materials. The combination shall exceed the below value for awarding point:
- ≥ 10 % [10 basic]
- ≥ 25 % (+5 bonus)
- ≥ 40% (+10 bonus)</td><td>Documentation with substantiation related to recycled content including but not limited to MSDS, production documentation, invoices / receipts</td><td>10</td><td>+5 / +10</td><td>4.2.1 (page 5)</td></tr>
<tr><td>Heavy Metals</td><td>o 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><td>Metal</td><td colspan="2">Concentration Limit (mg/kg)</td></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), MSDS and production documentation</td><td>5</td><td>+5</td><td>4.3.3 (page 7)</td></tr>
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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	Laboratory test report(s), MSDS and production documentation	**10**		*4.3.5 (page 8)*
Volatile Organic Compounds	○ The emission limit of the following substances from the product shall be: • TVOC: < 0.25 mg/m^3 • 4-phenylcyclohexene : < 0.0065 mg/m^3 • Total phthalates: < 0.01 mg/m^3 OR ○ Product shall not contain volatile organic compounds, 4-phenylcyclohexene and total phthalates contents	Laboratory test report(s), MSDS and production documentation	**10**		*4.3.6 (page 8)*
Flame Retardant	○ Following chemicals shall not be employed ≥ 0.1 by weight in the product: ○ Polybrominated biphenyls (PBBs) ○ Polybrominated diphenyl ethers (PBDEs) ○ Short chain chlorinated paraffins (SCCP) (≥ 50% chlorine)	Laboratory test report(s), MSDS and production documentation	**10**		*4.3.7 (page 9)*
		Subtotal:	**50**	**+15**	

NON-CORE CRITERIA

Criteria	***Requirements***	***Verification***	***Points +Bonus***	***Index***
Environmental Management System	○ Valid certification of ISO14001 or the EU Eco-Management and Audit Scheme (EMAS)	ISO14001 or EMAS certificate issued by accredited certification body	+5	*4.1.1 (page 4)*
Water Management	○ Manufacturer shall prepare a water management plan for the manufacturing process	Detailed report(s) of management plan	+5	*4.2.2 (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	+5	*4.3.1 (page 6)*

Agents for Surface Treatments	○ Glues, binders, additives or surface treatment agents shall not contain: ▪ Organotin compounds ▪ Halogenated organic binding agents ▪ Halogenated organic or aromatic solvents ▪ Phthalates including BBP, DBP, DEHP, DINP, DIDP, DNOP ▪ Pigments or additives based on Pb, Cd, Cr, Hg	Laboratory test report(s), MSDS and production documentation	+10	*4.3.2 (page 6)*
Hazardous Substances	○ Product shall not contain phosphogypsum, CFC, halons, and substances that have the potential to release formaldehyde when in use	Laboratory test report(s), MSDS, self-declaration letter and production documentation	+5	*4.3.4 (page 7)*
Recyclability and Biodegradability	Provide information on the product which is related to the recyclability and degradation of its product, which shall include the following: ○ Product shall not be impregnated, labelled, coated or treated in a manner which would prevent post-consumer recycling. ○ Information related to the degradation or recycling of product shall be provided.	Detailed report(s) / documentation of the recyclability and degradability of product	+5	*4.4.1 (page 10)*
		Subtotal:	**+35**	

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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 panel boards to govern the application and award of a label under the Scheme. The Standard also defines the verification methods to determine which labelling grade should be awarded to the product according to the assessment criteria.

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

1.2 BACKGROUND

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 environmental 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 aims 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.

Products shall be complied the following requirements:

Size : greater than or equal to 1,200mm X 2,400 mm and;
Area : larger than or equal to 2,880,000mm2

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

CFC: Chlorofluorocarbons

CIC: Construction Industry Council

CNAS: China National Accreditation Service for Conformity Assessment

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 ($CaSO_4. 2H_2O$)

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

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 should meet all the minimum requirements of the "Core Criteria" in order to be awarded a "Green" (i.e. a "pass" grade) Label under the Scheme. Bonus points may be awarded if the product meets the "Non-core Criteria" and a "Bronze", "Silver", "Gold" or "Platinum" Label will be awarded according to the total points accumulated (see Section 5 for details). All submissions and 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 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_2 emissions, secondary environmental load, waste management, water management, etc.

Verification

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

4.1.2 Product Information

5 Points (Core Criterion)

The Applicant shall provide written information to the consumers stating clearly:

- 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, web pages and any other information shall be freely available to customers or the public.

Verification

Copy of labels, care instructions and other information related to above requirements.

4.2 RESOURCE CONSUMPTION

4.2.1 Raw Materials

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

Raw materials or components of product (% by weight) are made from combination of recycled materials, waste materials and/or forest management certified materials. The panel board shall contain at least 10% of raw materials or components (by weight) from recycle. A total of 10 bonus points will be awarded if the recycled content of the product fulfils the requirement as shown in Table 1.

Table 1: Requirements on recycled content and associated points

Recycled content or forest management certified materials	***Points***
≥ 10%	10 [basic]
≥ 25%	+5 (bonus)
≥ 40%	+10 (bonus)

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).

4.2.2 Water Management

5 Points (Non-Core Criterion)

The Applicant shall monitor the water consumption including the water potable and non-potable used for production. The following 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 plan(s) of the water management shall be provided.

4.3 HUMAN TOXICITY

4.3.1 Carcinogenic Substances

5 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 be avoided during the production process or 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 Agents for Surface Treatments

10 Points (Non-Core Criterion)

Glues, binders, additives or surface treatment agents used for the plasterboard product shall not contain the followings:

- organotin compounds;
- halogenated organic binding agents;
- halogenated organic or aromatic solvents;
- Phthalates, including Benzyl Butyl Phthalate (BBP), dibutyl phthalate (DBP), Di-(2-ethylhexyl) phthalate (DEHP), Diisononyl phthalate (DINP), Diisodecyl phthalate (DIDP) and Di-n-octyl phthalate (DNOP) and
- Pigments or additives based on lead, cadmium, chromium, mercury.

Verification

Laboratory test report(s), MSDS and any relevant production documentation.

4.3.3 Heavy Metals

5 Basic + 5 Bonus Points (Core Criterion)

Certain heavy metals have human toxicity hazards as well as eco-toxicity effects. In order to limit the amount of pollution to the environment, the product shall not contain arsenic (As), mercury (Hg), lead (Pb), cadmium (Cd), chromium (III), chromium (VI) exceeding the limits listed below (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

A total of 5 bonus points will be awarded if the product fulfils the requirement in Table 2.

Verification

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

4.3.4 Hazardous Substances

5 Points (Non-Core Criterion)

The panel board shall not contain phosphogypsum and formaldehyde or have the potential to release formaldehyde during use. In addition, CFC and halons shall not be used in the production of the panel board.

Verification

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

4.3.5 Formaldehyde

10 Points (Core Criterion)

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 [#].

4.3.6 Volatile Organic Compounds

10 Points (Core Criterion)

Option A

To ensure that the panel board only emit minimal amount of hazardous substances in the consumption phase, the emission limit of the following substances from the product shall be:

- Total volatile organic compounds (TVOC): < 0.25 mg/m^3 within 24 hours^
- 4-phenylcyclohexene: < 0.0065 mg/m^3 within 48 hours^
- Total phthalates: < 0.01 mg/m^3

Option B

Product shall not contain volatile organic compounds, 4-phenylcyclohexene and total phthalates contents [#].

Verification for 4.3.5 and 4.3.6

Relevant laboratory test report(s), MSDS as well as any production documentation on formaldehyde, VOC emissions and composition of the product.

Option A

The emission tests in laboratories shall be performed in accordance with including but not limited to *AS/NZS 4266.16 Reconstituted Wood-based Panels – Methods of Test – Formaldehyde Emission – Desiccator Method* and *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.*
[#] *The detection limit is based on the equipment of Laboratory*

Option B

The content test in laboratory shall be performed in accordance with *CARB Method 310*. Other related testing methods are also acceptable with justification provided by the applicant.

Note for section 4.3.5 and 4.3.6 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

4.3.7 Flame Retardant

10 Points (Core Criterion)

Various flame retardants: polybrominated biphenyls (PBBs), polybrominated-diphenyl ethers (PBDEs) and short chain chlorinated paraffin (SCCP) (with chlorine concentration equal to or more than 50%) shall not be employed ≥ 0.1% by weight in the panel board product.

Verification

Laboratory test report(s), MSDS and any relevant production documentation.

4.4 ECOSYSTEM IMPACT

4.4.1 Recyclability and Biodegradability

5 Points (Non-Core Criterion)

The product shall be designed in a way so that its components can be diverted from the waste stream for reprocessing and reuse, where collecting or drop-off facilities are available and fulfil the below listed requirement. The applicant shall also provide information on the product which is related to the recyclability and degradation of its product, which shall include the following:

- Product shall not be impregnated, labelled, coated or treated in a manner which would prevent post-consumer recycling.
- Information related to the degradation or recycling of product shall be provided.

Verification

Detailed report(s)/ documentation of the recyclability and degradability of the product with relevant production documentation.

5. SCORING AND GRADING

The points for meeting each criterion stated in Section 4 are summarised in Table 3.

Table 3: Points to be awarded under the assessment criteria of this Standard

Evaluation criteria	***Points***	
	Basic	***+Bonus***
4.1.1 Environmental Management System		+5
4.1.2 Product Information [CORE]	**5**	
4.2.1 Raw Materials [CORE]	**10**	+5 / +10
4.2.2 Water Consumption		+5
4.3.1 Carcinogenic Substances		+5
4.3.2 Agents for Surface Treatments		+10
4.3.3 Heavy Metals [CORE]	**5**	+5
4.3.4 Hazardous Substances		+5
4.3.5 Formaldehyde [CORE]	**10**	
4.3.6 Volatile Organic Compounds (VOCs)	**10**	
4.3.7 Flame Retardant [CORE]	**10**	
4.4.1 Recyclability and Biodegradability		+5
	50	**+50**
Total:	**100**	

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

Table 4: Benchmarks for grading panel board

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