CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

Assessment Standard

Thermal Insulation

(Version 2.0)

Thermal Insulation

Summary of Assessment Criteria

CORE CRITERIA

Criteria	Requirements	Verification	Points		Index
			Basic	+Bonus	
Product Information	Provide following information with delivered products or made accessible to public: • Basic product specifications • Intended use of the product • Instructions for correct use and storage to maximize the lifetime of the product • Recommended maintenance instructions for the product • Installation method • Instructions for consumer product disposal • Country of origin	Documentation including but not limited to product catalogue, technical datasheet, webpages	**5**	-	4.1.1
ENVIRONMENT					
Human Toxicity and Ecosystem Impact	Heavy Metals: Concentration of heavy metals (or their related compounds) in the product shall be < 0.1% by weight of the product. • Chromium VI • Lead • Mercury	Laboratory test report(s)	**10**	-	4.4.3.2
	Flame Retardants: Concentration of the following flame retardants in the product shall < 0.1% by weight of the product: • Polybrominated diphenyl ether • Polybrominated biphenyls • Short-chained chlorinated paraffin • Hexabromocyclododecane	Laboratory test report(s)	**10**	-	4.4.3.5
Volatile Organic Compounds (VOC)	Formaldehyde: Products shall not exceed the following limits: • 0.1 mg per m^3 per hour at 24 hours *OR* • Formaldehyde shall be less than 0.01% by weight of the product	Laboratory test report(s)	**5**	-	4.4.4.1

Criteria	Requirements	Verification	Points		Index
			Basic	+Bonus	
	VOC Content: The products shall not exceed the following limits: Total volatile organic compounds: <0.5mg/m^3	Laboratory test report(s)	**5**	-	4.4.4.2
PERFORMANCE					
Performance Property	Thermal Conductivity: **For Traditional Insulation Materials:** 0.038 kcal/mh°C, or 0.044 W/mK at 22°C to 24°C mean, with respect to its insulation rate (heat conduction rate, heat resistance) **For Optical Performance Materials (Films, Reflective Coatings):** Total Solar Energy Rejected (TSER) ≥ 45% or Infrared Reflectance (IR) ≥ 80%.	Documentation such as test reports and product catalogue	**10**	-	4.5.1.1
Product Life	Serviceability: Quality, durability and performance of the product shall be demonstrated through at least *FOUR* testing items.	Laboratory test report(s)	**5**	-	4.5.2.1
		Subtotal:	**50**	-	

NON-CORE CRITERIA

<table>
<tr><th>Criteria</th><th>Requirements</th><th>Verification</th><th>Points
+Bonus</th><th>Index</th></tr>
<tr><td colspan="5">CARBON</td></tr>
<tr><td>CFP quantification</td><td>Provide a life cycle assessment report with the carbon footprint of products (CFP), covering at least A1 to A3 endorsed by a third-party critical review OR provide an Environmental Product Declaration (EPD).</td><td>CFP quantification report
OR
Environmental Product Declaration (EPD)</td><td>+5/
+10</td><td>4.2.1</td></tr>
<tr><td colspan="5">RESOURCE</td></tr>
<tr><td>Material Optimization</td><td>Raw Material:
Meet certain recycling rate percentage requirements for different materials found in thermal insulation products.
<table>
<tr><th rowspan="2">Product
(if applicable)</th><th colspan="2">Limit</th></tr>
<tr><th>Bonus
(+5)</th><th>Bonus
(+10)</th></tr>
<tr><td>Glass wool</td><td>≥ 50%</td><td>≥ 55%</td></tr>
<tr><td>Mineral wool (rock wool/slag wool)</td><td>≥ 20%</td><td>≥ 35%</td></tr>
<tr><td>Cellulose</td><td>≥ 75%</td><td>≥ 80%</td></tr>
<tr><td>Plastics or synthetic polymers</td><td>≥ 50%</td><td>≥ 55%</td></tr>
<tr><td>Extruded polystyrene</td><td>≥ 20%</td><td>≥ 25%</td></tr>
<tr><td>Polyisocyanurate (plastic parts only, e.g. not including facings)</td><td>≥ 10%</td><td>≥ 15%</td></tr>
<tr><td>Aluminum reflective insulation layer (plastic layer content)</td><td>≥ 20%</td><td>≥ 30%</td></tr>
<tr><td>Polyurethane foam</td><td>≥ 10%</td><td>≥ 20%</td></tr>
<tr><td>Film-Type Insulation Products</td><td>≥ 10%</td><td>≥ 20%</td></tr>
<tr><td>Coating-Type Insulation Products</td><td>≥ 10%</td><td>≥ 20%</td></tr>
</table></td><td>Documentation such as product catalogue and written declaration</td><td>+5/
+10</td><td>4.3.1.1</td></tr>
<tr><td>Circularity</td><td>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.</td><td>Recycling plan</td><td>+5</td><td>4.3.2.1</td></tr>
</table>

Criteria	Requirements	Verification	Points +Bonus	Index
	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: Implement waste management policies, procedures and/or program covering manufacturing operations. Documentation should be included.	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 certificate under ISO 14046: Water Footprint Assessment	ISO 14046 Certificate issued by accredited certification body		4.3.4.3
Energy Management	Option A: Energy Management Plan: Implement effective energy management policies and procedures and/or an energy management programme.	Energy management plan	+5/ +10	4.3.5.1
	Option B: Energy Management System: Possess valid certificate under ISO 50001: Energy management systems.	ISO 50001 Certificate issued by accredited certification body		4.3.5.2
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

Criteria	Requirements	Verification	Points +Bonus	Index
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: The product shall contain < 0.1% by weight of the listed substances. The restricted hazardous substance including the following types: • Organotin compounds • Carcinogens or any substance listed in the IARC's current Group 1, 2A and 2B • Mutagens substance • Reproductive toxins listed in the EU Legislation Group 1A, 2A and 2B • Biocides • Aziridine or polyaziridines • Alkylphenol ethoxylates	Laboratory test report(s) or self-declaration letter	+5	4.4.3.1
	Plasticisers: Concentration of phthalates in the product shall be < 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)	Laboratory test report(s)	+5	4.4.3.3
	Ozone Depleting Substances: Any ozone depleting substances regulated in "the Montreal Protocol on Substances that Deplete the Ozone Layer" shall be < 0.1% by weight of the product	Laboratory test report(s)	+5	4.4.3.4
INNOSMART				
Innovations & Additions:	Adopt new practice, technology and strategy; *OR* Achieve exemplary performance	Narrative with supporting	+5	4.6.1
		Subtotal:	**+85**	

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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

Thermal Insulation can place a significant burden on the environment, from raw material extraction to potential health hazards in the use phase. With increasing environmental claims of thermal insulation in the market, a more comprehensive and systematic approach to assess the environmental impacts of the thermal insulation shall be developed. The aim of this Standard is to help designers and end-users choosing greener products by conserving resources, reducing the amount of waste disposal in landfills and reducing the impact to human health throughout the life cycle of thermal insulation. The development of the assessment criteria in this Standard has made references to worldwide relevant eco-labelling schemes and some existing life cycle assessment (LCA) studies.

2. SCOPE

The scope of this Standard applies to thermal insulation materials used in building applications (e.g., walls, floors, ceilings) to reduce heat transfer. The insulation materials covered by this guideline include:

- Glass Wool and Mineral Wool Types (e.g., rock wool, slag wool)
- Cellulose-Based Insulation (e.g., loose-fill cellulose)
- Plastic and Synthetic Polymer-Based Insulation (e.g., extruded polystyrene, polyisocyanurate foam)
- Batt and Blanket Types
- Rigid Board Types
- Spray-On/Loose-Fill Types
- Reflective Types (e.g., aluminium foil, reflective insulation coatings)

The materials for the thermal insulation shall be specified clearly in each application. One application is applicable to the thermal insulation manufactured with same specifications and materials. Product under the same series with different sizes, thickness and shapes could be included in **ONE** application.

Subsequent application is available for products under the same product series and manufactured with the same type of the raw materials.

Note:

Each application should specify the product code / serial number.

3. DEFINITIONS

Applicant:	Organisation which applies for the label under the CIC Green Product Certification of the Construction Industry Council
ASTM:	American Society for Testing and Materials
BS:	British Standards
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.
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
Post-consumer recycled content:	Consumer waste, generated by end-users and can no longer be used for its intended purpose. Examples include construction and demolition debris, materials collected through recycling programs, discarded products (e.g., furniture, cabinetry, decking), and landscaping waste (e.g., leaves, grass clippings, tree trimmings).
Pre-consumer recycled content:	Recycled content comes from process waste that is used to make a different product.
Thermal Conductivity:	The time rate of steady state heat flow through a unit area of a homogeneous material induced by a unit temperature gradient in a direction perpendicular to that unit area.
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
US EPA:	United States Environmental Protection Agency
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

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

Applicant shall provide the following product information on the product packaging, catalogue and/or company website for compliance:

- Basic product specifications
- The intended use of the product
- Instructions for correct use and storage to maximize the lifetime of the product
- Recommended maintenance instructions for the product
- Installation method
- Instructions for consumer product disposal
- Country of origin

Verification

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

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 a 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 can achieve maximum 10 Bonus Points under this section.

4.3.1.1 Raw Material – Non-core Criteria

Requirements

5-10 Bonus Points for demonstrating that the product shall be made of the following minimum percentage of recycled content by weight (where applicable). Applicant shall provide a detailed breakdown of all materials composing the thermal insulation products for compliance.

Table 2: Minimum percentage of recycled content by weight

Product (if applicable)	**Limit**	
	Bonus(+5)	**Bonus(+10)**
Glass wool	≥ 50%	≥ 55%
Mineral wool (rock wool/slag wool)	≥ 20%	≥ 35%
Cellulose	≥ 75%	≥ 80%
Plastics or synthetic polymers	≥ 50%	≥ 55%
Extruded polystyrene	≥ 20%	≥ 25%
Polyisocyanurate (plastic parts only, e.g. not including facings)	≥ 10%	≥ 15%
Aluminum reflective insulation layer (plastic layer content)	≥ 20%	≥ 30%
Polyurethane foam	≥ 10%	≥ 20%
Film-Type Insulation Products	≥ 10%	≥ 20%
Coating-Type Insulation Products	≥ 10%	≥ 20%

Verification

Documentation including, but not limited to, product catalogue 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.

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 certificate under ISO 50001: Energy management systems — Requirements with guidance for use.

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

Verification

A valid ISO 50001 certificate issued by accredited certification body.

4.4 ENVIRONMENT

4.4.1 Environmental Management

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

4.4.1.1 Environmental Management System – Non-core Criteria

Requirements

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

The target of the environmental management system shall be set to reduce the environmental impacts during the manufacturing process which include but 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 20 Basic Points under this section. Additionally, the Applicant can achieve maximum 15 Bonus Points under this section.

4.4.3.1 Hazardous Substances – Non-core Criteria

Requirements

5 Bonus Points for demonstrating that the concentration of the hazardous substance in the product shall be below 0.1% by weight of the product. The restricted hazardous substance including the following types:

- Organotin compounds
- Any carcinogenic substances or chemicals that are classified as Group 1, 2A or 2B according to International Agency for Research on Cancer (IARC)[1].
- Mutagens substance (i.e. agents which increasing the occurrence of mutations) listed in the EU Legislation Group 1A, 2A and 2B
- Reproductive toxins (Agents which cause adverse effects on sexual function and fertility in males and females, developmental toxicity in the offspring and effects through or via lactation) listed in the EU Legislation Group 1A, 2A and 2B
- Biocides
- Aziridine or polyaziridines
- Alkylphenol ethoxylates

Verification

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

[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

10 Basic Points for demonstrating that concentration of heavy metals (or their related compounds) in the product shall be less than 0.1% by weight of the product. The limited heavy metals including the following types:

- Chromium VI
- Lead
- Mercury

Product shall be tested based on the requirements as stated in BS EN 62321:2009 (or later version); other related testing methods are also acceptable with justification provided by the applicant.

Note:

BS EN 62321 specifies the determination of the levels of lead, mercury, hexavalent chromium contained in inorganic and organic compounds.

Verification

Laboratory test report(s).

4.4.3.3 Plasticisers – Non-core Criteria

Requirements

5 Bonus Points for demonstrating that the concentration of phthalates in the product shall be less than 0.1% by weight of the product. The limited phthalates 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, including but not limited to Standard Operating Procedures for Determination of Phthalates (CPSC-CH-C1001-09.3).

4.4.3.4 Ozone Depleting Materials – Non-core Criteria

Requirements

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

Verification

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

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 including the following types:

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

Verification

Laboratory test report(s).

4.4.4 Volatile Organic Compounds (VOC)

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

4.4.4.1 Formaldehyde – Core Criteria

Requirements

5 Basic Points for demonstrating formaldehyde meet one of the following requirements:

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

OR

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

Verification

Laboratory test report(s)

4.4.4.2 VOC Content – Core Criteria

Requirements

5 Basic Points for demonstrating that the products shall not exceed the following limits:

- Total volatile organic compounds: <0.5mg/m^3

Products shall be tested in accordance including but not limited to ASTM D 5116-10: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials / Products or the California Department of Public Health (CDPH) standard method, other related testing methods are also acceptable with justification provided by the applicant.

Verification

Laboratory test report(s)

4.5 PERFORMANCE

4.5.1 Performance Property

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

4.5.1.1 Thermal Conductivity – Core Criteria

Requirements

10 Basic Points for demonstrating that the product meet the following requirements whichever applicable:

For Traditional Insulation Materials:

0.038 kcal/mh°C, or 0.044 W/mK at 22°C to 24°C mean, with respect to its insulation rate (heat conduction rate, heat resistance)

For Optical Performance Materials (Films, Reflective Coatings):

Total Solar Energy Rejected (TSER) ≥ 45% or Infrared Reflectance (IR) ≥ 80%.

Dynamic Testing: for special environment applications, thermal conductivity or insulation performance can be tested at -10°C and 40°C.

Verification

Documentation including, but not limited to, test reports and product catalogue

4.5.2 Product Life

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

4.5.2.1 Serviceability – Core Criteria

Requirements

5 Basic Points for demonstrating the product's quality, durability, and performance through at least **FOUR** relevant testing items, selected based on material type and application, to comprehensively evaluate its effectiveness across different insulation and reflective materials.

Testing categories including but not limited to the following:

For Traditional Insulation Materials (e.g., mineral wool, foam boards):

- Moisture Resistance: Water Vapour Permeance/Transmission, Water Resistance/Absorption.
- Environmental Durability: UV Resistance, Fungi Resistance, Corrosion Resistance.
- Fire Safety: Flammability/Flame Retardance, Smoldering Combustion.

For Reflective and Coating Insulation Products (e.g., reflective films, coatings):

- Adhesion and Surface Durability: Adhesive/Cohesive Strength, Scratch Resistance, Surface Burning Performance.
- Environmental Durability: Elevated Temperature and Humidity Resistance, UV Resistance.
- Odour and Emission Control: Odour Emission.

Universal Tests (applicable to both categories where relevant):

- Structural Integrity: Tensile/Bond Strength, Flexural Strength, Impact Resistance.

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, 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 3: 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/ EPD Report		-	+5/+10	MW 10
Resource	Material Optimization	Raw Material	-	+5/+10	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]	10	-	
		Plasticisers	-	+5	
		Ozone Depleting Substance	-	+5	MW 7
		Flame Retardants [CORE]	10	-	
	Volatile Organic Compounds (VOC)	Formaldehyde [CORE]	5	-	
		VOC Content [CORE]	5	-	HWB 8
Performance	Performance Property	Thermal Conductivity [CORE]	10	-	
	Product Life	Serviceability [CORE]	5	-	MW 4
InnoSmart	Innovations & Additions		-	+5	IA
		Total:	**50**	**+85**	

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

- MW 4: Design for Durability and Resilience
- MW 6: Recycled Materials
- MW 7 : Ozone Depleting Substances
- MW 8: Regional Materials
- MW 10: Life Cycle Assessment
- MW 9: Use of Green Products
- HWB 8: Indoor Air Quality
- Innovations & Additions