

ROOF TPO MEMBRANE BMI

Waterproofing membrane based on
thermoplastic polyolefins (TPO)

EverGuard TPO membrane
EverGuard Extreme TPO membrane

MEMBRANE TPO

Waterproofing membrane based on thermoplastic polyolefins (TPO)



Description

TPO thermoplastic polyolefin membrane reinforced inside with a polyester mesh armor. It is used for waterproofing roofs with inclination up to 20° for mechanical fixing

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Summary table: Environmental Parameters, in which products have a specific contribution.

Contribution detailed in LEED and BREEAM sections.

Support Documentation

Certifications : EPD, CSR, REACH

Self-declare

Potential

	Support Documentation	Certifications : EPD, CSR, REACH	Self-declare	Potential
Site Mobility	Solar Reflectance Index SRI	Rainwater Management	Exterior Lighting.	...
Energy Atmosphere	Embodied Energy	Effect of greenhouse gases	Energy Demand Reduction	Equipment Efficiency
Materials	Accredited location	Pre-consumer recycled content	Post-consumer recycled content	Potential reuse
Water	Consumption < reference	Water management	...	Other Polluting gases
Indoor Environment	Low VOC emissions	Low formaldehyde emissions	Comfort control	Lighting comfort
Innovation	Innovation	Acoustic comfort
				Renewable energy
				Energy management
				...
				Certified wood
				Construction waste
				Chemical composition
				...

NOTES:

- The information included in this document shows product compliance with environmental certification (VERDE, LEED or BREEAM) criteria. The analysis is performed based on the information provided by manufacturer. To ensure the compliance of these credits, it will be necessary during the process of any of the certifications to verify the validity of the information and data provided by the company.
- This document does not constitute a product certification, nor does it guarantee compliance with local regulations.
- The conclusions of this study apply only to products included in this report, and are subject to the invariability of product technical conditions.
- The validity of this document is subject to supporting documents expiration date, regulations variation, and environmental certification systems updates.
- This document informs about products possible contribution to VERDE, LEED or BREEAM certifications. However, the final decision on whether or not a product meets certification requirements is exclusive to certification bodies: GBCI (Green Business Certification Inc.) for LEED certification and BREEAM ES for BREEAM certification.

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SUMMARY OF CREDITS

LEED v4



SUSTAINABLE SITES (SS)

- SS, Reduced heat island effect



MATERIALES Y RECURSOS (MR)

- MR, Reducing the impact of the life cycle of the building
- MR, Transparency and optimization of construction products - Environmental Product Declaration
- MR, Transparency and optimization of construction products - Sources of raw materials
- MR, Transparency and optimization of construction products - Sources of raw materials



INNOVATION (IN)

- IN, Innovation

Environmental LEED Categories



(LT)
Location & Transportation



(SS)
Sustainable Sites



(WE)
Water Efficiency



(EA)
Energy & Atmosphere



(MR)
Material & Resources



(IEQ) Indoor Environmental Quality



(ID)
Innovation



(RP)
Regional Priority

LEED Certification Standards (v4)

EB Existing Building
 NC New Construction
 CI Commercial Interiors
 CS Core & Shell
 SNC School New Construction
 SEB School Existing Building
 MRB Mid Rise Buildings

RNC Retail New Construction
 REB Retail Existing Building
 RCI Retail Commercial Interiors
 HC Healthcare
 HNC Hospitality-New Constr.
 HEB Hospitality-Existing Building
 HCI Hospitality-Commercial Int.

DCNC Data Center NC
 DCEB Data Center EB
 WNC Warehouse NC
 WEB Warehouse EB
 NDP Neighborhood Devel. Plan
 ND Neighborhood Develop.
 HO Homes

CREDIT SHEET

LEED v4



CATEGORY (SS) SUSTAINABLE SITES

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

Aim Minimize the effects on microclimates and habitats of human life by reducing heat islands.

Compliance data BMI's EverGuard TPO waterproofing membrane, with a white finish color reference "EverGuard TPO White", have an SRI solar reflectance index between 98.1 and 98.9, as stated in the SRI index test report, attached. This test has been carried out according to ASTM E 1980-11.

Assessment procedure Use roofing materials with an SRI that meets or exceeds the values in the table:

	Inclination	initial SRI	30 years SRI
Low slope roof	< 2:12	82	64
Very sloping roof	>2:12	39	32

Meet SRI values at three years. If no information is available after three years, use materials that meet the initial SRI value

Analysis example NA

Backup documents *01_1-Ensayo índice SRI-Láminas TPO BMI.pdf*

Reference standard *ASTM E 1980-11, "Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces"*
ASTM E 903-12, "Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres"
ASTM C 1371-15, "Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emitters"



CATEGORY (MR) Material & Resources

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

Aim	Encourage the reuse and use of materials with less environmental impacts.
Compliance data	BMI EverGuard TPO membrane have a Type III EPD verified by an independent third party. The impacts of the materials calculated in the corresponding EPD can be used to carry out the LCA of the target building. NOTE: The final result to determine the total points depends on the construction systems used for the structure and the building enclosures.
Assessment procedure	<p>Option 4: Building life cycle analysis (structure and enclosure)</p> <p>Carry out the LCA (Life Cycle Analysis) of the enclosure and the building structure that shows a reduction, with respect to a reference building, of at least 10% in a minimum of three of the six impacts listed below. One of the three must necessarily be the global warming potential (emission of greenhouse gas emission):</p> <ul style="list-style-type: none"> • Global warming potential (CO2 eq.) • Destruction of the stratospheric ozone layer (kg of 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) • Depletion of non-renewable energy sources (MJ) <p>No impact category evaluated within the LCA can increase more than 5% with respect to the reference building.</p> <p>EP * Option 4: Improve the required thresholds of the six impact measures. * EP- Exemplary performance: Exemplary performance (Bonus point).</p>
Analysis example	NA
Backup documents	<i>03_1-DAP-Láminas TPO BMI.pdf</i>
Reference standard	<i>ISO 14025-2006 / ISO 21930:2017 / ISO 14040-2006 / ISO 14044-2006 / DIN-EN 15804+A1 RCP, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report V1.7, IBU Part B: Requirements on the EPD for Plastic and Elastomer Roofing and Sealing Sheet Systems</i>



CATEGORY (MR) Material & Resources

MR, Transparency and optimization of construction products - Environmental Product Declaration (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

Aim	Encourage 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	<p>BMI EverGuard TPO membrane have a EPD verified by an independent third party, which can contribute to obtaining credit.</p> <p>Verified by a third party, by NSF Certification, LLC, according to ISO 14025 and UNE-EN 15804 + A1.</p> <p>RCP, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report V1.7, IBU. Part B: Requirements on the EPD for Plastic and Elastomer Roofing and Sealing Sheet Systems</p> <p>In order to contribute to the fulfillment of option 2, it will be necessary to compare the product with the industry average.</p>
Assessment procedure	<p>Option 1. Environmental Product Declaration (EPD) (1 point)</p> <p>Use a minimum of 20 products permanently installed in the building (from 5 different manufacturers) that meet one of the following criteria:</p> <ul style="list-style-type: none"> • LCA public and reviewed by an independent third party (these products compute 25%) • EPD (Environmental Product Declaration): <ul style="list-style-type: none"> ○ Generic industry WTP (computed at 50%) ○ Product-specific EPD (Type III) (computed at 100%) <p>EP * Option1: Install 40 products (from at least 5 manufacturers) that meet the requirements.</p> <p>Option 2. Feature optimization</p> <p>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:</p> <ul style="list-style-type: none"> • Global warming potential (CO2 eq.) • Destruction of the stratospheric ozone layer (kg of 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) • Depletion of non-renewable energy sources (MJ) <p>EP * Option2: Buy 75% of products that meet the requirements.</p> <p>* EP- Exemplary performance: Exemplary performance (Bonus point)</p>
Analysis example	NA
Backup documents	<i>03_1-DAP-Láminas TPO BMI.pdf</i>

**Reference
standard**

*ISO 14025-2006 / ISO 21930:2017 / ISO 14040-2006 / ISO 14044-2006 /
DIN-EN 15804+A1
RCP, Part A: Calculation Rules for the Life Cycle Assessment and
Requirements on the Project Report V1.7, IBU
Part B: Requirements on the EPD for Plastic and Elastomer Roofing and
Sealing Sheet Systems*





CATEGORY (MR) Material & Resources

MR, Transparency and optimization of construction products - Sources of raw materials (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

Aim	Encourage the use of products and materials for which there is information available on the life cycle and that have life cycle impacts, preferably environmental, economic and social. Ask project teams to select products from manufacturers who have verified that they have been extracted or collected from sources in a responsible way
Compliance data	According to the table on page 37 of the GAF guide, the content of pre-consumer recycled material in EverGuard TPO membrane is 1%, which is why they contribute to the fulfillment of this criterion..
Assessment procedure	<p>Option 2. Leadership Practices in Extraction (1 point)</p> <p>Use products that meet at least one of the responsible extraction criteria listed below for at least 25%, by cost, of the total value of construction products permanently installed in the building. The materials of the structure and the enclosure cannot constitute more than 30% of the value of the compliant products of the building:</p> <ul style="list-style-type: none"> • Responsibility extended to the producer. • Bio-based materials. • Wood products. • Reuse of materials. • Recycled content. • USGBC approved program. <p>For the purposes of the calculation for obtaining the credit, the products obtained (by extraction, manufacture or purchase) less than 160 km from the project site will be computed at 200% of the base cost (Location Valuation Factor MR).</p> <p>EP * Option 2: Use products that meet at least one of the cited responsible extraction criteria for at least 50%, by cost, of the total value of construction products permanently installed in the building</p>
Analysis example	NA
Backup documents	<i>03_2-Guía GAF-Láminas TPO BMI.pdf</i>
Reference standard	NA



CATEGORY (MR) Material & Resources

MR, Transparency and optimization of construction products - Sources of raw materials (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

Aim	Encourage the use of products and materials whose life cycle information is available and which have preferable life cycle impacts from an environmental, economic and social point of view. Reward project teams that select products whose chemical ingredients have been inventoried using an accepted methodology and products that are shown to minimize the use and generation of harmful substances. Reward raw material manufacturers who manufacture products that are shown to have improved life cycle impacts.
Assessment procedure	<p>Option 1. Transparency in the composition of the product Use a minimum of 20 products permanently installed in the building (from 5 different manufacturers) that indicate the composition of the product in one of the formats:</p> <ul style="list-style-type: none"> • List of components identified by name and CASRN (Chemical Abstract Service Registration Number) or GreenScreen score. • Safety data sheet (HPD) indicating dangerous products according to the open standard Health Product Declaration • C2C certified products (Cradle to Cradle) C2Cv2 basic level / C2Cv3 bronze level <p>Option 2. Improvement of material components Use a minimum of 25% of products permanently installed in the building (% according to cost) that demonstrate that they do not contain dangerous substances:</p> <ul style="list-style-type: none"> • GreenScreen v1.2: Products that do not contain ingredients classified as level 1. • C2C certified products with a level above C2C v2 Gold / C2Cv3 Silver. • Products that do not contain substances from the REACH Authorization list (Registration, Evaluation, Authorization and Restriction of Chemicals) or from the list of candidate substances to be included (Candidate list) <p>EP * Option 2: Purchase at least 50%, assessed by cost, of all permanently installed building products that meet the criteria of option 2.</p>
Analysis example	NA
Backup documents	<p><i>06_1-Ficha de seguridad-Láminas TPO BMI.pdf</i> <i>06_2-HPD TPO-Láminas TPO BMI.pdf</i> <i>06_3-HPD Extreme TPO-Láminas TPO BMI.pdf</i></p>
Reference standard	<i>Reglamento CE 1272/2008 (CLP)</i>



CATEGORY (ID) Innovation

◆ ID, Innovation (NC, CS, SNC, RNC, HCNC, HNC, DCNC, WNC)

Aim	Encourage projects to achieve exceptional or innovative performance.
Compliance data	<p>The EverGuard TPO waterproofing membrane from BMI, according to studies provided, can promote the durability of the building and therefore propose an innovation strategy consisting of reducing the impact on the building's life cycle.</p> <p>They can also help meet the exemplary credit performance requirements:</p> <ul style="list-style-type: none"> • SS - Heat Island • MR - Reduction of the impact of the building's life cycle. • MR - Transparency and optimization of construction products - Environmental product declaration. • MR - Transparency and optimization of construction products - Raw material sources • MR - Management of construction and demolition waste
Assessment procedure	<p>Option 1: Innovation</p> <p>Achieve relevant and measurable environmental efficiency using a strategy not covered by the LEED rating system.</p> <p>Identify the following:</p> <ul style="list-style-type: none"> • The objective of the proposed innovation credit; • the proposed requirements for compliance; • proposed submissions to demonstrate compliance; Y • the design approach or strategies used to meet the requirement. <p>Option 3: Exemplary Performance (EP)</p> <p>Achieve exemplary performance on an existing LEED v4 prerequisite or credit that enables exemplary performance as provided in the LEED Reference Guide, v4 edition. Points for exemplary performance are typically earned for doubling credit requirements or meeting the next incremental percentage threshold.</p>
Analysis example	NA
Backup documents	<p><i>05_1-Guía resistencia química-Láminas TPO BMI.pdf</i></p> <p><i>05_2-Análisis durabilidad-Láminas TPO BMI.pdf</i></p>
Reference standard	<p>ISO 175</p> <p>EN 12316-2 ; EN 12310-1 y 2</p>

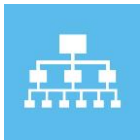
OTHER CONSIDERATIONS

Other considerations

Description	There is other evidence that does not fall within the LEED v4 reference categories, but that may be of use to the evaluating technician. These are:
Backup documents	<i>04_1-Código de conducta a proveedores-BMI.pdf</i> <i>07_1-Declaración proveedor palets-BMI.pdf</i> <i>07_2-Declaración proveedor palets-BMI.pdf</i>
Reference standard	NA

SUMMARY OF CREDITS

BREEAM



MANAGEMENT

◆ GST 03, Responsible Construction Practices



MATERIALS

◆ MAT 01, Life Cycle Impacts



WASTE

◆ RSD 01, Construction and Demolition Waste Management



INNOVATION

◆ INN 01, Innovation

BREEAM ES Environmental categories



Management



Health and Wellbeing



Energy



Transport



Water



Materials



Waste



Land use and ecology



Pollution



Innovation

BREEAM ES Certification Standards

URB BREEAM ES Urbanism

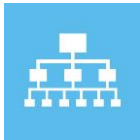
VIV BREEAM ES Housing

USO BREEAM ES in use

NC BREEAM ES New Construction

CREDIT SHEETS

BREEAM ES



CATEGORY MANAGEMENT

GST 03, Responsible Construction Practices. **(BREEAM ES NEW CONSTRUCTION 2015 - BREEAM ES HOUSING 2020)**

Aim	Recognize and promote work areas managed in a respectful, responsible and consistent way with the environment and society
Compliance data	The suppliers of wooden pallets for the packaging of BMI products, declare that the wood for the manufacture of their pallets has been legally obtained and marketed. They can therefore contribute to the achievement of this criterion.
Assessment procedure	Breem ES housing 2020. Prerequisite: All wood and wood derivatives used during the project construction process is "legally harvested and traded wood" (see relevant Definitions). Breem ES new build 2015: Point 8 of the GST3 criterion assesses the legal use of wood. To do this, it requests confirmation that all the wood used in the project is harvested and legally marketed wood.
Analysis example	NA
Backup documents	<i>07_1-Declaración proveedor palets-BMI.pdf</i> <i>07_2-Declaración proveedor palets-BMI.pdf</i>
Reference standard	NA



CATEGORY MATERIALS

🔍 **MAT 01, Life Cycle Impacts** **(BREEAM ES NEW CONSTRUCTION 2015 - BREEAM ES HOUSING 2020)**

Aim	Recognize and promote the use of robust and appropriate tools for life cycle analysis and, consequently, the specification of building materials with a low environmental impact (also in terms of embodied carbon) throughout the entire life cycle of the building.
Compliance data	<p>Option 1: Environmental Product Declaration (EPD) BMI EverGuard TPO MEMBRANE have an exclusive EPD and verified by an independent third party. NOTE: The final result to determine compliance with this option depends on the EPD of other construction products.</p> <p>Option 2: Life Cycle Analysis The impacts evaluated in the EPD can be used to carry out the LCA of the building, thus contributing to the fulfillment of option 2. The data of the EPDs are verified with the ISO 15804 standard and have numerous available indicators of environmental impacts, generation of waste, water consumption and energy consumption. NOTE: The final result to determine compliance with this option depends on the construction systems used for the building's structure and enclosures..</p>
Assessment procedure	<p>Option 1: Environmental Product Declaration (EPD) If at least 12 points are achieved following the method of calculation in the Methodology section, which evaluates the type and quantity of EPD available for certain construction products used in the building.</p> <p>Option 2: Life Cycle Analysis The project uses a life cycle analysis (LCA) tool to measure the environmental impact of the life cycle of building elements.</p> <p>Exemplary Level 85% of the points are obtained for both new construction and rehabilitation according to the BREEAM calculator.</p>
Analysis example	NA
Backup documents	<i>03_1-DAP-Láminas TPO BMI.pdf</i>
Reference standard	<i>ISO 14025-2006 / ISO 21930:2017 / ISO 14040-2006 / ISO 14044-2006 / DIN-EN 15804+A1 RCP, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report V1.7, IBU Part B: Requirements on the EPD for Plastic and Elastomer Roofing and Sealing Membrane Systems</i>



CATEGORY WASTE

➤ RSD 01, Construction and Demolition Waste Management (BREEAM ES NEW CONSTRUCTION 2015 - BREEAM ES HOUSING 2020)

Aim Encourage resource efficiency through effective and appropriate management of construction waste.

Compliance data BMI has performed a EPD on its EverGuard TPO MEMBRANE. The following are the kg of waste produced per 1m2 functional unit for an average EverGuard TPO membrane during the building construction process, according to the EPD calculation:

WASTE	WEIGHT PER m2 OF PRODUCT (1.94kg)
Product losses	10%; 0.194kg
Plastic waste	0.00454kg
Wood waste	0.0681kg
Cardboard waste	0,0327kg
Metal waste	0.000908kg

BMI EverGuard TPO MEMBRANE have the following percentage by weight of recyclable material at the end of their useful life according to EPD:

- Medium EverGuard TPO membrane: 100%

Assessment procedure

The client will ensure that a pre-execution audit will be carried out for all existing buildings, structures and hard surfaces (see NA02) to determine the feasibility of a possible rehabilitation or reuse, and if not, maximize the recovery of material from demolition for subsequent use, giving priority to those applications of higher quality or value. The requirements to carry out the audit are:

- The audit should be carried out in the Preliminary or equivalent phase, before the dismantling or demolition works in order to use the results to guide the design, consider what materials can be reused, and set management objectives and ensure that all contractors are involved in the process of maximizing reuse and recycling opportunities.

Analysis example

NA

Backup documents

03_1-DAP-Láminas TPO BMI.pdf

Reference standard

ISO 14025-2006 / ISO 21930:2017 / ISO 14040-2006 / ISO 14044-2006 /
DIN-EN 15804+A1
RCP, Part A: Calculation Rules for the Life Cycle Assessment and
Requirements on the Project Report V1.7, IBU
Part B: Requirements on the EPD for Plastic and Elastomer Roofing and
Sealing Membrane Systems



CATEGORY INNOVATION

INN 01, Innovation

(BREEAM ES NEW CONSTRUCTION 2015 - BREEAM ES HOUSING 2020)

Aim	Encourage innovation within the construction sector through the recognition of advantages in the area of sustainability that are not rewarded through the Standard Requirements.
Compliance data	<p>BMI EverGuard TPO waterproofing MEMBRANE can help meet exemplary performance in the requirement:</p> <ul style="list-style-type: none"> • MAT 01 - Life cycle impacts%
Assessment procedure	<p>They can be obtained by a combination of the following options:</p> <p>Exemplary level in existing Requirements Some BREEAM credits give the option of obtaining an extra score for demonstrating exemplary efficiency through the achievement of the exemplary level criteria defined in those credits.</p> <p>Approved innovations An extraordinary point may be obtained for each Innovation Request Approved by BREEAM ES provided that the criteria defined in an approved innovation request form are met..</p>
Analysis example	NA
Backup documents	<i>See corresponding requirements</i>
Reference standard	NA

OTHER CONSIDERATIONS

Other considerations

Description	There is other evidence that does not fall within the categories of the BREEAM ES reference, but that may be useful for the evaluating technician. These are:
Backup documents	<p><i>01_1-Ensayo índice SRI-Láminas TPO BMI.pdf</i></p> <p><i>03_2-Guía GAF-Láminas TPO BMI.pdf</i><i>04_1-Código de co</i> <i>proveedores-BMI.pdf</i></p> <p><i>05_1-Guía resistencia química-Láminas TPO BMI.pdf</i></p> <p><i>05_1-Análisis durabilidad-Láminas TPO BMI.pdf</i></p> <p><i>06_1-Ficha seguridad-Láminas TPO BMI.pdf</i></p> <p><i>06_2-HPD TPO-Láminas TPO BMI.pdf</i></p> <p><i>06_3-HPD Extreme TPO-Láminas TPO BMI.pdf</i></p>
Reference standard	<p>ISO 175</p> <p>EN 12316-2 ; EN 12310-1 y 2</p> <p>Reglamento CE 1907/2006 (REACH) y CE 1272/2008 (CLP)</p> <p>ASTM E 1980-11, ASTM E 903-12, ASTM C 1371-15</p>