CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

Assessment Standard

Technical Requirements

Thermal Insulation

(Version 2)

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, and 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 (PBDEs) • Polybrominated biphenyls (PBBs) • Short-chained chlorinated paraffin (SCCP) • Hexabromocyclododecane (HBCD)	Laboratory test report(s)	**10**	-	4.4.3.5
Volatile Organic Compounds (VOC)	Formaldehyde: The formaldehyde content in the product • shall be less than:0.1 mg per m3 per hour at 24 hours *OR* • shall be less than 0.01% by weight of the product.	Laboratory test report(s)	**5**	-	4.4.4.1
	VOC Content:	Laboratory test report(s)	**5**	-	4.4.4.2

Criteria	Requirements	Verification	Points		Index
			Basic	+Bonus	
	The TVOC contents in products shall be <0.5mg/m^3				
PERFORMANCE					
Performance Property	Thermal Conductivity: **For Traditional Insulation Materials:** Achieve thermal conductivity not greater than 0.038 kcal/mh°C, or 0.044 W/mK at 22°C to 24°C mean,. **For Optical Performance Materials (Films, Reflective Coatings):** Total Solar Energy Rejected (TSER) ≥ 45% or Infrared Reflectance (IR) ≥ 80%.	Documentation such as test report(s) and product catalogue	**10**	-	4.5.1.1
Product Life	Serviceability: Carry out at least **FOUR** testing items to demonstrate quality, durability and performance properties of the product. **For Traditional Insulation Materials:** • Moisture Resistance • Environmental Durability • Fire Safety **For Reflective and Coating Insulation Products** • Adhesion and Surface Durability • Environmental Durability • Odour and Emission Control **Universal Tests** • Structural Integrity	Laboratory test report(s) and any product documentation	**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 3rd party endorsed life cycle assessment report with the carbon footprint of products (CFP), covering at least A1 to A3 OR provide an Environmental Product Declaration (EPD).</td><td>CFP quantification report
OR
Environmental Product Declaration (EPD)</td><td>+10</td><td>4.2.1</td></tr>
<tr><td colspan="5">RESOURCE</td></tr>
<tr><td>Material Optimization</td><td>Raw Materials:
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 rowspan="2">Circularity</td><td>Recyclability:
Developed a recycling plan for the product and declared options for reuse, recycling, recovery, and disposal.</td><td>Documentation on recycling plan</td><td>+5</td><td>4.3.2.1</td></tr>
<tr><td>Packaging Requirement:
The packaging materials shall not contain halogenated plastics; OR</td><td>Documentation on packaging materials used</td><td>+5</td><td>4.3.2.2</td></tr>
</table>

Criteria	Requirements	Verification	Points +Bonus	Index
	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.			
Waste Management	Waste Management Plan: Implement waste management policies, procedures, and/or program covering manufacturing operations.	Waste management plan	+5	4.3.3.1
Water Management	Option A: Water Consumption Reporting: Report both potable and non-potable water usage in the production process of the past year.	Water consumption report	+5/ +10	4.3.4.1
	Water Recycling Program: Develop and implement a 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
Regional Product	Regional Manufactured Product: Products that are manufactured within 800km radius of HKSAR by road transportation; within a 1,600km radius by rail transportation; or within a 4,000km radius by sea transportation.	Location map with distance between manufacturer and HKSAR	+5	4.4.2.1

Criteria	Requirements	Verification	Points +Bonus	Index
Human Toxicity and Ecosystem Impact	Hazardous Substances: The product shall contain < 0.1% by weight of the listed substances. The restricted hazardous substances include 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 include 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 documents	+5	4.6.1
		Subtotal:	**+85**	

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1. INTRODUCTION

1.1 PURPOSE

The CIC Green Product Certification (the "Scheme") is a green product labelling scheme, owned by the Construction Industry Council (CIC) and implemented by the Hong Kong Green Building Council (HKGBC). The primary goal of the scheme is to support Hong Kong's transition to a low-carbon economy by encouraging the adoption of environmentally friendly construction practices.

With the Green Product Certification, various stakeholders, including consumers, building professionals, construction practitioners, and policymakers, can easily and unequivocally identify environmentally preferable construction materials and building products. This certification serves as a reliable indicator of a product's sustainability, helping to drive market demand for greener options.

To ensure the credibility and effectiveness of the certification, the CIC and the HKGBC has jointly developed this Technical Assessment Standards (the "Standard"), which sets out the assessment criteria and their benchmarks to govern the application and award of a grade under the Scheme. The comprehensive assessment evaluates the overall sustainability of construction materials and building products across multiple dimensions. These dimensions include environmental impact, resource efficiency, technical performance, and the use of smart manufacturing technologies.

The Standard is divided into two main parts:

- General Requirements (Refer to General Requirements provided in separate document). This part introduces Scheme's framework, outlines the application procedure, and details the grades.

- Technical Requirements (This document refers). This part defines the principles, requirements, and guides for quantifying and reporting the products' carbon footprint (CFP), along with other sustainability assessment criteria and scoring standards.

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

The Scheme is owned by the Construction Industry Council (CIC), 38/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon, Hong Kong; and operated by Hong Kong Green Building Council (HKGBC), 1/F, Jockey Club Environmental Building, 77 Tat Chee Avenue, Kowloon Tong, Hong Kong, Phone: +852 3994 8888, Email: cicgpc@hkgbc.org.hk

1.2 BACKGROUND

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 choose 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 the same specifications and materials. Products 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
GB:	National Standards of China
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
IR:	Infrared Reflectance
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

TSER: Total Solar Energy Rejected

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) grade under the Scheme. Bonus points may be awarded if the product meets the "Non-core Criteria". "Bronze", "Silver", "Gold", or "Platinum" grade will be awarded according to the total points accumulated, as shown in Table 1.

Table 1: Benchmarks for grading

Points achieved	Grade to be awarded
90 or above	Platinum
80 – 89	Gold
70 – 79	Silver
60 – 69	Bronze
50 – 59	Green
Below 50	No grade

All submissions and documentations shall be endorsed by the Chief Executive Officer or other authorised persons of the Applicant to demonstrate conformance to the assessment criteria. All certification, laboratory reports, and documentation must be valid during the assessment process and labelling period. The date of issue of all laboratory reports and documentation shall be within 5 years from the first application submission date.

If the certification expires during the labelling period or upon renewal, the applicant is required to provide an updated and valid certification. Failure to resubmit the required certification will result in the revocation of CIC Green Product Certificate without compensation.

The chemical tests should be conducted by either a third party or the manufacturer, providing that they have obtained ISO 17025 certification or relevant national accreditations, such as HOKLAS or CNAS.

4.1 BASIC INFORMATION

4.1.1 Product Information – Core Criteria

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

Requirements

5 Basic Points for providing following information with the product or made available to the public to help the users to use the thermal insulation products in a sustainable manner:

- 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 showing the product information and instructions including, but not limited to, product catalogue, technical datasheet, webpages, and/or any other information freely accessible by customers.

4.2 CARBON

4.2.1 CFP Quantification – Non-core Criteria

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

Requirements

10 Bonus Points for providing life cycle assessment report for quantifying and reporting the carbon footprint of products (CFP), covering at least A1 (raw material supply), A2 (transport), and A3 (manufacturing process). This can be achieved by either of the following:

Conduct CFP study report in accordance with ISO 14067:2018, GB/T 24067-2024 or equivalent.

OR

10 Bonus Points for providing the product's CFP value from a product level EPD issued in accordance with ISO 14025:2006, ISO 14067:2018, BS EN 15804:2012, ISO 21930:2017, GB/T 24025-2009 or GB/T 24067-2024.

Verification

Either of the following documents shall be provided for verification.

CFP quantification report endorsed by a third-party critical review, in accordance with ISO 14067:2018, GB/T 24067-2024 or equivalent.

OR

Environmental Product Declaration issued by 3rd party 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 Materials – 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**	
	+5 Bonus	**+10 Bonus**
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 be made available to the public:

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

Verification

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

4.3.2.2 Packaging Requirement – Non-core Criteria

Requirements

5 Bonus Points for minimizing the wastage from all primary packaging materials. The packaging materials shall achieve either of the following:

The packaging materials shall not contain halogenated plastics

OR

The packaging materials shall be comprised of 100% recycled materials, readily recyclable materials, or decomposable materials

OR

The packaging shall not be impregnated, labelled, coated, or otherwise treated in a manner which would prevent or significantly limit recycling.

Verification

Documentation describing the packaging materials used as well as their chemical composition (if any and where applicable), treatment process, and recyclability.

4.3.3 Waste Management

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

4.3.3.1 Waste Management Plan – Non-core Criteria

Requirements

5 Bonus Points for implementing effective waste management plan detailing the policies, procedures, and/or a waste management program covering manufacturing operations. The waste management plan should include, but should not be limited to, the following information:

- Initiatives taken to reduce waste generation and improve recovery/recycling of waste; and
- Initiatives implemented for recovery of post-consumer and/or pre-consumer waste that can be re-introduced into the manufacturing process; and
- Other environmental benefits or constraints associated with waste minimisation objectives and processes.

Verification

Documentation of waste management plan detailing the above, supported by organisational policy or equivalent documents.

4.3.4 Water Management

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

The Applicant can select one of the options below and comply with any or all the requirements under that option to achieve the associated points..

Option A:

4.3.4.1 Water Consumption Reporting – Non-core Criteria

Requirements

5 Bonus Points for reporting both potable and non-potable water usage in the production process of the past year.

Verification

Water consumption report, supported by water usage data acquired from water meter, water sub-meter, water bill, or other equivalent documents.

4.3.4.2 Water Recycling Program – Non-core Criteria

Requirements

5 Bonus Points for developing and implementing water recycling program during the manufacturing process.

Verification

Documentation demonstrating the implementation of water recycling program, supported by drawings, water usage data acquired from water sub-meter, or other equivalent documents.

Option B:

4.3.4.3 Water Management System – Non-core Criteria

Requirements

10 Bonus Points for possessing valid 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 Applicant can select one of the options below and comply with any or all the requirements under that option to achieve the associated points.

Option A:

4.3.5.1 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; and
- Supplier requirements: Manufacturers should extend their energy management efforts to their supply chain by establishing requirements or initiatives for suppliers and contract manufacturers to improve their energy performance where possible.

Verification

Documentation of energy management plan detailing the above, supported by 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 are 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 Manufactured Product – Non-core Criteria

Requirements

5 Bonus Points for products that are manufactured within 800km radius of HKSAR by road transportation; within a 1,600km radius by rail transportation; or within a 4,000km radius by sea transportation. The distance is measured by the direct distance, not by actual travel distance.

Verification

Documents demonstrating the location of the manufacturer and a map showing the distance between the manufacturer and HKSAR.

4.4.3 Human Toxicity and Ecosystem Impact

The Applicant can achieve maximum 35 Bonus Points under this section.

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 substances in the product shall be below 0.1% by weight of the product. The restricted hazardous substances include 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 the 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 include the following types:

- Chromium VI
- Lead
- Mercury

Verification

Laboratory test report(s) meeting the above requirements.

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 include 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 Substances – 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 shall 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, ISO 11890, and ASTM 17895.

4.4.3.5 Flame Retardants – Core Criteria

Requirements

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

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

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

Verification

Laboratory test report(s) meeting the above requirements.

4.4.4 Volatile Organic Compounds (VOC)

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

4.4.4.1 Formaldehyde – Core Criteria

Requirements

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

- Less than 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) in accordance with the above requirements.

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 with standards 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) in accordance with the above requirements.

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 meets the following requirements, whichever applicable:

For Traditional Insulation Materials:

Achieve thermal conductivity not greater than 0.038 kcal/mh°C, or 0.044 W/mK at 22°C to 24°C mean.

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 include, but are 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, Smouldering 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 the proposed Smart and Innovative Technologies; and

Include attachments that provide evidence of implementation, along with relevant technical specifications that support the claims made in the report.

5. SCORING

The points for meeting each criterion stated in this Standard are summarized below.

Table 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		-	+10	
Resource	Material Optimization	Raw Materials	-	+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 Manufactured Product	-	+5	MW 8
	Human Toxicity and Ecosystem Impact	Hazardous Substances	-	+5	
		Heavy Metals [CORE]	10	-	
		Plasticisers	-	+5	
		Ozone Depleting Substances	-	+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 9: Use of Green Products
- HWB 8: Indoor Air Quality
- Innovations and Additions