



# PVC-P WATERPROOFING MEMBRANES RENOLIT Ibérica S.A.

Product family

RENOLIT ALKORPLAN A, RENOLIT  
ALKORPLAN L, RENOLIT ALKORPLAN F y  
RENOLIT ALKORPLAN F SMART

Thermoplastic PVC-P membrane

# RENOLIT Ibérica S.A

## PVC-P WATERPROOFING MEMBRANES.



### WATERPROOFING MEMBRANES

**Product family**  
RENOLIT ALKORPLAN

#### Description

RENOLIT ALKORPLAN is a thermoplastic membrane made of a PVC-P monomer base. RENOLIT ALKORPLAN membranes are primarily intended for flat roofs, but they are also used for vaulted or sloping roofs due to their aesthetic qualities. They can be installed on all types of appropriate constructions for new-build or refurbishment.

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**Issue date: October 2024**

**Summary table: Environmental parameters to which the material makes a specific contribution.**  
Detailed in the respective VERDE, LEED and BREEAM environmental certification sheets.

Supporting documentation		Certifications: EPD, CSR, REACH			Self-declarations			Potential	
Plot Mobility		Solar reflectance index SRI	Rainwater management	External lighting control	...				
Energy and atmosphere		Embedded energy	Greenhouse gases	Energy demand reduction	Equipment efficiency	Other polluting gases	Renewable energy	Energy management	...
Materials		Accredited location	Pre-consumption recycling	Post-consumption recycling	Reuse potential	Certified wood	Construction waste	Chemical composition	...
Water		Consumption < reference	Water management	...					
Indoor environment		Low VOC emissions	Low formaldehyde emissions	Comfort control	Visual comfort	Acoustic comfort	Air quality	...	
Innovation		Innovation Design	...						

**NOTES:**

- The information contained in this document of compliance with the respective credits of the selected environmental certification system (VERDE, LEED or BREEAM) is based on information provided by the company. To ensure compliance with these credits, it would be necessary to verify the validity of this information during any accreditation processes.
- This document does not constitute a product certification, nor is it a guarantee of compliance with current local regulations.
- The conclusions of this analysis apply only to the products mentioned in this report and are subject to the invariability of the technical conditions of the product.
- The validity of this document is subject to the expiry of supporting documentation or to changes in regulations and/or versions of each environmental certification.
- This document provides information about the potential contribution of the studied products to obtaining VERDE, LEED or BREEAM certifications. However, the final decision on whether a product meets the requirements for LEED certification is exclusive to GBCI (Green Business Certification Inc.).

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# CREDIT SUMMARY

## VERDE



### PLOT AND SITE (PS)

- ◆ PE 08, Heat island effect



### NATURAL RESOURCES (NR)

- ◆ NR 05, Use of recycled materials
- ◆ NR 06, Responsible choice of material
- ◆ NR 07, Use of local materials
- ◆ NR 08, The building as a materials bank
- ◆ NR 09, Construction waste management
- ◆ NR 11, Life cycle analysis of the building
- ◆ AA 09, Life cycle analysis
- ◆ RN 12, Product eco-labelling
- ◆ AA 08, Responsible choice of material

### VERDE environmental categories



Plot and site



Energy and atmosphere



Natural resources



Indoor environment quality



Quality of service



Social and economic aspects



Innovation

### VERDE certification standards

Buildings 2022

Building

DU P

Urban Development Industrial Parks

# CREDIT SHEET



# VERDE



## CATEGORY PLOT AND SITE

### PE 08, Heat island effect (VERDE Buildings 2022)

**Objective** To reduce the heat island effect in urban areas through the use of planted spaces, green roofs or facades and the installation of shading and solar protection elements on accumulative surfaces.

**Compliance information** If the waterproofing membranes are the outermost layer of the roof, this material can be considered for this credit using the solar reflectance index (SRI).

To comply, the SRI must be at least 39 when the roof slope is greater than 15% and at least 82 when the roof slope is less than 15%.

**RENOLIT** has the SRI tests according to ASTM E1980-11, for the following products according to their finish colour:

The manufacturer offers SRI tests according to ASTM E1980-11 for the following RENOLIT exterior paint products:

PRODUCT	SRI (%)
<b>RENOLIT</b> ALKORPLAN F Bright (White Bright)	115
<b>RENOLIT</b> ALKORPLAN F Classic Light Grey (Light Grey STD)	38,9
<b>RENOLIT</b> ALKORPLAN Smart Cool Ivory (Cool Ivory)	82.5
<b>RENOLIT</b> ALKORPLAN Smart Cool Grey (Cool Grey)	62.8

It can thus be seen that if the building in question has roofs with a slope of less than 15% this criterion could be met if they were finished in **RENOLIT** ALKORPLAN F Bright or **RENOLIT** ALKORPLAN F Smart Cool Ivory. For roofs with slopes greater than 15%, the above would comply, and in addition, **RENOLIT** ALKORPLAN F Smart Cool Grey and **RENOLIT** ALKORPLAN F Classic Light Grey do not meet the VERDE requirements.

RENOLIT ALKORPLAN A and L do not apply under this criterion, as they are not designed to be installed as the top layer of roofing systems.

In any case, it is a partial contribution to meeting the credit, as compliance is defined based on the totality of the material used in the project, not just the waterproof membranes.

### Assessment procedure

The building is assessed against this criterion by calculating the surface area of the plot, roof and E-S-O facades that have the following characteristics:

- Landscaped surfaces with a topsoil thickness of at least 5 cm.
- Surfaces with permeable paving. For permeable open-grid paving, at least 50% of its surface must be covered by soil.
- Shaded surfaces to avoid heat islands

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- Surfaces with a light-coloured finish.

For roofs, VERDE considers a minimum SRI value according to the following table:

SLOPE	SRI minimum limit (%)
≤15%	82
≥15%	39

For east, south, and west facades, a finishing material that guarantees an SRI above 40 should be considered, or facades should be covered by vegetation.

The percentage of these surfaces with respect to the total surface area of roofing and E-S-W facades should be between 40% and 70%.

**Example analysis**

N/A

**Supporting documentation**

- *SRI\_RENOLIT ALKORPLAN F BRIGHT WHITE*
- *SRI\_RENOLIT ALKORPLAN F SMART COOL GREY*
- *SRI\_RENOLIT ALKORPLAN F SMART COOL IVORY*
- *SRI\_RENOLIT ALKORPLAN F CLASSIC LIGHT GREY*

**Reference standard**

- *ASTM E1549-09*



## CATEGORY NATURAL RESOURCES

### NR 05, Use of recycled materials (VERDE Buildings 2022)

**Objective** Encourage the choice of producers with high levels of pre-consumer and post-consumer recycling in their products to reduce the depletion of raw materials and the environmental impact associated with their extraction.

**Compliance information** The **PVC-P waterproof membranes RENOLIT ALKORPLAN** have a percentage of pre-consumer and post-consumer recycled content, as shown below:

PRODUCT	Pre-consumer recycled material (%)	Post-consumer recycled material (%)
RENOLIT ALKORPLAN A – 1,5mm	37%	0%
RENOLIT ALKORPLAN L – 1,5mm	14%	0%
RENOLIT ALKORPLAN F – 1,5mm Bright o Cool	10-20%	0%
RENOLIT ALKORPLAN F – 1,2mm Classic Light Grey	20-60%	0%
RENOLIT ALKORPLAN F – 1,5mm Classic Light Grey	20-60%	0%
RENOLIT ALKORPLAN F Smart – 1,2 o 1,5mm (Cool Ivory)	10-15%	0%
RENOLIT ALKORPLAN F Smart – 1,2 o 1,5mm (Cool Grey)	10-15%	0%

RENOLIT provides self-declarations with the recycled content of these products in accordance with ISO 14021 standards. Through reprocessing and recycling of the material, the need for virgin materials is reduced, preventing the potential flow of waste and contributing to the fulfilment of this criterion. The products contain pre-consumer recycled content, but not post-consumer recycled content.

In any case, it is a partial contribution to meeting the credit, as compliance is defined based on the totality of material used in the project, not just the waterproof membranes.

### Assessment procedure

The building's evaluation through this criterion is established by calculating the percentage by mass of post-consumer recycled material plus 50% of pre-consumer recycled materials over the total materials used in the project or the building's renovation process.

The score is weighted by assigning 50% of the score (linear valuation) to the families of aggregate and stone materials, ranging from 40% to 100% of the total, and the remaining 50% (linear valuation) to the other materials, ranging from 10% to 30% of the total.

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*Mechanical, electrical, or plumbing components, etc., and special elements such as elevators or other equipment are not included. Only material that are permanently installed in the building or site will be considered.*

*The equivalent functional unit (EFU) is considered the mass of the material in kg. Under justified circumstances, the cost of the materials can be used as the EFU.*

**Example analysis** N/A

**Supporting documentation** - **Responsible Recycling Declaration**

**Reference standard** - ISO 14021  
- SCS Recycled Content Standard V7-0





## CATEGORY NATURAL RESOURCES

- **NR 06, Responsible choice of materials**  
(VERDE Buildings 2022)
- **AA 08, Responsible choice of materials**  
(VERDE DU Polígonos Version 1.a β)

**Objective** Encourage the use of materials which meet recognised social and environmental standards in their origin and production. The objective is to protect forests, prevent child exploitation and maintain environmentally respectful standards in the extraction of natural stone.

**Compliance information** **RENOLIT** membranes are delivered on wooden pallets and packaging from Embalajes del Vallés S.L. which holds ISO 9001:2015 and PEFC certification, specifying the provision of a control system for the chain of custody of forest products.

In addition, **RENOLIT** requires that all its raw material suppliers comply with basic workers' rights, including child labour and environmental respect for protected areas of high ecological value. **RENOLIT** also presents the most recent sustainability report, approved by senior management, which describes, among other things, compliance with requirements of this criterion.

In any case, this represents a partial contribution to meeting the credit, as compliance is defined based on the totality of material used in the project, not just the waterproof membranes.

**Assessment procedure** Up to 70% of the criterion score (linear valuation) is based on the mass percentage of wood-based materials that have chain of custody certificate, including material used during construction such as pallets and formwork. It is assessed that this percentage ranges between 20% and 50% of the materials used. It is also assessed that this percentage ranges between 5% and 15% of the material used.

Up to 30% of the criterion score (linear valuation) is based on the mass percentage of non-wood-based materials that are supported by documentation demonstrating that the origin of the raw materials meets basic sustainability requirements.

The following documents are accepted to their justification::

- Global Reporting Initiative (GRI) Sustainable Report. If two different materials with this type of certificate are provided, innovation credits may be applied for.
- Manufacturer's self-declaration including place of extraction of raw materials used in their product and responsible environmental procedures during extraction and processing.
- Company policy document approved by senior management, which includes the requirement to be met by raw material suppliers regarding basic workers' rights, including child labour and environmental respect for protected areas or areas of high ecological value.

In the case of the VERDE DU Polígonos scheme, the building evaluation through this measure is established based on the following action, which contributes 15% to the criterion score (linear valuation):

- Use of locally sourced wood from sustainable resources for at least 50% or more of the total cost.

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**Example analysis** N/A

**Supporting documentation** - *AEN-PEFC-COC-0069\_ES*  
- *RENOLIT\_Sustainability\_Report\_2022*

**Reference standard** N/A





## CATEGORY NATURAL RESOURCES

◆ **NR 07, Use of locally produced materials**  
(VERDE Buildings 2022)

◆ **AA 08, Responsible choice of materials**  
(VERDE DU Polígons Version 1.a β)

**Objective** Encourage the use of locally produced materials, thereby boosting the local economy and reducing transport impacts.

**Compliance information** The production plant for all **RENOLIT** ALKORPLAN products is located at Carretera de Montnegre, s/n - 08470 Sant Celoni – Spain. Compliance with the criteria will depend on the location of the project.

In any case, this represents a partial contribution to meeting the credit. As compliance is defined based on the totality of materials used in the project, not just the waterproof membranes.

**Assessment procedure** The building's evaluation under this criterion is based on calculating the mass percentage of locally produced materials used, relative to the total materials employed in the project. Materials are considered locally produced if their manufacturing plant is located within a radius of 200 to 400 km from the project site

"Materials located within 0 to 200 km from the centre of the site are counted at 100%.

Materials located between 200 and 400 km from the centre of the site are counted according to a linear scale, where materials 200 km away are counted at 100%, and those 400 km away are counted at 0%. For example, a material located 300 km from the site will be counted at 50%

"For compliance with this criterion, a distinction is made between materials of stone origin and the rest of the materials. The former will contribute 40% to the criterion score (linear valuation) when the mass percentage that meets the requirements is between 40% and 80% of the total. In the second case, the materials will contribute 60% to the criterion score (linear valuation) when the mass percentage that meets the requirements is between 40% and 80% of the total.

The equivalent functional unit (EFU) is considered the mass of the material in kg. Under justified circumstances, the cost of the materials can be used as the EFU.

In the case of a renovation, the existing materials that are retained after the renovation are not considered.

In the case of the VERDE DU Polígonos scheme, the building's evaluation through this measure is established based on the following action, which contributes 25% to the criterion score (linear valuation):

- Use of local products (less than 200 km away, and with raw materials extracted within a maximum radius of 100 km) for at least 50% or more of the total cost

**Example analysis** N/A

# FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

## **Supporting documentation**

- *Responsible Declaration of Distance*

## **Reference standard**

- *ISO 14025 y EN UNE 15804 + A1*
- *RCP100 – Productos de construcción en general – V.2 (2016)*





## CATEGORY NATURAL RESOURCES

### ◆ NR 08, The building as a bank of materials (VERDE Buildings 2022)

**Objective** Encourage those designs and strategies implemented in the building project which consider and favour the recovery of materials at the end of the building's life cycle, and which allow for the reuse of as many materials as possible, as well as facilitating the recycling of the rest.

**Compliance information** Due to their fixing systems, the products **RENOLIT** ALKORPLAN are not easy to remove, so recycling them is very difficult. It is estimated that 10% of the material will be recycled, 45% incinerated and 45% transported to landfill.

At the end of the product's useful life, the flexible membranes undergo various end-of-life treatments. The % destined for recycling is:

PRODUCT	Reusable material (%)	Recyclable material (%)
RENOLIT ALKORPLAN A – 1,5mm	0%	10%
RENOLIT ALKORPLAN L – 1,5mm	0%	10%
RENOLIT ALKORPLAN F – 1,5mm Bright o Cool	0%	10%
RENOLIT ALKORPLAN F – 1,2mm Classic Light Grey	0%	10%
RENOLIT ALKORPLAN F – 1,5mm Classic Light Grey	0%	10%
RENOLIT ALKORPLAN F Smart – 1,2mm (Cool Ivory o Cool Grey)	0%	10%
RENOLIT ALKORPLAN F Smart – 1,5mm (Cool Ivory o Cool Grey)	0%	10%

In any case, this represents a partial contribution to meeting the credit, as compliance is defined based on the totality of materials used in the project, not just the waterproof membranes

**Assessment procedure** The building's evaluation under this indicator is based on calculating the mass percentage of elements that promote recycling, reuse, and recovery at the end of the life cycle, ranging between 40% and 60% of the total. This indicator contributes up to 80% (linear valuation) of the total criterion score.

The second indicator to be evaluated, accounting for the remaining 20%, is based on the assessment of the potential use of materials after disassembly at the end of the building's life cycle.

**Example analysis** N/A

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### **Supporting documentation**

- *Selective demolition plan*
- *EPD S-P 10294 Alkorplan F Smart\_rev01*
- *EPD S-P-11244 Alkorplan F Smart – 1.2mm (1,6m)*
- *EPD S-P-11240 Alkotplan F – 1,2mm (1,6m)*
- *EPD S-P 10290 Alkorplan F – 1,5mm (1,6m)\_rev01*
- *EPD S-P 10293 Alkorplan F Bright\_rev001*
- *EPD SP 10291\_Alkorplan L – 1,5mm\_rev0*
- *EPD SP 10289 Alkorplan A – 1,5mm\_rev\_01*

### **Reference standard**

- *EN 15978*
- *ISO 15868-8*
- *EN 15459*





## CATEGORY NATURAL RESOURCES

### ➤ NR 09, Construction waste management (VERDE Buildings 2022)

**Objective** Reduce construction waste sent to landfill, either using construction systems such as prefabrication or through controlled site processes that facilitate the separation and sorting of waste for subsequent reuse or recycling. Only waste produced during the construction or refurbishment phase is considered.

**Compliance information** All material waste generated during installation and all packaging waste can be collected for recycling, reuse or energy recovery. The waste generated by each product (in kg/m<sup>2</sup>) is specified in the table below.

PRODUCT	Destination	Weight
<b>RENOLIT ALKORPLAN A – 1.5 mm</b>	To be incinerated (without energy recovery)	0,081 kg
	To be incinerated (with energy recovery)	0,645 kg
	To be recycled	0,161 kg
	To landfill	0,726 kg
<b>RENOLIT ALKORPLAN L – 1.5 mm</b>	To be incinerated (without energy recovery)	0,068 kg
	To be incinerated (with energy recovery)	0,540 kg
	To be recycled	0,135 kg
	To landfill	0,608 kg
<b>RENOLIT ALKORPLAN F – 1,2mm (Classic Light Grey)</b>	To be incinerated (without energy recovery)	0,075 kg
	To be incinerated (with energy recovery)	0,600 kg
	To be recycled	0,150 kg
	To landfill	0,675 kg
<b>RENOLIT ALKORPLAN F – 1,5mm (Classic Light Grey)</b>	To be incinerated (without energy recovery)	0,069 kg
	To be incinerated (with energy recovery)	0,555 kg
	To be recycled	0,139 kg
	To landfill	0,624
<b>RENOLIT ALKORPLAN F – 1.5 mm (Bright o Cool)</b>	To be incinerated (without energy recovery)	0,069 kg

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

	To be incinerated (with energy recovery)	0,555
	To be recycled	0,139
	To landfill	0,624
<b>RENOLIT ALKORPLAN F</b> Smart – 1.2 mm (Cool Ivory o Cool Grey)	To be incinerated (without energy recovery)	0,075 kg
	To be incinerated (with energy recovery)	0,600 kg
	To be recycled	0,150 kg
	To landfill	0,675 kg
<b>RENOLIT ALKORPLAN F</b> Smart – 1.5 mm (Cool Ivory o Cool Grey)	To be incinerated (without energy recovery)	0,069 kg
	To be incinerated (with energy recovery)	0,555 kg
	To be recycled	0,139 kg
	To landfill	0,624 kg

The packaging applies in the same way to all product ranges. Pallets can be returned to the factory for reuse. Other packaging waste can be managed externally for recycling and/or recovery.

PRODUCT	Material	Packaging waste (kg)
<b>RENOLIT ALKORPLAN A –</b> 1.5 mm	Cardboard tubes	0,004
	PE sheet	0,002
	Pallet 224x119	0,148
	PE strips	0,001
	Recycled felt blanket	0,010
<b>RENOLIT ALKORPLAN L –</b> 1.5 mm	Cardboard tubes	0,002
	PE sheet	0,002
	Cardboard strips	0,001
	Pallet 120x210	0,060
	PE strips	0,0005
	Cardboard pieces	0,0003
	Recycled felt blanket	0,007
<b>RENOLIT ALKORPLAN F –</b> 1,2mm (Classic Light Grey)	Cardboard tubes	0,006
	PE sheet	0,004
	Cardboard wheels	0,003
	Pallet 116x160	0,006
	PE strips	0,131

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	Cardboard pieces	0,0006
	Felt blanket (PVC and geotextile)	0,013
<b>RENOLIT ALKORPLAN F – 1,5mm (Classic Light Grey)</b>	Cardboard tubes	0,005
	PE sheet	0,003
	Cardboard wheels	0,002
	Pallet 116x160	0,096
	PE strips	0,001
	Cardboard pieces	0,0004
	Felt blanket (PVC and geotextile)	0,009
<b>RENOLIT ALKORPLAN F – 1.5 mm (Bright o Cool)</b>	Cardboard tubes	0,006
	PE sheet	0,003
	Cardboard strips	0,002
	Pallet 115x160	0,118
	PE strips	0,001
	Cardboard pieces	0,001
	Felt blanket (PVC and geotextile)	0,011
<b>RENOLIT ALKORPLAN F Smart – 1.2 mm (Cool Ivory o Cool Grey)</b>	Cardboard tubes	0,009
	Cardboard strips	0,002
	Cardboard pieces	0,0006
	PE sheet	0,003
	Pallet 108x111	0,129
	Flexible PVC	0,0006
	PE strips	0,001
	Felt blanket (PVC and geotextile)	0,012
<b>RENOLIT ALKORPLAN F Smart – 1.5 mm (Cool Ivory o Cool Grey)</b>	Cardboard tubes	0,008
	PE papers	0,001
	Pallet 108x111	0,057
	PE strips	0,002
	Felt blanket (PVC and geotextile)	0,022

The waste has the potential to be recycled depending on the type of waste generated, the recycling treatment considered in the Waste Management Plan, and the certified management capacity of the Waste Manager designated for the project.

To comply with the credit, the project must include a general Waste Management Plan, also incorporating the waste generated by the waterproofing membranes.

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

<b>Assessment procedure</b>	<p>The assessment of this criterion is determined by the existence, in the planning phase, of a Construction Waste Management Study that complies with applicable regulation. Before beginning the intervention phase, a Construction Waste Management Plan must be drawn up, in accordance with the study previously carried out.</p> <p>The Construction Waste Management Study will be drafted with the objective of ensuring the reuse or recycling of between 50% and <math>\geq 75\%</math> (by weight) of the waste generated. This objective must be guaranteed both in the Waste Management Plan and during the actual execution of the works, with documentation provided to verify that this recovery has been carried out.</p> <p>The Study must be carried out by a qualified professional with proven knowledge and experience in construction materials, construction systems, demolition techniques, and waste treatment and processing, as well as in the local market for material reuse and recycling.</p> <p><i>The separation and classification of waste must be carried out on-site, except in cases where a space limitation can be demonstrated that makes such separation unfeasible.</i></p> <p><i>This criterion does not apply to existing buildings.</i></p>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	<ul style="list-style-type: none"><li>- <b>Responsible Waste Declaration</b></li><li>- <b>EPD S-P 10294 Alkorplan F Smart_rev01</b></li><li>- <b>EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)</b></li><li>- <b>EPD S-P 11240 Alkorplan F – 1,2mm (1,6m)</b></li><li>- <b>EPD S-P 10290 Alkorplan F – 1,5mm (1,6m)_rev01</b></li><li>- <b>EPD S-P 10293 Alkorplan F Bright_rev01</b></li><li>- <b>EPD SP 10291 Alkorplan L – 1,5mm_rev0</b></li><li>- <b>EPD SP 10289 Alkorplan A – 1,5mm_rev01</b></li></ul>
<b>Reference standard</b>	N/A



## CATEGORY NATURAL RESOURCES

- ◆ **NR 11, Building life cycle assessment**  
(VERDE Buildings 2022)
- ◆ **AA 09, Life Cycle Analysis**  
(VERDE DU Poligons Version 1.a β)

**Objective** Reduce the impacts associated with construction materials by selecting those with low life cycle impact, as well as through the use of reused or recycled materials.

**Compliance information**

RENOLIT has developed EPDs for each product.

Below are some of the impacts from stages A1–A3 associated with 1 m<sup>2</sup> of surface area of these products, which may be used for the building's LCA calculation.

In any case, this represents only a partial contribution, as the result will depend on all the materials that must be included in the building's LCA.

Cradle to Gate Impact	Abiotic Resource Depletion – Elements	Abiotic Resource Depletion – Fossil Fuels	Soil and Water Acidification Potential	Ozone Depletion Potential	Global Warming Potential	Eutrophication Potential	Photochemical Ozone Formation Potential
Material (A1-A3)	kg of SB eq.	MJ calorific value	kg of SO <sub>2</sub> eq.	kg of CFC <sub>11</sub> eq.	kg of CO <sub>2</sub> eq.	kg of PO <sub>4</sub> eq.	kg of ethane
RENOLIT Alkorplan A – 1,5 mm	3,45E-06	8,30E+01	6,29E-03	6,71E-11	3,19E+00	1,23E-05	9,52E-03
RENOLIT Alkorplan L – 1,5 mm	3,67E-06	5,94E+01	4,89E-03	4,80E-11	2,28E+00	5,83E-06	7,34E-03
RENOLIT Alkorplan F – 1,5 mm Bright o Cool	4,24E-06	8,31E+01	7,78E-03	7,87E-11	3,22E+00	1,26E-05	1,03E-02
RENOLIT Alkorplan F – 1,2 mm (Classic Light Grey)	2,59E-06	6,41E+01	4,39E-03	3,63E-11	2,57E+00	7,00E-06	6,88E-03
RENOLIT Alkorplan F – 1,5 mm (Classic Light Grey)	3,41E-06	6,99E+01	5,79E-03	5,26E-11	2,68E+00	8,26E-06	8,38E-03

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

<b>RENOLIT</b> Alkorplan F Smart – 1,2mm (Cool Ivory o Cool Grey)	3,96E-06	1,07E+02	9,01E-03	2,15E-11	4,42E+00	1,79E-05	1,19E-02
<b>RENOLIT</b> Alkorplan F Smart – 1,5mm (Cool Ivory o Cool Grey)	4,41E-06	8,48E+01	7,21E-03	8,41E-11	3,33+00	1,39E-05	1,02E-02

### Assessment procedure

The evaluation of the building according to this criterion is carried out by comparing the impacts associated with the construction materials against an established reference.

The scope of this criterion is limited to the materials used in the building envelope and interior partitions, considering the following construction elements: roof, façade, horizontal and vertical interior partitions, floor slabs in contact with the ground, party walls, and basement walls.

At a minimum, the impacts related to the embodied energy of materials and the CO<sub>2</sub> emissions generated must be considered, covering at least the extraction and production phase of materials and the construction process.

Additional value is given if the impacts of these same indicators are assessed across all life cycle stages of the building (according to EN 15978), or if the reduction of their impacts in the product stage compared to the reference building ranges between 5% and 15%.

Extra points can be awarded if the reduction percentage of an indicator other than non-renewable primary energy or CO<sub>2</sub> emissions of materials in the product stage, compared to the reference building, ranges between 5% and 15%.

*Due to the impossibility of defining a valid reference structure for all possible buildings, it has been decided not to include this element in the calculation of the criterion. However, if the definition of a reference structure is justified for a specific case, it may be included in the evaluation.*

### Example analysis

N/A

### Supporting documentation

- EPD S-P 10294 Alkorplan F Smart\_rev01
- EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)
- EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)
- EPD S-P 10290 Alkorplan F – 1,5mm (1,6)\_rev01
- EPD S-P 10293 Alkorplan F Bright\_rev01
- EPD SP 10291\_Alkorplan L – 1,5mm\_rev0
- EPD SP 10289 Alkorplan A – 1,5mm\_rev01

### Reference standard

- **UNE-EN 15804:2012 +A1:2014** – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
- **UNE-EN 15978:2012** – Sustainability of construction works – Assessment of environmental performance of buildings – Calculation methods.

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

- **UNE-EN ISO 14040:2006** – *Environmental management – Life cycle assessment – Principles and framework.*
- **UNE-EN ISO 14044:2006** – *Environmental management – Life cycle assessment – Requirements and guidelines.*





## CATEGORY NATURAL RESOURCES

- ◆ **NR 12, Product ecolabelling**  
(VERDE Buildings 2022)
- ◆ **AA 08, Responsible choice of materials**  
(VERDE DU Polígonos Version 1.a β)

<b>Objective</b>	Encourage the use of products with Type I or Type III ecolabels.
<b>Compliance information</b>	<p><b>RENOLIT</b> provides an Environmental Product Declaration (EPD) for each product, as shown in the previous section RN11.</p> <p>These are Type III eco-labels for the 'other materials' category, meaning non-ceramic, non-aggregate, non-stone, and non-concrete materials.</p> <p>In any case, this represents a partial contribution to credit compliance, as full compliance is defined based on all materials used in the project, not just the waterproofing membranes.</p>
<b>Assessment procedure</b>	<p><b>NR 12. Product ecolabelling</b></p> <p>The evaluation of the building using this indicator is based on calculating the number of materials that have a Type I and/or Type III eco-label. For Type I labels, these materials must represent between 10% and 20% of the total mass of materials used in the project. For Type III labels, they must represent between 70% and 100% of the total mass of ceramic, aggregate, stone, and concrete materials, and between 20% and 40% of the total mass of all other materials, in order to achieve the minimum and maximum score for this criterion, respectively. The score is distributed linearly, with 80% attributed to the contribution of EPDs and the remaining 20% to the inclusion of corresponding Type I eco-labels.</p> <p>Materials that provide a Type III eco-label must be found at a minimum, in the following categories: structural elements, insulation, and finishes.</p> <p>Additional points may be awarded (without exceeding 100%) if at least 50% of the EPDs include a life cycle assessment (LCA) covering all life cycle stages, or if they consider the indicators specified in the UNE-EN 15804 standard.</p> <p>In the case of a renovation, existing materials that are retained after the intervention are not considered.</p> <p><b>AA 08. Responsible choice of materials</b></p> <p>In the case of the VERDE DU Polígonos scheme, the evaluation of the building under this measure is based on the contribution of at least three Type I eco-labels from different material groups, or the Environmental Product Declaration (Type III eco-label) of at least one product.</p>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	<ul style="list-style-type: none"> <li>- <i>EPD S-P 10294 Alkorplan F Smart_rev01</i></li> <li>- <i>EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)</i></li> <li>- <i>EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)</i></li> <li>- <i>EPD S-P 10290 Alkorplan F – 1,5mm (1,6)_rev01</i></li> <li>- <i>EPD S-P 10293 Alkorplan F Bright_rev01</i></li> <li>- <i>EPD SP 10291_Alkorplan L – 1,5mm_rev0</i></li> </ul>

- *EPD SP 10289 Alkorplan A – 1,5mm\_rev01*

**Reference  
standard**

*N/A*



# CREDIT SUMMARY

## LEED v4



### SUSTAINABLE SITES (SS)

- ◆ SSc2, Site development – protect or restore habitat
- ◆ SSc3, Open space
- ◆ SSc4, Rainwater management
- ◆ SSc5, Heat Island reduction



### MATERIALS AND RESOURCES (MR)

- ◆ MRp2 and MRc5, Construction and demolition waste management planning
- ◆ MRc1, Building life-cycle impact reduction
- ◆ MRc2, Building product disclosure and optimisation – Environmental Product Declarations (EPD)
- ◆ MRc3, Building product disclosure and optimisation – Sourcing of raw materials



### Innovation (ID)

- ◆ Innovation

### LEED environmental categories



(LT)  
Location and transport



(SS)  
Sustainable sites



(WE)  
Water efficiency



(EA)  
Energy and atmosphere



(MR)  
Materials and resources



(IEQ) Indoor environment quality



(ID)  
Innovation in design



(RP)  
Regional priority

### LEED (v4) certification standards

**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 Centre NC  
**DCEB** Data Centre EB  
**WNC** Warehouse NC  
**WEB** Warehouse EB  
**NDP** Neighbourhood Devel. Plan  
**ND** Neighbourhood Develop.  
**HO** Homes

# CREDIT SHEET

## LEED v4



### CATEGORY

## SUSTAINABLE SITES (SS)

#### SSc2, Site development – protect or restore habitat (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, EB, SEB, REB, HEB, DCEB, WEB)

<b>Objective</b>	To conserve existing natural areas and restore damaged areas to promote biodiversity, keeping 40% of the site unaffected.
<b>Compliance information</b>	<p>The waterproofing membrane, if part of a green roof system, can contribute to the re-naturalisation of the site. However, it would only be considered to make a partial contribution.</p> <p>The <b>RENOLIT ALKORPLAN Green</b> system includes most of the components necessary to build a green roof.</p>
<b>Assessment procedure</b>	<p>Restore 30% of the altered site with native or adapted plants. Restoration strategies include green roofs.</p> <p>Justify the soil composition:</p> <ul style="list-style-type: none"> <li>• Soils (imported or in situ) must be reused for functions comparable to their original function.</li> <li>• Restored soils must meet soil criteria in terms of:             <ul style="list-style-type: none"> <li>○ Organic content.</li> <li>○ Compaction.</li> <li>○ Infiltration rate.</li> <li>○ They must also comply with one of the following two categories:                 <ul style="list-style-type: none"> <li>▪ Biological function of the soil.</li> <li>▪ Chemical characteristics of the soil.</li> </ul> </li> </ul> </li> </ul>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	- <b>ES-TF-ALKORPLAN-L-Classic-35177-230302</b>
<b>Reference standard</b>	<ul style="list-style-type: none"> <li>• U.S. EPA ecoregions: <a href="http://epa.gov">epa.gov</a></li> <li>• Land Trust Alliance accreditation: <a href="http://landtrustalliance.org">landtrustalliance.org</a></li> <li>• Natural Resources Conservation Service, web soil survey: <a href="http://websoilsurvey.nrcs.usda.gov">websoilsurvey.nrcs.usda.gov</a></li> <li>• Sustainable Sites Initiative (SITES™): <a href="http://sustainablesites.org">sustainablesites.org</a></li> </ul>



## CATEGORY SUSTAINABLE SITES (SS)

### ◆ SSc3, Open space (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, EB, SEB, REB, HEB, DCEB, WEB)

<b>Objective</b>	Preserve natural areas and restore affected areas with the goal of promoting biodiversity, keeping 40% of the site free from impact.
<b>Compliance information</b>	<p>The waterproofing membrane, if part of a green roof system, can contribute to the re-naturalisation of the site. However, it would only be considered to make a partial contribution.</p> <p>The <b>RENOLIT ALKORPLAN Green</b> system includes most of the components necessary to build a green roof.</p>
<b>Assessment procedure</b>	<p>Outdoor space must make up at least 30% of the total site area (discounting energy production installations and systems). A minimum of 25% of the open space must be planted (ground or roof) or have an overhead planted canopy.</p> <p>The outdoor space must be physically accessible and fall into one or more of the following categories:</p> <ul style="list-style-type: none"> <li>• a pedestrian area containing elements that accommodate social activities</li> <li>• a recreation area that encourages physical activity</li> <li>• a garden with a diversity of vegetation and species, dedicated to the community and/or food production</li> </ul> <p>For projects with a density greater than 1.5 (FAR - floor area ratio), green roofs can make up a maximum of 25% of the total outdoor space.</p>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	- <b>ES-TF-ALKORPLAN-L-Classic-35177-230302</b>
<b>Reference standard</b>	N/A



## CATEGORY SUSTAINABLE SITES (SS)

### ◆ SSc4, Rainwater management (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, EB, SEB, REB, HEB, DCEB, WEB)

<b>Objective</b>	To reduce water runoff by avoiding impervious surfaces, increasing the infiltration of rainwater, and controlling its pollution.
<b>Compliance information</b>	<p>The waterproofing membrane, if part of a green roof system, can contribute to rainwater management through two complementary strategies:</p> <ul style="list-style-type: none"> <li>a) Rainwater collection by rainwater tank on roof or annex</li> <li>b) As part of the re-naturalisation system on a green roof</li> </ul> <p>However, it would only be considered to make a partial contribution. The <b>RENOLIT ALKORPLAN Green</b> system includes most of the components necessary to build a green roof.</p>
<b>Assessment procedure</b>	<p>Implement a rainwater control system to prevent sudden runoff. Including a rainwater tank if necessary.</p> <p><u>Option 1. Percentage of precipitation events.</u>                  Path 3. "Zero lot line" projects (occupying &gt; 90% of the site)                  The post-development runoff should not exceed 85% of the usual runoff from the site.</p>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	- <b>ES-TF-ALKORPLAN-L-Classic-35177-230302</b>
<b>Reference standard</b>	<i>U.S. EPA Technical Guidance on Implementing the Rainwater Runoff Requirements.</i>



## CATEGORY SUSTAINABLE SITES (SS)

### SSc5, Heat Island reduction (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, EB, SEB, REB, HEB, DCEB, WEB)

**Objective** To minimise effects on microclimates and human and wildlife habitats by reducing heat islands.

**Compliance information** If the waterproof membranes are the topmost surface layer of the roof, this material may be considered for this criterion using the Solar Reflectance Index (SRI).

To comply, the SRI must be equal to or greater than 39 for roofs with a slope greater than 2:12, and equal to or greater than 82 for roofs with a slope less than 2:12.

**RENOLIT** has IRS test reports according to the ASTM E1549-09 standard for the following products, based on their finish colour.

PRODUCT	SRI (%)
RENOLIT ALKORPLAN F Bright (White Bright)	115
RENOLIT ALKORPLAN F Classic Light Grey (Light Grey STD)	38,9
RENOLIT ALKORPLAN Smart Cool Ivory (Cool Ivory)	82,5
RENOLIT ALKORPLAN Smart Cool Grey (Cool Grey)	62,8

In this way, it is evident that if the building in question had roofs with slopes less than 2:12, it could comply with the criterion using **RENOLIT ALKORPLAN Bright** and **Smart Cool Ivory** products. For roofs with slopes greater than 2:12, the former would comply, and in addition, **RENOLIT ALKORPLAN Smart Cool Grey** and **RENOLIT ALKORPLAN Classic Light Grey** do not meet the LEED requirements.

The **RENOLIT ALKORPLAN A** and **L** membranes do not apply to this criterion as they are not designed to be installed as the top surface layer of the roofs.

In any case, this represents a partial contribution to credit compliance, as compliance is defined based on all materials used in the project, not just the waterproof membranes.

*\*The LEED reference guide proposes the methodology of ASTM E903 E892 standard. The manufacturer provides them according to ASTM 1980-11. According to accredited laboratories (CRRCLabel and EELab), the difference never exceeds 1.5%. The most restrictive value is taken.*

### Assessment procedure

Option 1. Non-roof and roof (BDC, IDC)  
Option 3. Non-roof and roof (EB)

$$\frac{\text{Area of Nonroof Measures}}{0.5} + \frac{\text{Area of High-Reflectance Roof}}{0.75} + \frac{\text{Area of Vegetated Roof}}{0.75} \geq \frac{\text{Total Site Paving Area}}{\text{Total Roof Area}}$$

# FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

## Non-roof

- Use materials with a solar reflectance index (SRI) of at least 28 (for 3-year-old materials), or an initial SRI of 33 (for new materials).
- Provide shade with trees, energy generation systems.
- Use an open-grid pavement system (at least 50% unbound).

## Roof

- Use roofing materials that have an SRI of at least 39 (initial) and 32 (after three years) for a sloping roof, and 82 (initial) and 64 (after three years) for a flat roof, for 75% of the roof.
- Green (planted) roof
- Or a combination of both
- Roof installations and skylights are excluded from the calculation.

Minimum Solar Reflectance Index values according to slope			
Low-slope roof	≤ 2:12	82	61
Steep-slope roof	≥ 2:12	39	32

## Option 2.

Place a minimum of 75% of parking spaces under cover (1) roofs with SRI higher than 39, (2) green (planted) roofs, (3) energy generation elements.

### Example analysis

N/A

### Supporting documentation

- SRI\_RENOLIT ALKORPLAN F BRIGHT WHITE
- SRI\_RENOLIT ALKORPLAN F SMART COOL GREY
- SRI\_RENOLIT ALKORPLAN F SMART COOL IVORY
- SRI\_RENOLIT ALKORPLAN F CLASSIC LIGHT GREY

### Reference standard

- *ASTM Standards E903 and E892: [astm.org](http://astm.org)*
- *Cool Roof Rating Council Standard (CRRR-1): [coolroofs.org](http://coolroofs.org)*



## CATEGORY MATERIALS AND RESOURCES (MR)

◆ **MRp2 and MRc5, Construction and demolition waste management planning (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI, EB, SEB, REB, HEB, WEB)**

**Objective** To separate and recycle construction waste to avoid it being sent to landfill or incineration facilities.

**Compliance information** Both the material waste generated during installation and the packaging waste can be 100% collected for recycling, reuse, or energy recovery. Below, we will specify the waste generated in kg/m<sup>2</sup> for each product.

PRODUCT	Destination	Weight (kg)
<b>RENOLIT ALKORPLAN A – 1,5mm</b>	To incinerate (without energy recovery)	0,081 kg
	To incinerate (with energy recovery)	0,645 kg
	To recycling	0,161 kg
	To landfill	0,726 kg
<b>RENOLIT ALKORPLAN L – 1,5mm</b>	To incinerate (without energy recovery)	0,068 kg
	To incinerate (with energy recovery)	0,540 kg
	To recycling	0,135 kg
	To landfill	0,608 kg
<b>RENOLIT ALKORPLAN F – 1,2mm (Classic Light Grey)</b>	To incinerate (without energy recovery)	0,075 kg
	To incinerate (with energy recovery)	0,600 kg
	To recycling	0,150 kg
	To landfill	0,675 kg
<b>RENOLIT ALKORPLAN F – 1,5mm (Classic Light Grey)</b>	To incinerate (without energy recovery)	0,069 kg
	To incinerate (with energy recovery)	0,555 kg
	To recycling	0,139 kg
	To landfill	0,624 kg
<b>RENOLIT ALKORPLAN F – 1,5mm (Bright o Cool)</b>	To incinerate (without energy recovery)	0,069 kg
	To incinerate (with energy recovery)	0,555 kg
	To recycling	0,139 kg
	To landfill	0,624 kg

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

<b>RENOLIT ALKORPLAN F Smart</b> – 1,2mm (Cool Ivory o Cool Grey)	To incinerate (without energy recovery)	0,075 kg
	To incinerate (with energy recovery)	0,600 kg
	To recycling	0,150 kg
	To landfill	0,675 kg
<b>RENOLIT ALKORPLAN F Smart</b> – 1,5mm (Cool Ivory o Cool Grey)	To incinerate (without energy recovery)	0,069 kg
	To incinerate (with energy recovery)	0,555 kg
	To recycling	0,139 kg
	To landfill	0,624 kg

The packaging applies in the same way to all product ranges. Pallets can be returned to the factory for reuse. Other packaging waste can be managed externally for recycling and/or recovery.

PRODUCT	Material	Packaging waste (kg)
<b>RENOLIT ALKORPLAN A</b> – 1.5 mm	Cardboard tubes	0,004
	PE sheet	0,002
	Pallet 224x119	0,148
	PE strips	0,001
	Recycled felt blanket	0,010
<b>RENOLIT ALKORPLAN L</b> – 1.5 mm	Cardboard tubes	0,002
	PE sheet	0,002
	Cardboard strips	0,001
	Pallet 120x210	0,060
	PE strips	0,0005
	Cardboard pieces	0,0003
	Recycled felt blanket	0,007
<b>RENOLIT ALKORPLAN F</b> – 1,2mm (Classic Light Grey)	Cardboard tubes	0,006
	PE sheet	0,004
	Cardboard wheels	0,003
	Pallet 116x160	0,006
	PE strips	0,131
	Cardboard pieces	0,0006
	Felt blanket (PVC and geotextile)	0,013
<b>RENOLIT ALKORPLAN F</b> – 1,5mm (Classic Light Grey)	Cardboard tubes	0,005
	PE sheet	0,003

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

	Cardboard wheels	0,002
	Pallet 116x160	0,096
	PE strips	0,001
	Cardboard pieces	0,0004
	Felt blanket (PVC and geotextile)	0,009
<b>RENOLIT ALKORPLAN F – 1.5 mm (Bright o Cool)</b>	Cardboard tubes	0,006
	PE sheet	0,003
	Cardboard strips	0,002
	Pallet 115x160	0,118
	PE strips	0,001
	Cardboard pieces	0,001
	Felt blanket (PVC and geotextile)	0,011
<b>RENOLIT ALKORPLAN F Smart – 1.2 mm (Cool Ivory o Cool Grey)</b>	Cardboard tubes	0,009
	Cardboard strips	0,002
	Cardboard pieces	0,0006
	PE sheet	0,003
	Pallet 108x111	0,129
	Flexible PVC	0,0006
	PE strips	0,001
	Felt blanket (PVC and geotextile)	0,012
<b>RENOLIT ALKORPLAN F Smart – 1.5 mm (Cool Ivory o Cool Grey)</b>	Cardboard tubes	0,008
	PE papers	0,001
	Pallet 108x111	0,057
	PE strips	0,002
	Felt blanket (PVC and geotextile)	0,022

The above-mentioned waste has the potential to be recycled depending on the type of waste generated, the recycling treatment considered in the Waste Management Plan, and the accredited management capacity of the Waste Manager designated on the site.

To comply with MRp2, the project will need to include a general Waste Management Plan, also incorporating the waste generated by the waterproofing membranes.

### **Assessment procedure**

Develop, implement and monitor a Waste Management Plan that incorporates the percentages of recovered and/or recycled material. Detail the location and procedure for the management and repurposing of each material.

Option 1. (BDC, IDC)

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

Prevent 50% or 75% of the total construction and demolition waste from ending up in landfill or the incinerator, instead repurposing it.

Option 1. (EB)

Prevent 70% of the total construction and demolition waste from ending up in landfill or the incinerator, instead repurposing it.

Option 2.

Reduce the total amount of construction waste generated to below 12.2 kg/m<sup>2</sup>.

### Example analysis

N/A

### Supporting documentation

- *Responsible Waste Declaration*
- *EPD S-P 10294 Alkorplan F Smart\_rev01*
- *EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)*
- *EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)*
- *EPD S-P 10290 Alkorplan F – 1,5mm (1,6)\_rev01*
- *EPD S-P 10293 Alkorplan F Bright\_rev01*
- *EPD SP 10291 Alkorplan L – 1,5mm\_rev0*
- *EPD SP 10289 Alkorplan A – 1,5mm\_rev01*

### Reference standard

N/A



## CATEGORY MATERIALS AND RESOURCES (MR)

### MRc1, Building life-cycle impact reduction (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI, EB, SEB, REB, HEB, WEB)

**Objective** Extend the lifespan of the building, preserve resources and cultural heritage.  
Reduce waste and environmental impact caused by new construction.

**Compliance information** RENOLIT has developed EPDs for each product.

Below are some of the impacts from stages A1-A3 associated with 1 m<sup>2</sup> of surface area of these products, which may be used for the building's LCA calculation.

In any case, this is a partial contribution, as the final result will depend on all the materials that must be included in the building's LCA

Cradle to Gate Impact	Abiotic Resource Depletion – Elements	"Abiotic Resource Depletion – Fossil Fuels	Soil and Water Acidification Potential	Ozone Depletion Potential	Global Warming Potential	Eutrophication Potential	Photochemical Ozone Formation Potential
Material (A1-A3)	kg of SB eq.	MJ calorific value	kg of SO <sub>2</sub> eq.	kg of CFC <sub>11</sub> eq.	kg of CO <sub>2</sub> eq.	kg of PO <sub>4</sub> eq.	kg of ethane
RENOLIT Alkorplan A – 1,5 mm	3,54E-06	8,30E+01	6,29E-03	6,71E-11	3,19E+00	1,23E-05	9,52E-03
RENOLIT Alkorplan L – 1,5 mm	3,67E-06	5,94E+01	4,89E-03	4,80E-11	2,28E+00	5,83E-06	7,34E-03
RENOLIT Alkorplan F – 1,5 mm Bright o Cool	4,24E-06	8,31E+01	7,78E-03	7,87E-11	3,22E+00	1,26E-05	1,03E-02
RENOLIT Alkorplan F – 1,2 mm (Classic Light Grey)	2,59E-06	6,41E+01	4,39E-03	3,63E-11	2,57E+00	7,00E-06	6,88E-03
RENOLIT Alkorplan F – 1,5 mm (Classic Light Grey)	3,41E-06	6,99E+01	5,79E-03	5,26E-11	2,68E+00	8,26E-06	8,38E-03
RENOLIT Alkorplan F Smart – 1,2mm (Cool Ivory o Cool Grey)	3,96E-06	1,07E+02	9,01E-03	2,15E-11	4,42E+00	1,79E-05	1,19E-02
RENOLIT Alkorplan F Smart – 1,5mm (Cool Ivory o Cool Grey)	4,41E-06	8,48E+01	7,21E-03	8,41E-11	3,33+00	1,39E-05	1,02E-02

**Assessment procedure**

**Option 4. Building life cycle assessment**

Carry out an assessment of the life cycle of the building (structure and envelope) that demonstrates at least a 10% reduction in the life cycle impact with respect to the reference building. No single category can have an impact of more than 5% of the baseline.

The baseline and the project must consider a life cycle of 60 years, with equivalent use.

Select at least three of the following categories.

- global warming potential (greenhouse gases), in CO<sub>2</sub>e and depletion of the stratospheric ozone layer, in kg CFC-11
- acidification of land and water sources, in moles H<sup>+</sup> or kg SO<sub>2</sub>
- eutrophication, in kg nitrogen or kg phosphate
- Tropospheric ozone formation, in kg NO<sub>x</sub>, kg O<sub>3</sub> eq
- use of non-renewable energy resources, in MJ

**Example analysis**

N/A

**Supporting documentation**

- *EPD S-P 10294 Alkorplan F Smart\_rev01*
- *EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)*
- *EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)*
- *EPD S-P 10290 Alkorplan F – 1,5mm (1,6)\_rev01*
- *EPD S-P 10293 Alkorplan F Bright\_rev01*
- *EPD SP 10291 Alkorplan L – 1,5mm\_rev0*
- *EPD SP 10289 Alkorplan A – 1,5mm\_rev01*

**Reference standard**

N/A



## CATEGORY MATERIALS AND RESOURCES (MR)

### MRc2, Building product disclosure and optimisation – Environmental Product Declarations (EPD) (NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI, EB, SEB, REB, HEB, WEB)

**Objective** Promote the use of materials with life cycle information and details of their environmental, economic and social impacts.

**Compliance information** RENOLIT has developed EPDs for each product.

Below are some of the impacts from stages A1-A3 associated with 1 m<sup>2</sup> of surface area of these products, which may be used for the building's LCA calculation.

In any case, this is a partial contribution, as the final result will depend on all the materials that must be included in the building's LCA

Cradle to Gate Impact	Abiotic Resource Depletion – Elements	"Abiotic Resource Depletion – Fossil Fuels	Soil and Water Acidification Potential	Ozone Depletion Potential	Global Warming Potential	Eutrophication Potential	Photochemical Ozone Formation Potential
Material (A1-A3)	kg of SB eq.	MJ calorific value	kg of SO <sub>2</sub> eq.	kg of CFC <sub>11</sub> eq.	kg of CO <sub>2</sub> eq.	kg of PO <sub>4</sub> eq.	kg of ethane
RENOLIT Alkorplan A – 1,5 mm	3,54E-06	8,30E+01	6,29E-03	6,71E-11	3,19E+00	1,23E-05	9,52E-03
RENOLIT Alkorplan L – 1,5 mm	3,67E-06	5,94E+01	4,89E-03	4,80E-11	2,28E+00	5,83E-06	7,34E-03
RENOLIT Alkorplan F – 1,5 mm Bright o Cool	4,24E-06	8,31E+01	7,78E-03	7,87E-11	3,22E+00	1,26E-05	1,03E-02
RENOLIT Alkorplan F – 1,2 mm (Classic Light Grey)	2,59E-06	6,41E+01	4,39E-03	3,63E-11	2,57E+00	7,00E-06	6,88E-03
RENOLIT Alkorplan F – 1,5 mm (Classic Light Grey)	3,41E-06	6,99E+01	5,79E-03	5,26E-11	2,68E+00	8,26E-06	8,38E-03
RENOLIT Alkorplan F Smart – 1,2mm (Cool Ivory o Cool Grey)	3,96E-06	1,07E+02	9,01E-03	2,15E-11	4,42E+00	1,79E-05	1,19E-02
RENOLIT Alkorplan F Smart – 1,5mm (Cool Ivory o Cool Grey)	4,41E-06	8,48E+01	7,21E-03	8,41E-11	3,33E+00	1,39E-05	1,02E-02

<b>Assessment procedure</b>	<p><b>Option 1: Environmental Product Declarations (EPD)</b></p> <p>Must be provided for a minimum of 20 products, from 5 different suppliers, which meet one of the following criteria:</p> <ul style="list-style-type: none"> <li>- Products with LCA, public and reviewed according to ISO 14044, as a minimum, covering the whole cradle-to-gate process (valued ¼)</li> <li>- EPD, according to ISO 14025, 14040, 14044 and EN 15804 or ISO 21930, as a minimum, covering the entire cradle-to-gate process:             <ul style="list-style-type: none"> <li>o Industry-wide EPD (generic) (valued ½)</li> <li>o Product-specific Type III EPD (valued 1)</li> </ul> </li> </ul>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	<ul style="list-style-type: none"> <li>- <b>EPD S-P 10294 Alkorplan F Smart_rev01</b></li> <li>- <b>EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)</b></li> <li>- <b>EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)</b></li> <li>- <b>EPD S-P 10290 Alkorplan F – 1,5mm (1,6)_rev01</b></li> <li>- <b>EPD S-P 10293 Alkorplan F Bright_rev01</b></li> <li>- <b>EPD SP 10291 Alkorplan L – 1,5mm_rev0</b></li> <li>- <b>EPD SP 10289 Alkorplan A – 1,5mm_rev01</b></li> </ul>
<b>Reference standard</b>	<ul style="list-style-type: none"> <li>- <i>International Standard ISO 14021–1999, Environmental labels and declarations—Self Declared Claims (Type II Environmental Labeling): iso.org</i></li> <li>- <i>International Standard ISO 14025–2006, Environmental labels and declarations (Type III Environmental Declarations—Principles and Procedures): iso.org</i></li> <li>- <i>International Standard ISO 14040–2006, Environmental management, Life cycle assessment principles, and frameworks: iso.org</i></li> <li>- <i>International Standard ISO 14044–2006, Environmental management, Life cycle assessment requirements, and guidelines: iso.org</i></li> <li>- <i>CEN Comité Européen de Normalisation (European Committee for Standardization) EN 15804—2012 Sustainability of construction works, Environmental product declarations, Core rules for the product category of construction products: cen.eu</i></li> <li>- <i>International Standard ISO 21930–2007 Sustainability in building construction—Environmental declaration of building products: iso.org</i></li> <li>- <i>Federal Trade Commission, Guides for the Use of Environmental Marketing Claims, 16 CFR 260.7 (e): ftc.gov/bcp/grnrule/guides980427.htm</i></li> </ul>



## CATEGORY MATERIALS AND RESOURCES (MR)

◆ **MRc3, Building product disclosure and optimisation – Sourcing of raw materials**  
(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI, EB, SEB, REB, HEB, WEB)

**Objective** Encourage the use of products and materials for which life cycle information is available, and that have life cycle impacts, preferably environmental, economic, and social. Request project teams to select products from manufacturers who have verified that they have extracted or sourced them responsibly.

**Compliance information** The PVC-P waterproofing membranes **RENOLIT** ALKORPLAN have a percentage of pre-consumer and post-consumer recycled content, as shown below:

PRODUCT	Pre-consumption recycled material (%)	Post-consumption recycled material (%)
RENOLIT ALKORPLAN A – 1,5mm	20-30%	0%
RENOLIT ALKORPLAN L – 1,5mm	20-30%	0%
RENOLIT ALKORPLAN F – 1,5mm Bright	10-20%	0%
RENOLIT ALKORPLAN F – 1,2mm Classic Light Grey	30-50%	0%
RENOLIT ALKORPLAN F – 1,5mm Classic Light Grey	20-60%	0%
RENOLIT ALKORPLAN F Smart Cool Ivory – 1,2 o 1,5mm	5-10%	0%
RENOLIT ALKORPLAN F Smart Cool Grey – 1,2 o 1,5mm	10-15%	0%

RENOLIT provides self-declarations regarding the recycled content of these products in accordance with ISO 14021. Through the reprocessing and recycling of the material, the need for virgin materials is reduced, preventing potential waste flow and contributing to the compliance with this criterion. The products contain pre-consumer recycled content, but no post-consumer recycled content.

Since a range of recycled content is provided, the most unfavourable value may be taken, or a more precise self-declaration of recycled content for the product supplied to the site can be requested directly.

In any case, this is a partial contribution to credit compliance, as compliance is defined based on the totality of materials used in the project, not just the waterproof membranes.

**Assessment procedure**

**Option 1. Raw material source and extraction reporting (1 point)**

Use at least 20 different products installed permanently from at least five different manufacturers that have an accepted report. Products with Corporate Sustainability Reports (CSR) verified by a third party, which include the impacts of the manufacturer's products and the product supply chain, are valued as a single product for the credit achievement calculation. Acceptable CSR frameworks include the following:

- Sustainability report (Global Reporting Initiative) (GRI)
- Guidelines for Multinational Enterprises from the Organisation for Economic Co-operation and Development (OECD)
- UN Global Compact: Communication on Progress
- ISO 26000: Guidelines on Social Responsibility
- USGBC-approved Program: Other USGBC-approved programs that meet the CSR criteria.

**EP\*Option 1:** to install 40 products (from at least 5 producers) that meet the requirements.

**Option 2. Leadership extraction practices (1 point)**

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 permanently installed construction products in the building. Structural and envelope materials cannot account for more than 30% of the value of the compliant products in the building:

- Extended producer responsibility
- Biobased materials.
- Wood products.
- Material reuse.
- Recycled content.
- USGBC-approved program.

**EP\*Option 2:** Use products that meet at least one of the responsible extraction criteria listed for at least 50%, by cost, of the total value of permanently installed construction products in the building.

**Example analysis**

N/A

**Supporting documentation**

- **Responsible Recycling Declaration**
- **Responsible Distance Declaration**

**Reference standard**

- SCS Recycled Content Standard V7-0
- U.N. Global Compact, Communication of Progress: [unglobalcompact.org/cop/](http://unglobalcompact.org/cop/)
-



## CATEGORY INNOVATION



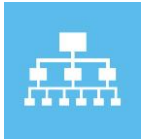
### Innovation

(NC, CS, SNC, RNC, HC, HNC, DCNC, WNC, CI, RCI, HCI, EB, SEB, REB, HEB, WEB)

<b>Objective</b>	Encourage projects to achieve exemplary or innovative performance.
<b>Compliance information</b>	<p>RENOLIT ALKORPLAN products can contribute to meeting the exemplary level criteria in the following requirements:</p> <ul style="list-style-type: none"> <li>- MrP2 – MRc5, Construction and demolition waste management</li> <li>- MRc1, Reduction of the building's life cycle impact</li> <li>- MR,2, Transparency and optimization of construction products – EPD</li> <li>- MRc3, Transparency and optimization of building products – Sources of raw materials</li> </ul> <p>NOTE: Check the criteria levels in each requirement</p>
<b>Assessment procedure</b>	<p>A maximum of 10 innovation points can be earned through a combination of the following options:</p> <p><b>Exemplary Level in Existing Requirements</b> Some LEED credits offer the option to earn additional points by demonstrating exemplary performance through the achievement of the exemplary level criteria defined in those credits, up to a maximum of 2 points for the entire project.).</p> <p><b>Innovations and Approved Pilot Credits</b> Additionally, one innovation point can be earned for each innovation credit or pilot credit pre-approved by USGBC, as long as the requirements for the credit are met.</p>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	- See corresponding requirements.
<b>Reference standard</b>	- See corresponding requirements.

# CREDIT SUMMARY

## BREEAM



### MANAGEMENT

- ◆ MAN03 Impact of construction sites (BREEAM ES New Construction 2015)
- ◆ MAN03 Responsible building practices (BREEAM ES HOUSING 2020)
- ◆ MAN05 Life cycle cost (BREEAM ES New Construction 2015)
- ◆ MAN02 Life cycle cost (BREEAM ES HOUSING 2020)



### MATERIALS

- ◆ MAT 01 Life cycle impacts
- ◆ MAT 03 Responsible sourcing of construction products (BREEAM ES New Construction 2015)
- ◆



### WASTE

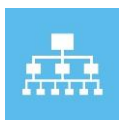
- ◆ WST 01 Construction waste management



### INNOVATION

- ◆ Innovation

#### BREEAM ES environmental categories



Management



Health and wellbeing



Energy



Transport



Water



Materials



Waste



Land use and ecology



Contamination



Innovation

#### BREEAM ES certification standards

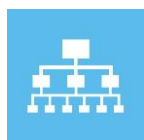
**UR** BREEAM ES Urban Planning  
**NC** BREEAM ES New Construction

**VIV** BREEAM ES Home

**USO** BREEAM ES In-use

# CREDIT SHEET

## BREEM ES



### CATEGORY MANAGEMENT

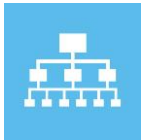
- ◆ **MAN 03 Construction site impacts**  
(BREEAM ES NEW CONSTRUCTION 2015)
- ◆ **MAN 03 Responsible building practices**  
(BREEAM ES HOME 2020)

<b>Objective</b>	<p>To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption and pollution. Criteria relevant to:</p> <ul style="list-style-type: none"> <li>- Transport of construction materials and waste</li> <li>- Timber procurement</li> </ul>
<b>Compliance information</b>	<p>Regarding transport, the production plant for all <b>RENOLIT</b> ALKORPLAN products is located in Carretera de Montnegre, s/n - 08470 Sant Celoni - Spain.</p> <p>In relation to the supply of ALKORPLAN products, the company RENOLIT uses wood material supplied by Embalajes del Vallès S.L., which has a forest product chain of custody control system No: AEN-PEFC-COC-0069. This certificate is valid until 04/05/2027.</p> <p>However, this is only a partial contribution, as the result will depend on all the materials installed and on the sustainability manager for the construction site completing the necessary reports.</p>
<b>Assessment procedure</b>	<p><b>Transport of construction materials and waste (one point)</b> The building is assessed against this criterion by indicating, in a separate report, the total fuel consumption (litres), the total carbon dioxide emissions (kg CO<sub>2</sub> eq) because of transport and the total distance travelled (km) to reach the building.</p> <p><b>Timber procurement (one point)</b> The building is assessed against this criterion by confirming that all the wood used for palletising the product is “legally harvested and traded timber” or has a recognised certification system (FSC, PEFC) or its approved schemes (SFI, etc.). If they do not possess the certification system seal, the supplier must provide written confirmation that the wood used has been legally obtained and sold.</p>
<b>Example analysis</b>	N/A
<b>Supporting documentation</b>	<ul style="list-style-type: none"> <li>- <i>Responsible Distance Declaration</i></li> <li>- <i>AEN-PEFC-COC-0069_ES</i></li> <li>- <i>RENOLIT_Sustainability_Report_2023</i></li> </ul>

**Reference  
standard**

- *UNE-EN 15643-4:2012*
- *UNE-EN 15978:2012*
- *National Inventory of Atmospheric Emissions (Netcen, 2005) based on DTI data combined with TRL factors as functions of average vehicle speed, derived from test data carried out in real-world test cycles*
- *Summary of Energy Statistics for the UK DTI 2004 and carbon factors for fuels from UKPIA (2004)*
- *Guidelines for Corporate Reporting on Greenhouse Gas Emissions, DEFRA, Continuous Road Freight Transport Survey 2001*





## CATEGORY MANAGEMENT

- ◆ **MAN 05 Life cycle cost and service life planning (BREEAM ES NEW CONSTRUCTION 2015)**
- ◆ **MAN 02 Life cycle cost and service life planning (BREEAM ES HOME 2020)**

**Objective** Recognise and encourage life cycle costing and service life planning to improve decisions taken in relation to design, specification and through-life maintenance and operation of the building.

**Compliance information** To check product prices, please contact **RENOLIT** (Jennifer Che - [Jennifer.che@renolit.com](mailto:Jennifer.che@renolit.com)).

In relation to maintenance, no specific action will be required during the use of the building that involves the maintenance of these materials, except for those specifically indicated for building envelopes in accordance with applicable standards.

### Assessment procedure

#### **BREEAM IS NEW CONSTRUCTION 2015**

##### **1 point**

Carry out a life cycle cost (LCC) analysis based on the proposals developed during the concept design/design development and implementation phases in accordance with the standard UNE-EN 15643-4: 2012 using a study period of at least 40 years and ideally 60 years, the results of which are shown in terms of actual and discounted cash flow for the following phases and uses:

- Construction: includes investment costs.
- Operation: includes, as a minimum, installation, cleaning, and management costs.
- Maintenance: includes, as a minimum, planned maintenance, replacement, and repair costs.

##### **2 Points**

The LCC analysis shows that elements from at least two building components have been assessed from a strategic and systemic perspective, comparing alternatives.

The options meet the building performance criteria (i.e., realistic options are used in the comparisons), and preference is given to the lowest updated LCC over the period, assuming that the selection of these options will result in at least one of the following outcomes:

- a) Lower energy consumption of the building over its lifecycle compared to other options or alternatives analysed (see “Additional Notes” NA2)
- b) A reduction in maintenance requirements and frequency
- c) An increase in the service life of the infrastructure and systems of the facilities or the building structure, leading to longer replacement intervals
- d) The disassembly and recycling or reuse of building components

##### **3 points**

The analysis referred to in the first point of the LCC has been updated during the detailed design and construction phases.

The results of the analysis have been applied in the specifications, design, and final construction of the evaluated building.

A maintenance strategy has been developed based on the Life Cycle Cost (LCC) analysis.

## **BREAM IT'S HOUSING 2020**

### **1 point**

An LCC (Life Cycle Costing) assessment has been carried out for building elements at the end of the detailed design stage, in accordance with ISO 15686-5:2017. The assessment includes at least the most significant element of each of the following types (where present):

- a) Building envelope
- b) Building services
- c) Interior finishes
- d) External spaces

It is demonstrated, using suitable examples provided by the design team, how the LCC assessment of elements—by comparing different solutions—is used to influence the building design, services, and specifications to minimize life cycle cost and maximize whole-life value.

### **1 point**

The building's investment cost is reported through the BREEAM assessment tool. The data will be confidential and will only be used for aggregated data studies.

### **2 points**

A basic Life Cycle Costing (LCC) analysis of the entire building has been carried out during the schematic design phase, according to the design options, in accordance with Buildings and Constructed Assets – Service Life Planning – Part 5: Life Cycle Costing ISO 15686-5:2017.

### **Example analysis**

N/A

### **Supporting documentation**

- *EPD S-P 10294 Alkorplan F Smart\_rev01*
- *EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)*
- *EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)*
- *EPD S-P 10290 Alkorplan F – 1,5mm (1,6)\_rev01*
- *EPD S-P 10293 Alkorplan F Bright\_rev01*
- *EPD SP 10291\_Alkorplan L – 1,5mm\_rev0*
- *EPD SP 10289 Alkorplan A – 1,5mm\_rev01*

### **Reference standard**

- *UNE-EN 15643-4:2012*
- *UNE-EN 15978:2012*
- *ISO 15686-5:2017*



## CATEGORY MATERIALS

### **MAT 01 – Life cycle impacts** (BREEAM ES NEW CONSTRUCTION 2015 and BREEAM ES HOME 2020)

**Objective** To recognise and encourage the use of robust and appropriate tools for life cycle analysis and, consequently, the specification of building materials with low environmental impact (including in terms of embodied carbon) over the full life cycle of the building.

#### **Compliance information**

#### **Option 1: Environmental Product Declaration**

Each product in the RENOLIT ALKORPLAN series has an Environmental Product Declaration (EPD), verified by an independent third party, to comply with Option 1. The data in the EPDs conform to the UNE EN ISO 14025 and UNE EN 15804 standards.

#### **Option 2: Life cycle assessment:**

The impacts assessed in the EPDs can be used for conducting a Life Cycle Assessment (LCA). Below are some of the impacts from stages A1-A3 associated with 1 m<sup>2</sup> of surface area of these products that may be used for the building's LCA calculation:

Cradle to Gate Impact	Abiotic Resource Depletion – Elements	"Abiotic Resource Depletion – Fossil Fuels	Soil and Water Acidification Potential	Ozone Depletion Potential	Global Warming Potential	Eutrophication Potential	Photochemical Ozone Formation Potential
Material (A1-A3)	kg of SB eq.	MJ calorific value	kg of SO <sub>2</sub> eq.	kg of CFC <sub>11</sub> eq.	kg of CO <sub>2</sub> eq.	kg of PO <sub>4</sub> eq.	kg of ethane
<b>RENOLIT</b> Alkorplan A – 1,5 mm	3,54E-06	8,30E+01	6,29E-03	6,71E-11	3,19E+00	1,23E-05	9,52E-03
<b>RENOLIT</b> Alkorplan L – 1,5 mm	3,67E-06	5,94E+01	4,89E-03	4,80E-11	2,28E+00	5,83E-06	7,34E-03
<b>RENOLIT</b> Alkorplan F – 1,5 mm Bright o Cool	4,24E-06	8,31E+01	7,78E-03	7,87E-11	3,22E+00	1,26E-05	1,03E-02
<b>RENOLIT</b> Alkorplan F – 1,2 mm (Classic Light Grey)	2,59E-06	6,41E+01	4,39E-03	3,63E-11	2,57E+00	7,00E-06	6,88E-03
<b>RENOLIT</b> Alkorplan F – 1,5 mm (Classic Light Grey)	3,41E-06	6,99E+01	5,79E-03	5,26E-11	2,68E+00	8,26E-06	8,38E-03
<b>RENOLIT</b> Alkorplan F Smart – 1,2mm (Cool Ivory o Cool Grey)	3,96E-06	1,07E+02	9,01E-03	2,15E-11	4,42E+00	1,79E-05	1,19E-02

# FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

RENOLIT Alkorplan F Smart – 1,5mm (Cool Ivory o Cool Grey)	4,41E-06	8,48E+01	7,21E-03	8,41E-11	3,33+00	1,39E-05	1,02E-02
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In any case, this is a partial contribution, as the final result will depend on all the materials that must be included in the building's LCA

## Assessment procedure

### BREEAM ES New Construction 2015

#### Option 1: 1 point

Products with Environmental Product Declarations (EPD) have been specified in at least 30% of the categories: Ceramics, Stone, etc.

*Note: The EPD must cover at least 80% of the products in each category (by volume).*

#### Option 2: 1 to 6 points

The project uses a Life Cycle Assessment (LCA) tool to measure the environmental impact of the building elements' life cycle.

#### Exemplary level (1 extra point)

A rigorous LCA has been conducted, including most of the building elements. At least 85 points are obtained in the BREEAM ES MAT 01 calculator.

### BREEAM ES Home 2020

#### Option 1: 1 point

At least 12 points are achieved through Environmental Product Declarations (EPDs) following the calculation method in the Methodology section. EPDs grant points based on their type:

- Type A (EPD sectorial) by 0,5 points
- Type B (EPD individual of family products) by 1,25 points
- Type C (EPD individual of products) by 1,5 points

#### Option 2: 1 to 5 points

The project uses a life cycle assessment (LCA) tool to measure the environmental impact of the life cycle of the building's elements.

#### Exemplary level (1 extra point)

A rigorous LCA has been conducted, including most of the building elements. At least 85 points are obtained in the BREEAM ES MAT 01 calculator.

#### Life cycle assessment (LCA):

The project uses a BREEAM-compliant life cycle assessment (LCA) tool to measure the environmental impact of building elements over their life cycle.

## Example analysis

N/A

## Supporting documentation

- EPD S-P 10294 Alkorplan F Smart\_rev01
- EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)
- EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)
- EPD S-P 10290 Alkorplan F – 1,5mm (1,6)\_rev01
- EPD S-P 10293 Alkorplan F Bright\_rev01
- EPD SP 10291\_Alkorplan L – 1,5mm\_rev0
- EPD SP 10289 Alkorplan A – 1,5mm\_rev01

# FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

**Reference  
standard**

- *ISO 14025:2010*
- *UNE-EN 15804:2012*
- *UNE-EN 15978:2012*





## CATEGORY MATERIALS

### ◆ MAT 03 – Responsible sourcing of construction products (BREEAM ES NEW CONSTRUCTION 2015 and BREEAM ES HOME 2020)

**Objective** Recognise and encourage the specification of responsibly sourced materials for key building elements.

**Compliance information** The production plant for all RENOLIT ALKORPLAN products is located at Carretera de Montnegre, s/n – 08470 Sant Celoni – Spain, and it is certified with an Environmental Management System (ISO 14001), certified by a third party for the design, development, and production activities of its products.

Additionally, **RENOLIT ALKORPLAN** membranes contain recycled material, always from pre-consumer sources, with a variable percentage depending on the characteristics of the product. RENOLIT provides self-declarations with the recycled content, as shown below:

PRODUCT	Pre-consumption recycled material (%)	Post-consumption recycled material (%)
RENOLIT ALKORPLAN A – 1,5mm	20-30%	0%
RENOLIT ALKORPLAN L – 1,5mm	20-30%	0%
RENOLIT ALKORPLAN F – 1,5mm Bright	10-20%	0%
RENOLIT ALKORPLAN F – 1,2mm Classic Light Grey	30-50%	0%
RENOLIT ALKORPLAN F – 1,5mm Classic Light Grey	20-60%	0%
RENOLIT ALKORPLAN F Smart Cool Ivory – 1,2 o 1,5mm	5-10%	0%
RENOLIT ALKORPLAN F Smart Cool Grey – 1,2 o 1,5mm	10-15%	0%

RENOLIT provides self-declarations with the recycled content of these products in accordance with ISO 14021. Through the reprocessing and recycling of material, the need for virgin materials is reduced, preventing the potential flow of waste and contributing to the fulfilment of this criterion.

Since a range of recycled content is presented, the least favourable value can be taken, or a more precise self-declaration of the recycled content of the product supplied to the project can be requested directly

In any case, this is a partial contribution to meeting the credit, as compliance is defined based on the totality of materials used in the project, not just the waterproofing membranes.

**Assessment procedure**

**Responsible sourcing (up to 3 points)**

Each of the applicable materials specified as part of the main construction elements has been assigned a responsible sourcing certification level and the relevant points have been awarded accordingly.

*Tabla 34: Niveles de certificación de aprovisionamiento responsable y puntos MAT 3 disponibles*

Nivel de certificación	Puntos
1	3,0
2	2,0
3	1,5
4	0

The BREEAM ES MAT 3 calculator should be used to obtain the final score.

Each of the applicable materials will be assigned a responsible sourcing certification level with a corresponding score. The level of certification is determined based on the rigour of responsible sourcing demonstrated by the suppliers/manufacturers of each material/element (through responsible sourcing certification schemes). The responsible sourcing certification schemes are listed below:

- BRE Global, BES6001 product certification (or equivalent)
- Canadian Standards Association’s (CSA) Chain of Custody Scheme (CoC) (endorsed by the PEFC) for chain of custody (CoC) certification
- Environmental Management System (EMS) (certified) for the key process and supply chain extraction process
- Environmental Management System (EMS) (certified) for the key process
- FLEGT-licensed timber
- Forest Stewardship Council (FSC)
- Recycled materials with Certified EMS for key process.
- Reused materials
- Malaysian Timber Certification (PEFC-endorsed) with Chain of Custody (CoC) certification
- Programme for the Endorsement of Forest Certification (PEFC) with Chain of Custody (CoC) certification
- Sustainable Forest Initiative (SFI) (endorsed by the PEFC) with chain of custody certification (CoC) with a declaration of 70% certified material.

**Exemplary level (1 extra point):**

BREEAM ES Home: When 50% of the available responsible sourcing points have been reached.

BREEAM ES New Construction: When the responsible sourcing requirements assessed by BREEAM are exceeded and 70% of the available responsible sourcing points have been reached.

**Example analysis**

N/A

**Supporting documentation**

- **ISO 14001 SP**
- **Environmental Product Declaration (EPD)**
- **Declaration of location**



**CATEGORY  
WASTE**

**WST 01 Construction waste management  
(BREEAM ES NEW CONSTRUCTION 2015 and BREEAM ES HOME 2020)**

**Objective** To promote resource efficiency via the effective and appropriate management of construction waste.

**Compliance information** All material waste generated during installation and all packaging waste can be collected for recycling. The waste generated by each product (in kg/m<sup>2</sup>) is specified in the table below:

PRODUCT	Destination	Weight (kg)
<b>RENOLIT ALKORPLAN A – 1,5mm</b>	To incinerate (without energy recovery)	0,081 kg
	To incinerate (with energy recovery)	0,645 kg
	To recycling	0,161 kg
	To landfill	0,726 kg
<b>RENOLIT ALKORPLAN L – 1,5mm</b>	To incinerate (without energy recovery)	0,068 kg
	To incinerate (with energy recovery)	0,540 kg
	To recycling	0,135 kg
	To landfill	0,608 kg
<b>RENOLIT ALKORPLAN F – 1,2mm (Classic Light Grey)</b>	To incinerate (without energy recovery)	0,075 kg
	To incinerate (with energy recovery)	0,600 kg
	To recycling	0,150 kg
	To landfill	0,675 kg
<b>RENOLIT ALKORPLAN F – 1,5mm (Classic Light Grey)</b>	To incinerate (without energy recovery)	0,069 kg
	To incinerate (with energy recovery)	0,555 kg
	To recycling	0,139 kg
	To landfill	0,624 kg
<b>RENOLIT ALKORPLAN F – 1,5mm (Bright o Cool)</b>	To incinerate (without energy recovery)	-0,069 kg
	To incinerate (with energy recovery)	-0,555 kg
	To recycling	- 0,139 kg
	To landfill	-0,624 kg

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

<b>RENOLIT ALKORPLAN F Smart</b> – 1,2mm (Cool Ivory o Cool Grey)	To incinerate (without energy recovery)	0,075 kg
	To incinerate (with energy recovery)	0,600 kg
	To recycling	0,150 kg
	To landfill	0,675 kg
<b>RENOLIT ALKORPLAN F Smart</b> – 1,5mm (Cool Ivory o Cool Grey)	To incinerate (without energy recovery)	0,069 kg
	To incinerate (with energy recovery)	0,555 kg
	To recycling	0,139 kg
	To landfill	0,624 kg

Regarding the packaging of the products: the pallets can be returned to the factory for reuse, and other packaging waste can be managed externally for recycling and/or recovery.

The estimated amount (kg) of packaging waste per m<sup>2</sup> of product is as follows:

PRODUCT	Material	Packaging waste (kg)
<b>RENOLIT ALKORPLAN A</b> – 1.5 mm	Cardboard tubes	0,004
	PE sheet	0,002
	Pallet 224x119	0,148
	PE strips	0,001
	Recycled felt blanket	0,010
<b>RENOLIT ALKORPLAN L</b> – 1.5 mm	Cardboard tubes	0,002
	PE sheet	0,002
	Cardboard strips	0,001
	Pallet 120x210	0,060
	PE strips	0,0005
	Cardboard pieces	0,0003
	Recycled felt blanket	0,007
<b>RENOLIT ALKORPLAN F</b> – 1,2mm (Classic Light Grey)	Cardboard tubes	0,006
	PE sheet	0,004
	Cardboard wheels	0,003
	Pallet 116x160	0,006
	PE strips	0,131
	Cardboard pieces	0,0006
	Felt blanket (PVC and geotextile)	0,013
	Cardboard tubes	0,005

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

<b>RENOLIT ALKORPLAN F – 1,5mm (Classic Light Grey)</b>	PE sheet	0,003
	Cardboard wheels	0,002
	Pallet 116x160	0,096
	PE strips	0,001
	Cardboard pieces	0,0004
	Felt blanket (PVC and geotextile)	0,009
<b>RENOLIT ALKORPLAN F – 1.5 mm (Bright o Cool)</b>	Cardboard tubes	0,006
	PE sheet	0,003
	Cardboard strips	0,002
	Pallet 115x160	0,118
	PE strips	0,001
	Cardboard pieces	0,001
	Felt blanket (PVC and geotextile)	0,011
<b>RENOLIT ALKORPLAN F Smart – 1.2 mm (Cool Ivory o Cool Grey)</b>	Cardboard tubes	0,009
	Cardboard strips	0,002
	Cardboard pieces	0,0006
	PE sheet	0,003
	Pallet 108x111	0,129
	Flexible PVC	0,0006
	PE strips	0,001
	Felt blanket (PVC and geotextile)	0,012
<b>RENOLIT ALKORPLAN F Smart – 1.5 mm (Cool Ivory o Cool Grey)</b>	Cardboard tubes	0,008
	PE papers	0,001
	Pallet 108x111	0,057
	PE strips	0,002
	Felt blanket (PVC and geotextile)	0,022

To comply with the valorisation of products and their packaging, the project must include a general Waste Management Plan that addresses the waste generated by the waterproof membranes. Valorisation will depend on the type of waste generated, the recycling treatment considered in the Waste Management Plan, and the accredited management capacity of the designated Waste Manager on the site.

### Assessment procedure

It is necessary to document the amount of waste generated per 100m<sup>2</sup> (constructed area) or m<sup>3</sup> (when referring to the actual waste volume, not the apparent volume), or the tons derived from the construction process, using the BREEAM ES evaluation tool.

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

Procedures have been implemented for the classification, reuse, and recycling of construction waste for at least the waste fractions identified in the legislation, either on or off-site, through an authorized external waste manager.

A significant amount of demolition (where applicable) and non-hazardous construction waste generated in the project has been diverted from the landfill.

### **BREEAM ES New Construction 2015** **Construction resource efficiency (up to 2 points):**

One point: The justification is made through a Construction or Demolition Waste Management Plan (PGR) that meets certain requirements to ensure the minimization of hazardous and non-hazardous waste produced.

One point: It is justified through the implementation of procedures for the classification, reuse, and recycling of construction waste from at least the waste fractions identified in current legislation, both on and off-site, through an authorized external waste manager. Each type of waste must be specified by its code and associated with a waste manager with accredited capacity for managing and recovering the waste.

### **BREEAM ES Home 2020** **Reduction of construction waste (up to 2 points):**

One point: They are justified through a Construction or Demolition Waste Management Plan (PGR) that meets specific requirements to ensure the minimization of both hazardous and non-hazardous waste generated.

One point: It is justified through the implementation of procedures for the classification, reuse, and recycling of construction waste, at least for the groups indicated in the Checklists and Tables section, both on and off-site through an authorized external waste manager.

### **BOTH BREEAM** **Diversion of resources from landfill (1 point)**

One point: It is justified through reports/records of equivalent control that confirm the total amount of waste produced and the key waste groups that have been defined and demonstrate that a significant amount of demolition waste (when applicable) and non-hazardous construction waste generated in the project has been diverted from landfill by at least 80%.

Tasa nacional de recuperación	Tipo de residuos	Un punto Tasas objetivo BREEAM en materia de desvíos del vertedero	Nivel ejemplar
>70% (por peso)	Construcción	Superar en más de un 10% la tasa nacional	Superar en más de un 25% la tasa nacional
>70% (por peso)	Demolición	Superar en más de un 10% la tasa nacional	Superar en más de un 25% la tasa nacional

**Example analysis** N/A

#### **Supporting documentation**

- **Responsible Waste Declaration**
- **EPD S-P 10294 Alkorplan F Smart\_rev01**
- **EPD S-P-11244 Alkorplan F Smart – 1,2mm (1,6m)**
- **EPD S-P-11240 Alkorplan F – 1,2mm (1,6m)**
- **EPD S-P 10290 Alkorplan F – 1,5mm (1,6)\_rev01**

## FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

- *EPD S-P 10293 Alkorplan F Bright\_rev01*
- *EPD SP 10291\_Alkorplan L – 1,5mm\_rev0*
- *EPD SP 10289 Alkorplan A – 1,5mm\_rev01*

**Reference  
standard**

*N/A*





## CATEGORY INNOVATION

### INNOVATION (BREEAM ES NEW CONSTRUCTION 2015, BREEAM ES HOMES 2011)

<b>Objective</b>	To incentivise innovation within the construction sector by recognising improvements in the field of sustainability that are not rewarded through the Standard Requirements. Description of the objective of the credit. Reference: BREEAM ES
<b>Compliance information</b>	<p>RENOLIT ALKORPLAN products can contribute to the fulfilment of the exemplary level criteria in the requirements:</p> <ul style="list-style-type: none"> <li>• MAT 01, Life cycle impacts</li> <li>• MAT 03, Responsible sourcing of materials</li> <li>• WST 01, Construction waste management</li> </ul> <p>NOTE: See the exemplary level criteria for the corresponding requirement.</p>
<b>Assessment procedure</b>	<p>Up to 10 innovation points can be obtained by a combination of the following options:</p> <p><b>Exemplary level in existing requirements</b> Some BREEAM credits give the option to obtain an additional score for demonstrating exemplary efficiency by meeting defined exemplary level performance criteria in the corresponding credits.</p> <p><b>Approved innovations</b> One innovation credit can be awarded for each innovation application approved by BREEAM ES, provided that the building complies with the criteria defined in an Approved Innovation application form.</p>
<b>Example analysis</b>	<i>n/a</i>
<b>Supporting documentation</b>	<i>See corresponding requirements</i>
<b>Reference standard</b>	<i>See corresponding requirements</i>