materials **platform**

GBCe
green building council españa

PAINTS AND COATINGS
GRAPHENSTONE

Product range

Biosphere Premium, Ecosphere Premium, Ecosphere Eggshell Premium, AmbientPro+ Premium, Filler$^{F10/F20}$ Premium, Stuki Premium, Kratzputz Premium, Füllmasse Premium

Paints and Coatings GRAPHENSTONE

PAINTS AND COATINGS

GRAPHENSTONE

LIME BASED

GRAPHENSTONE
THE ORIGINAL & AUTHENTIC

Description

Lime based mortars and paints. The porous nature of the lime ensures the breathability of the walls, avoiding humidity and creating safe and healthy environments.

Components of the family:

- Biosphere Premium: Exterior lime Paint
- Ecosphere Premium, Ecosphere Eggshell Premium: Interior lime paint (matt/eggshell)
- AmbientPro+ Premium: Photocatalytic lime Paint
- Filler$^{F10/F20}$ Premium: Lime primer
- Stuki Premium: Lime coating to make stuccos
- Kratzputz Premium: Textured lime coating
- Füllmasse Premium: Lime putty

Contact details

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Issuing date: November 2018

Summary table: Environmental parameters to which the material has a specific contribution.
Detailed in the cards of the respective environmental certifications GREEN, LEED and BREEAM.

Supporting Documents ***Certifications:*** *EPD, CSR, REACH* ***Self-declarations*** ***Potential***

Plot Mobility	Solar reflectance material index (SRI)	Rainwater Control	External light control	…					
Energy Atmosphere	Embedded energy	Greenhouse gases	Energy demand reduction	Equipment Efficiency	Other pollutant gases	Renewable energy	Energy manage-ment	…	
Materials	Accredited location	Pre-consumer recycling	Post-consumer recycling	Potential for reuse	Certified Wood	Construc-tion residue	Chemical Composi-tion	…	
Water	Consumption < reference	Water management	…						
Indoor Environment	Low VOCs emission	Low Formaldehy-de emission	Comfort control	Lighting comfort	Acoustic comfort	Air quality	…		
Innovation	Design Innovation	…							

NOTAS:

1. La información contenida en este documento de cumplimiento de los créditos correspondientes al sistema de certificación ambiental de estudio elegido (VERDE o LEED o BREEAM) se realiza en función de la información que la empresa aporte y proporcione. Para asegurar la posibilidad de cumplimiento de dichos créditos será necesario en el proceso de cualquiera de los sellos verificar la validez de la información y datos aportados por la empresa.
2. Este documento no constituye una certificación del producto, ni garantiza el cumplimiento de la normativa local vigente.
3. Las conclusiones de este estudio se aplican solamente a los productos mencionados en este informe y está sujeto a la invariabilidad de las condiciones técnicas del producto.
4. La validez de este documento está supeditado a la caducidad de los documentos de soporte o variación de normativas y/o versiones de los sellos de certificación ambiental.
5. Este documento informa de la posible contribución de los productos estudiados a la obtención de las certificaciones VERDE,LEED y BREEAM. No obstante, la decisión final sobre si un producto cumple o no los requisitos de la certificación LEED es exclusiva del GBCI (Green Business Certification Inc.).

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LEED Certification Standards (v4)

EB	Existing Building	RNC	Retail New Construction	DCNC	Data Center NC
NC	New Construction	REB	Retail Existing Building	DCEB	Data Center EB
CI	Commercial Interiors	RCI	Retail Commercial Interiors	WNC	Warehouse NC
CS	Core & Shell	HC	Healthcare	WEB	Warehouse EB
SNC	School New Construction	HNC	Hospitality-New Constr.	NDP	Neighborhood Devel. Plan
SEB	School Existing Building	HEB	Hospitality-Existing Building	ND	Neighborhood Develop.
MMR	Multifamily Mid Rise	HCI	Hospitality-Commercial Int.	HM	Homes

CREDIT FILE
LEED v4

CATEGORY
SUSTAINABLE SITES (SS)

SS Reduced heat island effect (NC, CS, SNC, RNC, HNC, DCNC, WNC y HCNC)

Purpose

Minimize the effect on microclimates and habitats for people and wildlife by reducing heat islands.

Compliance Data

Option 1: Biosphere Premium is an exterior paint that can be used as a deck finish. The Biosphere Premium White product has an SRI = 100.8 ± 0.3 > 82. The application of white Biosphere Premium on 75% of the roof surface could contribute to obtaining the maximum score of the criteria*.
*The calculation of the credit is done in a pondered way between the measures for cover and measures at plot level. For the analysis of the compliance at roof level, it has been considered that there are no pavements in the plot.

Biosphere Premium White can therefore contribute to the fulfilment of the requirements of credit option 1.

Evaluation procedure

Option 1: Roofs:

Solutions with highly reflective finishes will be installed.

PENDENT		Initial SRI*	SRI at age 3*
Flat roof	≤16% (2:12)	82	64
Inclined roof	>16% (2:12)	39	32

Other heat island preventative measures:

1. Use vegetation that provides shade on paved areas.
2. To provide shadows by means of fastening structures for energy generation elements such as solar collectors, photovoltaic panels or wind turbines.
3. Shade with structures that have an SR solar reflectance after 3 years of at least 0.28 (if no reflectance information is available after three years, use materials with an initial reflectance ≥ 0.33).
4. Use exterior paving on the plot with solar reflectance (SR) after three years ≥ 0.28 (if no reflectance information is available after three years, use materials with an initial reflectance ≥ 0.33).
5. Use open-joint floorings (opening ≥50%)

Option 2: Covered parking.

Locate 75% of covered parking spaces. This roof must comply:

- SRI required for inclined roof
- vegetation cover
- covered by power generation elements (wind turbines or solar thermal/photovoltaic panels)

EP* Option 1: Comply with options 1 and 2. Design 100% of the covered car park.

**EP- Exemplary perfomance: Requirements for Exemplary Performance (see category Innovation in Design).*

Example of analysis

N/A

Supporting Documents

Biosphere_ASTM-E1980-11_SRI

Reference standard

- ASTM Standards E903 y E892: astm.org
- Cool Roof Rating Council Standard (CRRC-1): coolroofs.org

CATEGORY
MATERIALS AND RESOURCES (MR)

MR Reducing the impact of the building's life cycle (NC, CS, SNC, RNC, HC, HNC, DCNC, WNCI)

Purpose

Encourage the reuse and use of materials with less environmental impact.

Compliance Data

GRAPHENSTONE has created the GRAPHENSTONE Ecosphere Premium EPD. This EPD is also representative of the other products analysed in this sheet: Biosphere Premium, AmbientPro+ Premium, FillerF10/F20 Premium. The results of the products are shown in Annex I: Stuki Premium, Kratzputz Premium and Füllmasse Premium.

The impacts indicated in this EPD can be used to carry out the LCA of the target building. The scope of the analysis covers the phases from cradle to door.

NOTES:

The final result for determining the total points depends on the computation of all envelope and structure materials.

Evaluation procedure

Opction 4: Life cycle analysis of the building LCA (structure and enclosure) (3 points)
Carry out the LCA of the enclosure and the structure of the building that demonstrates a reduction, with respect to a reference building, of at least 10% in a minimum of three of the following impacts: Global Warming, Ozone Layer Destruction, Acidification, Eutrophication, Ground-Level Ozone Formation and Non-Renewable Energy Depletion.
One of the three impacts must necessarily be global warming potential.
No impact category assessed within the LCA can be increased by more than 5% with respect to the reference building.

EP* Option 4: Improve the required thresholds of the six impact measures.

Example of analysis

NA

Supporting Documents

IEDISA Graphenstone Ecosphere Premium Environmental Product Declaration (EPD) "epd1050es_IEdiSA_Graphenstone Ecosphere Premium_2017".

Reference standard

ISO 14021–1999/ ISO 14025–2006/ ISO 14040–2006/ ISO 14044–2006 / EN 15804.

CATEGORY
MATERIALS AND RESOURCES (MR)

MR Product Optimization and Transparency - Environmental Product Declaration
(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose	Promote the use of products and materials that have information on their life cycle and that demonstrate a reduction in the impacts associated with it.
Compliance Data	**Optionn 1:** GRAPHENSTONE has created the EPD GRAPHENSTONE Ecosphere Premium. This EPD is also representative of the other products analysed in this sheet: Biosphere Premium, AmbientPro+ Premium, FillerF10/F20 Premium. The results of the products are shown in Annex I: Stuki Premium, Kratzputz Premium and Füllmasse Premium. The programme operator is EPD® International. It therefore contributes to the fulfilment of the credit. Being a product-specific EPD, the products compute at 100% (option 1).
Evaluation procedure	**Option 1. Environmental Product Declaration (EPD) (1 point)** Use a minimum of 20 of the products permanently installed in the building (from 5 different manufacturers) that meet one of the following criteria: • Public LCA and reviewed by an independent third party (these products account for 25%). • EPD (Environmental Product Declaration): • Generic industry EPD (compute at 50%) • Product specific EPD (100% computed) EP* Option1: Install 40 qualifying products (from at least 5 manufacturers). **Option 2. Characteristics optimization (1 point)** Use 50% (computed according to cost) of the products permanently installed in the building that demonstrate, certified by an independent third party, a reduction of impacts with respect to the industry average, in at least three of the following categories: • Global warming potential (CO2 eq.) • Destruction of the stratospheric ozone layer (kg CFC-11) • Acidification of soil and water sources (moles H+ or kg SO2) • Eutrophication (kg of N or PO4) • Formation of tropospheric ozone (kg NOx or kg C2H4) • Exhaustion of non-renewable energy sources (MJ) Products (by extraction, manufacture and purchase) coming from a radius less than 160 km from the project site will be computed at 200% (Location Valuation Factor MR). **EP* Option 2:** Purchase 75% of products that meet the requirements.
Example of analysis	*NA*
Supporting Documents	***IEDISA Graphenstone Ecosphere Premium Environmental Product Declaration (EPD) "epd1050es_IEdiSA_Graphenstone Ecosphere Premium_2017".***
Reference standard	*ISO 14021–1999/ ISO 14025–2006/ ISO 14040–2006/ ISO 14044–2006 / EN 15804.*

CATEGORY
MATERIALS AND RESOURCES (MR)

MR Product optimization and transparency - Material components

(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose	Reward the selection of products that have information about the chemical ingredients contained in them (according to an accepted and verified methodology) in order to minimize the use and generation of potentially harmful substances.
Compliance Data	Graphenstone Biosphere Premium, Ecosphere Premium, Ecosphere Eggshell Premium, Filler F10 / F20 Premium, Stuki Premium, Kratzputz Premium, Füllmasse Premium and AmbientPro+ Premium (in white colour) are certified Cradle to Cradle, version 3.1, gold level. They therefore contribute to the fulfillment of options 1 and 2, with 150% in option 2: https://www.c2ccertified.org/products/scorecard/graphenstone-indoor-and-outdoor-paint-only-white-color-and-filler-iedisa
Evaluation procedure	**Opción 1. Transparencia en la composición del producto (1 punto)** Use a minimum of 20 of the products permanently installed in the building (from 5 different manufacturers) that indicate the composition of the product, up to 0.1% (1000 ppm), in one of the formats accepted by the USGBC (U.S. Green Building Council) (Component Listing, HPD, C2C, etc.). **EP* Option 1:** Purchase at least 40 permanently installed building products that meet the credit criteria. **Opción 2. Improvement of material components (1 point)** Use a minimum of 25% of products permanently installed in the building (% according to cost) that demonstrate that they do not contain hazardous substances, according to the certifications or formats accepted by USGBC (GreenScreen v1.2, C2C, REACH declaration, etc.). Products (by extraction1, manufacture1 and purchase) coming from a radius less than 160 km from the project site will be computed at 200% (Location Valuation Factor MR). **EP* Optionn 2:** Purchase at least 50%, evaluated by cost, of all permanently installed building products that meet option 2 criteria.
Example of analysis	*NA*
Supporting Documents	***Certificate C2C***
Reference standard	*Chemical Abstracts Service: cas.org/* *Health Product Declaration: hpdcollaborative.org/* *Cradle-to-Cradle CertifiedCM Product Standard: c2ccertified.org/product_certification* *Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH):echa.europa.eu/support/ guidance-on-reach-and-clp-implementation* *GreenScreen: cleanproduction.org/Greenscreen.v1-2.php*

CATEGORY
MATERIALS AND RESOURCES (MR)

MR Construction and Demolition Waste Management
(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose

Reduce construction and demolition waste deposited in landfills and incinerated through recovery, reuse and recycling.

Compliance Data

GRAPHENSTONE contributes to the reduction of waste on the construction site. Their paints have a high yield per square metre, so they need a low volume of paint per square metre. The only residue during construction is the packaging.

In order to comply with option 2, it is advisable to carry out an initial assessment of the waste to be produced on site.
EPD Graphenstone has estimated the kg of non-hazardous waste generated on site per m2 (uf) of product that can be used for this initial assessment:

PRODUCT	Kg of on-site waste /uf
Biosphere Premium	5,46E-03
Ecosphere Premium	
Ecosphere Eggshell Premium	
AmbientPro+ Premium	
Filler$^{F10/F20}$ Premium	
Stuki Premium	6,45E-03
Kratzputz Premium	1,17E-01
Füllmasse Premium	1,18E-01

Graphenstone products can contribute, due to their low generation of waste, to compliance with the criteria. However, it is up to the waste management plants to certify the actual quantities of residue generated on site and the quantities recycled.

Evaluation procedure

Opction 2. Reduction of waste generated on site (2 points):
Do not generate more than 12.2 kilograms of construction waste per square metre of building constructed.
EP* Also comply with Option 1: Recycle 50-75% of construction site residues, including 3-4 types of waste.

Example of analysis

NA

Supporting Documents

IEDISA Graphenstone Ecosphere Premium Environmental Product Declaration (EPD) "epd1050es_IEdiSA_Graphenstone Ecosphere Premium_2017".

Reference standard

- European Commission Waste Framework Directive 2008/98/EC
- European Commission Waste Incineration Directive 2000/76/EC
- EN 303-1—1999/A1—2003
- EN 303-3—1998/AC—2006
- EN 303-4—1999
- EN 303-5—2012
- EN 303-6—2000
- EN 303-7—2006

CATEGORY
INDOOR ENVIRONMENTAL QUALITY (IEQ)

EQ Low-emission materials
(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose

Reduce concentrations of chemical pollutants that can damage air quality, occupants' health and productivity, as well as the environment.

Compliance Data

Graphenstone Interior Paint (Ecosphere Premium) has been tested according to the California Department of Public Health (CDPH) Standard Method v1.1-2010 and the AgBB standard, meeting the limits required by them. The formaldehyde limit after 28 days, according to the AgBB standard, is <2 µg/m3.

Tests have been carried out by Tecnalia and EcoInstitut, accredited by ISO/IEC 17025.

The Ecosphere Premium product, according to section 8 of CDPH Standard Method v1.1-2010, is considered to be representative of the rest of the products analysed in the file, due to the similarity in its composition: aerial lime, water, selected aggregates, graphene fiber, thickeners, stabilizers and specific dispersants.

The VOC content of the products included in this sheet is <1 g/L, complying with the Ecopaint Directive (2004/42/EC, Phase II), contributing to LEED requirements for liquid-applied paints, as well as requirements for outdoor products in hospitals and schools.

Stuki Premium stucco is exempt from the need for testing, as shown in table 5 of the LEEDv4 guide.

The products analysed in the data sheet can therefore contribute to the fulfilment of the requirements of the criteria.

Evaluation procedure

The objective of this credit is the use of building construction products, with very low emissions of Volatile Organic Compounds (VOCs).

Two options are available:

- **Option 1:** defines several product categories and awards points based on the number of categories that meet the low VOC emission requirements.
- **Option 2:** If any product in any category does not meet the criteria, Option 2 can be used to perform a pondered calculation, and compute partial compliance for several categories.

Paints and **coatings** must meet the following requirements:

- *General Emissions Assessment:* carry out an emissions test in an accredited laboratory, according to some of the standards accepted by USGBC.
- *VOC content for liquid-applied products:* Comply with the VOC content limit set by USGBC recognized standards.

Products that inherently do not emit VOCs comply with the credit requirements without the need for testing, provided they do not have organic-based coatings, binders or sealants.

In hospitals and educational centers there are also extra requirements for isolation blankets and some products located outside the building such as adhesives, sealants, coatings, roofs and waterproofing materials applied in situ.
EP* Option 1: Achieve the highest score and 100% product compliance.

EP* Option 2: 100% product compliance.

**EP: Exemplary performance: Exemplary performance (Additional point)*

Example of analysis

NA

Supporting Documents

- ***Tests:***
  - ***Ecosphere_VOC-Emissions_CS01350***
  - ***50457.001.IEdiSA.AGBB***
- ***Declaration "COVs_UE 2004_42_CE21"***

Reference standard

- *CDPH Standard Method v1.1–2010: cal-iaq.org*
- *ISO 17025, ISO Guide 65 e ISO 16000 partes 3, 6, 7, 11: iso.org*
- *AgBB-2010: umweltbundesamt.de/produkte-e/bauprodukte/agbb.htm*
- *South Coast Air Quality Management District (SCAQMD) Rule 1168 y Rule 1113: aqmd.gov*
- *European Decopaint Directive:*
- *ec.europa.eu/environment/air/pollutants/stationary/paints/paints_legis.htm*
- *Canadian VOC Concentration Limits for Architectural Coatings:*
- *ec.gc.ca/lcpe-cepa/eng/regulations/detailReg.cfm?intReg=117*
- *Hong Kong Air Pollution Control Regulation:*
- *epd.gov.hk/epd/english/environmentinhk/air/air_maincontent.html*
- *CARB 93120 ATCM: arb.ca.gov/toxics/compwood/compwood.htm*
- *ANSI/BIFMA M7.1 Standard Test Method for Determining VOC Emissions from Office Furniture Systems, Components and Seating and ANSI/BIFMA e3–2011 Furniture Sustainability Standard: bifma.org*

CATEGORY
INDOOR ENVIRONMENTAL QUALITY (IEQ)

EQ Analysis of indoor air quality
(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose

Establish better indoor air quality in the building after construction and during occupation.

Compliance Data

Graphenstone products have an inert character and therefore do not produce emissions of volatile organic compounds (VOCs) (see previous credit "Low Emission Materials").
In addition, the main component of the product is lime, which carbonates in its use phase by absorbing CO2 from the air.
It can therefore contribute to the achievement of credit.

NOTE: Compliance with the criteria is justified by the results of an on-site test according to standards accepted by LEED.

Evaluation procedure

Opction 2: Analysis of air quality according to ASTM, EPA or ISO standards accepted by LEED for each type of pollutant.
The concentration of the following pollutants shall be measured in all commonly occupied spaces: Formaldehyde, PM10 and PM2.5 particles, ozone, VOCs listed in CDPH Standard Method v1.1 (Table 4-1) and carbon monoxide. The minimum concentrations established by LEED for each case may not be exceeded.
The laboratory performing the test must be accredited according to ISO/IEC 17025.

Example of analysis

NA

Supporting Documents

- ***Test:***
  - ***Ecosphere_VOC-Emissions_CS01350***
  - ***50457.001.IEdiSA.AGBB***
- ***Declaration "COVs_UE 2004_42_CE21"***

Reference standard

- *ASTM D5197–09e1 Standard Test Method for Determination of Formaldehyde and Other Carbony Compounds in Air (Active Sampler Methodology): astm.org/Standards/D5197.htm*
- *ASTM D5149–02(2008) Standard Test Method for Ozone in the Atmosphere: Continuous Measurement by Ethylene Chemiluminescence: astm.org/Standards/D5149*
- *ISO 16000-3, Indoor air–Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air—Active sampling method: iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=51812*
- *ISO 16000-6, Indoor air–Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID: iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=52213*
- *ISO 4224 Ambient air—Determination of carbon monoxide—Nondispersive infrared spectrometric method: iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=32229*

- *ISO 7708 Air quality—Particle size fraction definitions for health-related sampling: iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=14534*
- *ISO 13964 Air quality—Determination of ozone in ambient air—Ultraviolet photometric method: iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=23528*
- *U.S. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air, IP-1: Volatile Organic Compounds, IP-3: Carbon Monoxide and Carbon Dioxide, IP-6: Formaldehyde and other aldehydes/ketones, IP-10 Volatile Organic Compounds: nepis.epa.gov*
- *U.S. EPA Compendium of Methods for the Determination of Inorganic Compounds in Ambient Air, TO-1: Volatile Organic Compounds, TO-11: Formaldehyde, TO-15: Volatile Organic Compounds, TO-17: Volatile Organic Compounds: epa.gov/ttnamti1/airtox.html*
- *California Department of Public Health, Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers, v1.1–2010: cal-iaq.org/separator/voc/standard-method*

CATEGORY
INDOOR ENVIRONMENTAL QUALITY (IEQ)

EQ Interior lighting
(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose	To provide high quality lighting to promote productivity, comfort and well-being of occupants.
Compliance Data	GRAPHENSTONE paints, when formulated with lime, have a reflectance of 89.4%, exceeding LEED requirements for ceilings and walls. They can therefore contribute to meeting the requirements of the criteria.
Evaluation procedure	Option 2. Lighting quality: LEED evaluates, among other strategies, that 90% of the regularly occupied surface meets the following weighted average reflectance thresholds: 85% for ceilings, 60% for walls, and 25% for floors.
Example of analysis	*NA*
Supporting Documents	***Reflectance LRV***
Reference standard	*- The Lighting Handbook, 10th edition, Illuminating Engineering Society of North America: ies.org*

CATEGORY
INNOVATION DESIGN (ID)

IN Innovation Criteria for Exemplary Performance (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI)

Purpose	Reward projects that achieve exceptional or innovative performance in meeting LEED requirements.
Compliance Data	GRAPHENSTONE may contribute to meeting the requirements of exemplary performance in credits: • MR - Product Optimization and Dissemination - Material Components • MR - Product Optimization and Dissemination - Material Extraction • EQ - Low Emission Materials
Evaluation procedure	**Option 3: Exemplary Performance – EP** Some LEED credits provide the option to earn an extra point for Exemplary Performance (EP) if the credit requirements are exceeded, reaching the values defined by LEED as Exemplary Performance (EP). In this way a maximum of 2 points can be obtained (corresponding to two different credits). The values defined as Exemplary Performance have been indicated in this sheet as EP, in the corresponding credits.
Example of analysis	*NA*
Supporting Documents	***See corresponding credit***
Reference standard	*See corresponding credit*

CREDIT OVERVIEW
LEED v2009

SUSTAINABLE SITES (SS)

- SSc7.2 - Heat island – Deck

MATERIALS AND RESOURCES (MR)

- MRc5 – Regional Material

INDOOR ENVIRONMENTAL QUALITY (IEQ)

- EQc3.2 – Pre-Occupation Indoor Air Management Plan
- EQc4.2 – Low Emission Materials - Paints and Coatings

INNOVATION DESIGN (ID)

- IN – Innovation in design. Exemplary performance.

Environmental categories LEED

(SS) Sustainable Sites	(WE) Water use efficiency	(EA) Energy and Atmosphere	(MR) Materials and Resources	(IEQ) Indoor Environmen-tal Quality	(ID) Innovation in Design	(RP) Regional Priority

LEED Certification Standards (v2009)

EB	Existing Building	CS	Core & Shell	HM	Homes
NC	New Construction	S	Schools	NDP	Neighborhood Devel. Plan
HC	Healthcare	RCI	Retail Commercial Interiors	ND	Neighborhood Develop. Built project
RT	Retail	CI	Commercial Interiors		

CREDIT FILE
LEED v2009

CATEGORY
SUSTAINABLE SITES (SS)

SSc7.2 Heat island - Deck (NC, CS, S)

Purpose

Minimize the effect on microclimates and habitats for people and wildlife by reducing heat islands.

Compliance Data

Option 1: Biosphere Premium is an outdoor paint that can be used as a deck finish. The White Biosphere Premium product has a SRI = 100.8 ± 0.3 > 78.

The SRI has been calculated according to ASTM E 1980, the reflectance according to ASTM E 903 and the emittance according to ASTM C 1371.

Biosphere Premium White can therefore contribute to the fulfillment of the credit requirements for option 1.

Evaluation procedure

Option 1: Roofs with high SRI
Install solutions with highly reflective finishes on 75% of the roof surface.

PENDENT		Initial SRI*
Flat roof	≤16% (2:12)	78
Inclined roof	>16% (2:12)	29

Option 2: Vegetable Cover.
Install a vegetative cover on 50% of the cover area.

Option 3: Covered parking.
Install roofs with highly reflective finishes in combination with green roofs, so that they meet the requirements indicated in options 1 and 2, weighted by their area.

NOTE: The SRI calculation is to be made according to ASTM E 1980. Reflectance shall be measured in accordance with ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured in accordance with ASTM E408 or ASTM C 1371.

EP*: 100% of the cover is a vegetative cover.

**EP- Exemplary performance: Requirements for exemplary Performance (see category Innovation in Design)*

Example of analysis

N/A

Supporting Documents	***Biosphere_ASTM-E1980-11_SRI***
Reference standard	• ASTM Standards E903 and E892: astm.org • Cool Roof Rating Council Standard (CRRC-1): coolroofs.org

CATEGORY
MATERIALS AND RESOURCES (MR)

MR c5 Regional Materials
(NC, CS, S)

Purpose

Use locally produced materials. Use construction materials and products that have been extracted, collected and reclaimed, as well as manufactured within 500 Miles of the construction site.

Compliance Data

The location of the extraction and manufacturing points for Graphenstone products is detailed below:

PRODUCT	MANUFACTURING	EXTRACTION
Biosphere Premium	Pol. Ind. Poliviso, Herreros 8 Street 41520 El Viso del Alcor Seville, Spain	100% of the raw materials are extracted within a radius of 800km from the factory, most within a radius of 160km.
Ecosphere Premium		
Ecosphere Eggshell Premium		
AmbientPro+ Premium		
Filler$^{F10/F20}$ Premium		
Stuki Premium		
Kratzputz Premium		
Füllmasse Premium		

The products indicated above can contribute to the fulfilment of the credit for projects located less than 800km from both the extraction sites and the manufacturing sites indicated in the table above.

NOTE:
The final result in determining the total points depends on the computation of all building materials. These products contribute to meeting the sustainability criteria.

Evaluation procedure

The sum of the regional material content must constitute at least 10-20% of the total cost of the value of materials in the project. It must be assessed on the total cost of materials used in the project, excluding facilities and labour.

Regional material is considered to be that which has been extracted and manufactured within a radius of 800 km of the project plot.

EP*: The sum of the regional material content must constitute at least 30%.

Example of analysis

NA

Supporting Documents

Factory_origin-products
Contact for more information: constructionmanager@graphenstone.com

Reference standard

NA

CATEGORY
INDOOR ENVIRONMENTAL QUALITY (IEQ)

EQc3.2 – Indoor Air Quality Management Plan - before occupation (NC, S)

Purpose

Reduce indoor air quality problems arising from construction to improve the comfort and well-being of building site workers and occupants.

Compliance Data

Graphenstone products are inert and therefore produce no emissions of volatile organic compounds (VOCs) (see Low Emission Materials credit below).
In addition, the main component of the product is lime, which carbonates in its use phase by absorbing CO2 from the air.
It can therefore contribute to the achievement of credit.

NOTE: Compliance with the criteria is justified by the results of an on-site test according to standards accepted by LEED.

Evaluation procedure

Option 2: Analysis of air quality, after construction and before occupation of the building, according to U.S. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor or ISO protocols, accepted by LEED for each type of pollutant.

The concentration of the following pollutants in the most representative and unfavourable spaces of the building must be measured: Formaldehyde, PM10 particles, TVOCs, 4-Phenylcyclohexene (4-PCH) and carbon monoxide.

The minimum concentrations established by LEED for each case may not be exceeded.

Example of analysis

NA

Supporting Documents

- ***Test:***
  - ***Ecosphere_VOC-Emissions_CS01350***
  - ***50457.001.IEdiSA.AGBB***
- ***Declaration "VOCs_UE 2004_42_CE21"***

Reference standard

- *U.S. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air*

CATEGORY
INDOOR ENVIRONMENTAL QUALITY (IEQ)

EQc4.2 – Low Emission Materials - Paints and Coatings (NC, CS, S)

Purpose

Reduce the amount of indoor air pollutants that are odorous, irritating and/or detrimental to the comfort and well-being of the installers and occupants of the building.

Compliance Data

Graphenstone Biosphere Premium, Ecosphere Premium, Ecosphere Eggshell Premium, AmbientPro+ Premium, FillerF10/F20 Premium, Stuki Premium, Kratzputz Premium and Füllmasse Premium are all inert mineral products made from hydrated lime, water, limestone, aggregates and natural additives.
Their VOC content is less than 1g/l, thus meeting LEED requirements.
They can therefore contribute to meeting the requirements of the criteria.

Evaluation procedure

Requirements:
Paints and coatings used inside the building must comply with the following criteria:

- Anticorrosive paints: must not exceed the VOC content limit of 250g/L.
- Wood varnishes, floor coverings, stains, primers, sealers and lacquers: shall not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD), Rule 1113, for architectural coatings (January 1, 2004).
- All other paints and coatings applied in situ: shall not exceed the limits for volatile organic compounds (VOCs) set forth in Green Seal Standard GS-11, Paints (May 20, 1993).

Example of analysis

NA

Supporting Documents

- ***Declaration "VOCs_UE 2004_42_CE21"***

Reference standard

- *Green Seal Standard GS-11*
- *Green Seal Standard GC-03*
- *South Coast Air Quality Management District (SCAQMD), rule 1113, Architectural Coatings*

CATEGORY
INNOVATION DESIGN (ID)

IN Innovation Criteria for Exemplary Performance (NC, CS, S)

Purpose

Reward projects that achieve exceptional or innovative performance in meeting LEED requirements.

Compliance Data

GRAPHENSTONE can contribute to meeting the requirements of exemplary performance in credits:

- MR c5 – Regional Materials.

Evaluation procedure

Option 2: Exemplary Performance – EP

Some LEED credits give the option of obtaining an extra point for Exemplary Performance (EP) if the credit requirements are exceeded, reaching the values defined by LEED as Exemplary Performance (EP).

In this way a maximum of 3 points can be obtained (corresponding to three different credits).

The values defined as Exemplary Performance have been indicated in this sheet as EP, in the corresponding credits.

Example of analysis

NA

Supporting Documents

See corresponding credit

Reference standard

See corresponding credit

REQUIREMENTS OVERVIEW
BREEAM

HEALTH AND WELLBEING

- SyB 2 / SyB 8 Indoor air quality

MATERIALS

- MAT 1 Life Cycle Impacts
- MAT 3 Responsible material procurement
- MAT 8 Low environmental impact materials
- MAT 10 Responsible Procurement of Materials - Finishing Elements

INNOVATION

- INNOVATION

BREAM ES Environmental categories

Manage-ment | Health & Wellness | Energy | Transport | Water | Materials | Waste | Land use and ecology | Pollution | Innova-tion

BREAM ES Certification Standards

UR	BREAM ES Urbanism	VIV	BREAM ES housing	USO	BREAM ES In Use
NC	BREAM ES New Construction				

REQUIREMENTS SHEET
BREAM ES

CATEGORY
HEALTH AND WELLBEING

SyB 2 – SyB 8 Indoor air quality
(BREEAM ES NEW CONSTRUCTION 2015, BREEAM ES HOUSING 2011)

Purpose

Ensure, through design, the achievement of appropriate levels of Recognise and incentivise a healthy internal environment by specifying and installing appropriate ventilation systems, equipment and finishes.

Compliance Data

GRAPHENSTONE's Ecosphere Premium interior paint produces low VOC emissions, contributing to compliance with BREEAM requirements:

- Compliance standard: EU Directive 2004/42/EC21 of 21 April 2004 on the limitation of emissions of volatile organic compounds (VOCs).
- Test standard: UNE-EN ISO 11890-2:2013. Paints and varnishes. Determination of volatile organic compound (VOC) content. Part 2: Method by gas chromatography. (ISO 11890-2:2013).

To ensure resistance to fungi and algae in humid environments (bathrooms, kitchens, laundry rooms, etc.), Graphenstone Primer AmbientPrimer L44 should be applied and Ecosphere paint applied on top.

Evaluation procedure

BREEAM values, among other aspects, the choice of finishing materials with low VOC emissions.

All decorative paints and varnishes must also be resistant to fungi and algae in humid environments.

Exemplary level criteria

BREEAM ES New Construction: In addition to developing an Indoor Air Quality Control Plan and meeting BREEAM requirements for interior finishing materials, formaldehyde emissions are at 0.06 mg/m3 of air (1 point) or 0.01 mg/m3 of air (2 points). If fewer than eight products are specified for the building, all of them must meet the criteria to obtain this point.

BREEAM ES Housing: All categories of materials assessed by BREEAM must meet the requirements of the requirement.

Example of analysis

NA

Supporting Documents

- ***Resistance-Algae-Fungus***
- ***Compliance Standard of behaviour: VOCs_UE 2004_42_CE21***
- ***Compliance Test standard: Tecnalia_062777_Ecosphere_VOCs***

Reference standard

- *UNE-ISO 16000-4: 2006. Indoor air. Part 4: Determination of formaldehyde. Diffusive sampling method.*
- *UNE-ISO 16000-6: 2006. Indoor air. Part 6: Determination of volatile organic compounds in indoor air and test chambers by diffusive sampling with Tenax TA adsorbent, thermal desorption and gas chromatography using MS/FID.*
- *UNE-EN ISO 16017-2: 2004. Indoor, ambient and occupational air. Sampling and analysis of volatile organic compounds by adsorbent tube/thermal desorption/capillary gas chromatography. Part 2: Diffusion sampling*
- *UNE 77260-3: 2004. Indoor air. Part 3: Determination of formaldehyde and other carbonyl compounds. Active sampling method.*
- *UNE-EN ISO 9001:2008. Quality management systems. Requirements.*
- *UNE-EN 13300:2002. Paints and varnishes. Aqueous phase coating materials and systems for interior walls and ceilings. Classification.*
- *UNE-EN ISO 11890-2:2013. Paints and varnishes. Determination of volatile organic compound (VOC) content. Part 2: Method by gas chromatography. (ISO 11890-2:2013).*
- *UNE-EN 717-1:2006. Wood-based panels. Determination of formaldehyde emission. Part 1: Emission of formaldehyde by the chamber method.*
- *UNE-EN ISO 16000-9:2006. Indoor air. Biological evaluation of medical devices - Part 9: Determination of the emission of volatile organic compounds from construction products and furniture. Chamber emission test method.*
- *E-EN 13999-2:2014. Adhesives. Short method for measuring the emission properties of low-solvent or solvent-free adhesives after application. Part 2: Determination of volatile organic compounds.*
- *UNE-EN 13999-3:2007+A1:2009. Adhesives. Short method for measuring the emission properties of low solvent or solvent-free adhesives after application. Part 3: Determination of volatile aldehydes.*
- *UNE-EN 13999-4:2007+A1:2009. Adhesives. Short method for measuring the emission properties of low solvent or solvent-free adhesives for application. Part 4: Determination of volatile diisocyanates*
- *UNE-EN 233:2000, section 5.7: Finished wallpapers*
- *UNE-EN 233:2000, section 5.7: Vinyl and plastic wall coverings*
- *UNE 57162/1M: 1997, Decorative coatings in rolls. Specification of decorative coatings for later decoration.*
- *UNE-EN 259-1:2002, section 4.5-4.7: High strength wall coatings.*
- *UNE-EN 12149:1998. Decorative coatings in rolls. Determination of migration of heavy metals and other extractable elements, vinyl chloride monomer content and formaldehyde release. Test A: Heavy metals; Test B: vinyl chloride monomer; Test C: Formaldehyde.*

CATEGORY
MATERIALS

MAT1 – Life Cycle Impacts
MAT8 – Low Environmental impact materials
(BREEAM ES NEW CONSTRUCTION 2015, BREEAM ES HOUSING 2011)

Purpose

Recognize and encourage the use of robust and appropriate tools for life cycle analysis and, consequently, the specification of building materials with low environmental impact (also in terms of incorporated carbon) throughout the entire life cycle of the building.

Compliance Data

Type I, II and III environmental labels:
GRAPHENSTONE has produced the EPD GRAPHENSTONE Ecosphere Premium. This EPD is also representative of the other products analyzed in this sheet: Biosphere Premium, AmbientPro+ Premium, FillerF10/F20 Premium. The results of the products are shown in Annex I: Stuki Premium, Kratzputz Premium and Füllmasse Premium.
These products may contribute with the EPD indicated above to the fulfilment of MAT 8 requirements (BREEAM ES Viviendas 2011). BREEAM ES New Construction 2015, on the other hand, does not include paints for compliance with the option of Environmental Labels Type I, II and III of the criteria.

Life Cycle Analysis:
The impacts evaluated in the EPD can be used to carry out the LCA and can thus contribute to compliance with the LCA calculation option, both in BREEAM ES New Construction and BREEAM ES Housing. The EPD data are verified with the ISO 15804 standard and have numerous available indicators of environmental impacts, waste generation, water consumption and energy consumption.

Evaluation procedure

Option 1, Environmental Labels Type I, II and III:
- BREEAM ES Housing: Specify products with Type I, II or III ecolabels.
- BREEAM ES New Construction: Specify products with Environmental Declarations of Products, EPDs (Type III Labels).

Option 2, Life Cycle Analysis (LCA):
The project uses a life cycle analysis (LCA) tool, according to BREEAM specifications, to measure the environmental impact of the life cycle of building elements.

Exemplary level (1 extra point):
- BREEAM ES Housing: As a result of the LCA, materials with less environmental impact have been chosen for at least 6 building elements.
- BREEAM ES New Construction: Rigorous LCAs have been carried out which include most of the building elements.

Example of analysis

NA

Supporting Documents

IEDISA Graphenstone Ecosphere Premium Environmental Product Declaration (EPD) "epd1050es_IEdiSA_Graphenstone Ecosphere Premium_2017".

Reference standard

- *UNE-EN 15804:2012. Sustainability in construction. Environmental product declarations. Basic product category rules for construction products.*
- *UNE-EN 15978:2012. Sustainability of construction. Evaluation of the environmental performance of buildings. Calculation methods.*

CATEGORY
MATERIALS

MAT3 – Responsible Procurement of Materials
MAT10 – Responsible Procurement of Materials – Finishing elements (BREEAM ES NEW CONSTRUCTION 2015, BREEAM ES HOUSING 2011)

Purpose	Recognize and promote the specification of materials for the main elements of the building whose procurement has been carried out responsibly.
Compliance Data	GRAPHENSTONE paints are manufactured by Industria Española para el Desarrollo e Investigación 2100, S.A. (IEDISA). They contribute to the fulfilment of the requirement through the IEDISA ISO 14001 certificate, which includes the production of water-based paints, considered by BREEAM to be a key process.
Evaluation procedure	The award of points is assigned for compliance with the requirements of responsible procurement by the different construction elements. To justify compliance, each product must be certified according to any of the responsible sourcing systems approved by BREEAM. Each of the applicable materials shall be assigned a level of responsible sourcing certification with its corresponding score. This level will depend on the system used for certification and the scope of certification. **Exemplary level BREEAM ES New Construction:** When the responsible sourcing requirements assessed by BREEAM are exceeded and 70 % of the available responsible sourcing points are reached.
Example of analysis	*NA*
Supporting Documents	***Graphenstone_ISO14001***
Reference standard	• *UNE-EN ISO 14006:2011. Environmental management systems. Guidelines for the incorporation of ecodesign.* • *ISO 14001*

CATEGORY
INNOVATION

INNOVATION / EXEMPLARY LEVEL
(BREEAM ES NEW CONSTRUCTION 2015, BREEAM ES HOUSING 2011)

Purpose

To encourage innovation within the construction sector through the recognition of improvements in the field of sustainability that are not rewarded through the Standard Requirements.

Compliance Data

GRAPHENSTONE can contribute to meeting the exemplary level of requirements:

- SyB2– SyB8, Indoor Air Quality.
- MAT1, Life Cycle Impacts.
- MAT3, Responsible Procurement of Materials
- MAT8, Low environmental impact materials

NOTE:

- See exemplary level criteria in the corresponding requirement.
- BREEAM ES New Construction recognizes exemplary level points in the Innovation category. BREEAM ES Housing recognizes exemplary level points as extraordinary points, but they are not included in an innovation category. However, they have been collected here for ease of readability.

Evaluation procedure

A maximum of 10 innovation points can be earned for a combination of the following options:

Exemplary level in existing Requirements
Some BREEAM credits provide the option of obtaining extra scores for demonstrating exemplary efficiency through the achievement of the exemplary level criteria defined in those credits.

Approved Innovations
An extraordinary score may be awarded for each BREEAM ES Approved Innovation Application provided that the criteria defined in an approved innovation application form are met.

Example of analysis

NA

Supporting Documents

See corresponding requirements

Reference standard

NA