



# **FLEXIBLE PVC-P WATERPROOFING MEMBRANES**

**RENOLIT Ibérica  
S.A.**

Product family

RENOLIT ALKORPLAN A, RENOLIT  
ALKORPLAN L, RENOLIT ALKORPLAN F

Thermoplastic PVC-P membrane

# WATERPROOFING MEMBRANES

RENOLIT Ibérica S.A.



## FLEXIBLE PVC-P 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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**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, Use of materials obtained from sustainable resources
- ◆ NR 07, Use of local materials
- ◆ NR 08, Selective demolition strategy planning
- ◆ NR 09, Construction waste management
- ◆ NR 10, Impact of construction materials
- ◆ NR 11, Product ecolabelling

### 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

# 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 (%)
RENOLIT ALKORPLAN Bright	115
RENOLIT ALKORPLAN Smart Grey	62.8
RENOLIT ALKORPLAN Smart Ivory	82.5

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 Bright** or **RENOLIT ALKORPLAN Smart Ivory** membrane, and that if the slope was greater than 15% the roof would also meet this criterion if finished in **RENOLIT ALKORPLAN Smart Grey** membrane.

### Assessment procedure

The building is assessed against this criterion by calculating the surface area of the plot, roof and E-S-W 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
- 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
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- 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** *Test of each product according to ASTM E1980-11*

**Reference standard** *n/a*





## 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** **RENOLIT** ALKORPLAN membranes contain recycled material which is always of pre-consumer origin and present in a variable percentage depending on the characteristics of the product.  
RENOLIT provides self-declarations of recycled content.

PRODUCT	% POST-CONSUMPTION RECYCLED MATERIAL	% PRE-CONSUMPTION RECYCLED MATERIAL
RENOLIT ALKORPLAN A	0%	20-30%*
RENOLIT ALKORPLAN L	0%	20-30%
RENOLIT ALKORPLAN F	0%	20-60%
RENOLIT ALKORPLAN F Smart	0%	10-15%
RENOLIT ALKORPLAN F Bright	0%	10-20%

\* PVC-P is the only component that incorporates recycled content. The above values are calculated on the total.

**Assessment procedure** The building is assessed against this indicator by expressing the mass of post-consumer recycled ceramic, aggregate, stone, and concrete elements, plus 50% of the pre-consumption recycled ceramic, aggregate, stone and concrete elements as a percentage of the total mass of these elements used in the building project or renovation process.  
This percentage should be between 40% and 100% for ceramic elements, aggregates, stone, and concrete. It should be between 10% and 30% for other materials.

NOTE: Structural concretes are excluded from the calculation of this indicator as the recycled content is regulated.

**Example analysis** n/a



**Supporting documentation**      *Environmental Product Declaration (EPD)*

**Reference standard**      *n/a*





## CATEGORY NATURAL RESOURCES

### ◆ NR 06, Responsible choice of materials (VERDE Buildings 2022)

<b>Objective</b>	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.
<b>Compliance information</b>	<b>RENOLIT</b> membranes are delivered on wooden pallets and packaging from Embalajes del Vallés S.L. which holds ISO 9001:2015 certification specifying the provision of a control system for the chain of custody of forest products. In addition, <b>RENOLIT</b> 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.
<b>Assessment procedure</b>	<p>The building is assessed against this criterion by calculating the total percentage (by mass) of wood and materials containing wood used in the project that possess chain of custody (CoC) certification such as PERF or FSC. All wood to be used during construction must be considered, even if not permanently installed in the building, such as concrete formwork and pallets. This percentage should be between 20% and 50%.</p> <p>Between 5% and 15% by mass of the building materials should have a document stating the origin of the raw materials guaranteeing the requirements indicated in the credit.</p> <p>The following documents are accepted to prove the sustainable sourcing of raw materials:</p> <ul style="list-style-type: none"> <li>• Global Reporting Initiative (GRI) Sustainable Report. If two different materials with this type of certificate are provided, innovation credits may be applied for.</li> <li>• Manufacturer’s self-declaration including place of extraction of raw materials used in their product and responsible environmental procedures during extraction and processing.</li> </ul> <p>Company policy document approved by senior management that includes requirements for raw material suppliers to comply with basic workers’ rights, including child labour and environmental respect for protected areas or areas of high ecological value.</p>
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<p><b>R- 31-C DECLARACION SDD PEFC - EMBALAJES DEL VALLÉS - RENOLIT IBERICA, S.A. - 2023.pdf</b>  <b>AEN-PEFC-COC-0069_ES.pdf</b>  <b>AEN-PEFC-COC-0069_IN.pdf</b>  <b>Company policy</b></p>
<b>Reference standard</b>	n/a



## CATEGORY NATURAL RESOURCES

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

<b>Objective</b>	Encourage the use of locally produced materials, thereby boosting the local economy and reducing transport impacts.
<b>Compliance information</b>	The production plant for all <b>RENOLIT</b> ALKORPLAN products is located at Carretera de Montnegre, s/n - 08470 Sant Celoni - Spain
<b>Assessment procedure</b>	<p>The building is assessed against this criterion by expressing the mass of locally produced materials used (treating the families of ceramics, aggregates, stone, and concrete separately from the rest of the materials) as a percentage of the total mass of the materials used in the project. Locally produced materials are those with a production plant located within a radius of 400 km of the site being studied. Of these elements, those with a production plant less than 200 km away will count at 100% while those between 200 and 400 km away will apply a linear scale between 100% and 0%.</p> <p>This percentage should be between 40% and <math>\geq 80\%</math>.</p> <p>Mechanical, electrical, or plumbing components - or special items such as lifts or other equipment - are not included. Only materials permanently installed in the building or plot are considered.</p>
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<i>Environmental Product Declaration (EPD)</i> <i>Declaration of location</i>
<b>Reference standard</b>	n/a



## 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 L**, **RENOLIT ALKORPLAN F** and **RENOLIT ALKORPLAN A** 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	0%	10%
RENOLIT ALKORPLAN L	0%	10%
RENOLIT ALKORPLAN F	0%	10%

**Assessment procedure** The building is assessed against this indicator by expressing the mass of materials which could demonstrably be recycled, reused, or recovered at the end of the building's life as a percentage of the total mass of the elements used in the project or in the process of the building's refurbishment. This percentage should be between 40% and  $\geq 60\%$ .

A study should be made of the possible use of materials after dismantling at the end of the building's life. This should include calculating the percentage of the construction systems planned in the design of the building that can be dismantled by non-destructive processes and the layers of materials that compose them can be separated into the purest possible elements. Disassembly of elements using non-destructive methods means that it is possible to separate the element without it being damaged and without damaging the rest of the construction system to which it belongs, or that separation is not necessary because all layers or elements belong to the same group of materials or raw materials.

- Mechanical, electrical, or plumbing components - or special items such as lifts or other equipment - are not included.

**Example analysis** n/a

**Supporting documentation** *Environmental Product Declaration (EPD)*  
*Selective demolition plan*

**Reference standard**      *n/a*





## 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	WEIGHT	DESTINATION
RENOLIT ALKORPLAN A – 1.5 mm	0.148	Reuse
	0.007	Recycling
RENOLIT ALKORPLAN L – 1.5 mm	0.060	Reuse
	0.006	Recycling
RENOLIT ALKORPLAN F Bright	0.118	Reuse
	0.013	Recycling
	0.011	Energy recovery
RENOLIT ALKORPLAN F Smart	0.057	Reuse
	0.011	Recycling
	0.022	Energy recovery
RENOLIT ALKORPLAN F – 1.5 mm (1.6 m)	0.097	Reuse
	0.010	Recycling
	0.009	Energy recovery

**Assessment procedure** 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.  
For a refurbishment, all waste production that is required for the refurbishment will be considered, including any possible demolitions.  
Between 50% and 75% by mass of the total waste generated on site should be guaranteed to be recovered.

**Example analysis** n/a

<b>Supporting documentation</b>	<i>Environmental Product Declaration (EPD) for each product</i>
<b>Reference standard</b>	<i>n/a</i>





## CATEGORY NATURAL RESOURCES

### NR 11, Building life cycle assessment (VERDE Buildings 2022)

**Objective** Make a responsible choice of materials considering the impacts associated with their life cycle.

**Compliance information** **RENOLIT** has developed EPDs for its ALKORPLAN products. The impacts of stages A1-A3 are shown below, reflected in the EPDs of each product that can be used to calculate the building's LCA (life cycle assessment). However, this is only a partial contribution as the final result will depend on all the materials to be included in the building's LCA. The environmental impact and resource use data for the different products are:

#### RENOLIT ALKORPLAN A – 1.5 mm:

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3.40E+00	1.11E-01	6.10E-03	0.00E+00	3.68E-02	1.27E+00	2.10E-01	-6.23E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3.18E+00	1.09E-01	6.05E-03	0.00E+00	3.61E-02	1.27E+00	2.09E-01	-3.90E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3.40E+00	1.10E-01	6.07E-03	0.00E+00	3.62E-02	1.27E+00	2.10E-01	-6.22E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-2.07E-01	-1.52E-03	-5.07E-05	0.00E+00	-4.59E-04	2.16E-04	-5.62E-04	2.32E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2.41E-03	1.00E-03	3.52E-05	0.00E+00	3.25E-04	9.68E-05	5.32E-05	-3.61E-04	
Ozone depletion	[kg CFC-11 eq.]	6.71E-11	1.41E-14	2.83E-14	0.00E+00	4.66E-15	9.03E-13	1.97E-13	-5.23E-12	
Acidification	[Mole of H+ eq.]	6.28E-03	1.47E-04	1.05E-05	0.00E+00	5.14E-05	2.82E-04	1.85E-04	-9.04E-04	
Eutrophication - freshwater	[kg P eq.]	1.23E-05	3.99E-07	1.70E-08	0.00E+00	1.28E-07	2.65E-07	9.64E-06	-1.42E-06	
Eutrophication - marine	[kg N eq.]	1.88E-03	5.14E-05	3.51E-06	0.00E+00	1.91E-05	9.17E-05	4.57E-05	-2.94E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1.99E-02	6.12E-04	4.00E-05	0.00E+00	2.22E-04	1.21E-03	5.28E-04	-3.20E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	9.52E-03	1.28E-04	8.86E-06	0.00E+00	4.65E-05	2.61E-04	1.41E-04	-1.16E-03	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3.54E-06	7.12E-09	6.50E-10	0.00E+00	2.31E-09	7.94E-09	2.31E-09	-4.29E-08	
Resource use - fossil	[MJ]	8.30E+01	1.47E+00	1.02E-01	0.00E+00	4.78E-01	2.01E+00	9.97E-01	-1.32E+01	
Water use	[m³ world equiv.]	1.29E+00	1.31E-03	2.64E-03	0.00E+00	4.24E-04	1.25E-01	1.49E-02	-4.99E-02	
Resource use indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
Use of renewable primary energy (PERE)	[MJ]	3.80E+01	1.07E-01	3.53E-02	0.00E+00	3.48E-02	4.71E-01	1.26E-01	-5.27E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2.29E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	3.80E+01	1.07E-01	3.53E-02	0.00E+00	3.48E-02	4.71E-01	1.26E-01	-5.27E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	5.76E+01	1.48E+00	1.02E-01	0.00E+00	4.80E-01	2.01E+00	9.97E-01	-1.32E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2.54E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8.31E+01	1.48E+00	1.02E-01	0.00E+00	4.80E-01	2.01E+00	9.97E-01	-1.32E+01	
Use of secondary material (SM)	[MJ]	4.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use of net fresh water (FW)	[m3]	2.81E-02	1.17E-04	3.96E-05	0.00E+00	3.81E-05	3.14E-03	4.00E-04	-2.69E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	



**RENOLIT ALKORPLAN L – 1.5 mm:**

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	2,36E+00	8,72E-02	3,90E-03	0,00E+00	1,53E-02	1,06E+00	1,78E-01	-5,08E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	2,28E+00	8,60E-02	3,88E-03	0,00E+00	1,51E-02	1,06E+00	1,75E-01	-4,12E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	2,35E+00	8,64E-02	3,89E-03	0,00E+00	1,52E-02	1,06E+00	1,78E-01	-5,05E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-7,61E-02	-1,20E-03	-2,04E-05	0,00E+00	-1,92E-04	1,81E-04	-4,70E-04	9,32E-02	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	1,78E-03	7,90E-04	1,52E-05	0,00E+00	1,38E-04	8,10E-05	4,45E-05	-2,30E-04	
Ozone depletion	[kg CFC-11 eq.]	4,80E-11	1,11E-14	2,80E-14	0,00E+00	1,91E-15	7,56E-13	1,65E-13	-4,28E-12	
Acidification	[Mole of H+ eq.]	4,86E-03	1,16E-04	6,65E-06	0,00E+00	2,15E-05	2,36E-04	1,55E-04	-6,98E-04	
Eutrophication - freshwater	[kg P eq.]	5,83E-06	3,12E-07	9,14E-09	0,00E+00	5,37E-08	2,22E-07	8,07E-08	-1,14E-06	
Eutrophication - marine	[kg N eq.]	1,34E-03	4,05E-05	2,16E-06	0,00E+00	7,89E-06	7,67E-05	3,83E-05	-2,22E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1,45E-02	4,82E-04	2,42E-05	0,00E+00	9,27E-05	1,01E-03	4,42E-04	-2,41E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	7,34E-03	1,01E-04	5,66E-06	0,00E+00	1,95E-05	2,18E-04	1,18E-04	-8,92E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3,67E-06	5,61E-09	5,08E-10	0,00E+00	9,67E-10	6,65E-09	1,94E-09	-3,44E-08	
Resource use - fossil	[MJ]	5,94E+01	1,10E+00	7,29E-02	0,00E+00	2,00E-01	1,69E+00	8,34E-01	-1,08E+01	
Water use	[m³ world equiv.]	9,65E-01	1,03E-03	2,61E-03	0,00E+00	1,77E-04	1,05E-01	1,25E-02	-3,89E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	2,62E+01	8,45E-02	3,32E-02	0,00E+00	1,46E-02	3,94E-01	1,06E-01	-3,25E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	1,09E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	2,62E+01	8,45E-02	3,32E-02	0,00E+00	1,46E-02	3,94E-01	1,06E-01	-3,25E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	3,37E+01	1,17E+00	7,30E-02	0,00E+00	2,01E-01	1,69E+00	8,35E-01	-1,08E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2,57E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	5,94E+01	1,17E+00	7,30E-02	0,00E+00	2,01E-01	1,69E+00	8,35E-01	-1,08E+01	
Use of secondary material (SM)	[MJ]	3,62E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m³]	2,02E-02	9,26E-05	3,73E-05	0,00E+00	1,59E-05	2,63E-03	3,35E-04	-2,18E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F – 1.5 mm (1.6 m):**

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	2,81E+00	9,61E-02	4,21E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,44E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	2,88E+00	9,48E-02	4,08E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-3,93E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	2,81E+00	9,53E-02	4,21E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,44E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-1,33E-01	-1,32E-03	-1,28E-02	0,00E+00	-3,95E-04	1,86E-04	-4,83E-04	1,51E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	1,85E-03	8,71E-04	4,86E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-2,82E-04	
Ozone depletion	[kg CFC-11 eq.]	5,26E-11	1,22E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-4,80E-12	
Acidification	[Mole of H+ eq.]	5,79E-03	1,27E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-7,72E-04	
Eutrophication - freshwater	[kg P eq.]	8,26E-06	3,44E-07	4,56E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,31E-06	
Eutrophication - marine	[kg N eq.]	1,58E-03	4,47E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,48E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1,70E-02	5,32E-04	3,25E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,69E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	8,38E-03	1,11E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-9,79E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3,41E-06	6,19E-09	7,00E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,78E-08	
Resource use - fossil	[MJ]	6,99E+01	1,28E+00	7,62E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,16E+01	
Water use	[m³ world equiv.]	1,11E+00	1,14E-03	1,83E-01	0,00E+00	3,85E-04	1,08E-01	1,28E-02	-4,37E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	2,94E+01	9,32E-02	8,92E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,05E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,32E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	2,94E+01	9,32E-02	8,92E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,05E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,22E+01	1,29E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,16E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	6,99E+01	1,29E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,16E+01	
Use of secondary material (SM)	[MJ]	3,44E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m³]	2,30E-02	1,02E-04	4,36E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,38E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F Bright:**

Environmental impact indicators	Module	Manufacture		Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
<b>EN 15804 +A2</b>									
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3,39E+00	9,77E-02	4,28E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,54E-01
Global warming potential (GWP) - Total	[kg CO2 eq.]	3,22E+00	9,63E-02	4,15E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-3,69E-01
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3,39E+00	9,68E-02	4,28E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,54E-01
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-1,84E-01	-1,34E-03	-1,28E-02	0,00E+00	-3,95E-04	1,88E-04	-4,83E-04	1,85E-01
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2,16E-03	8,65E-04	5,44E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-3,00E-04
Ozone depletion	[kg CFC-11 eq.]	7,87E-11	1,24E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-5,08E-12
Acidification	[Mole of H+ eq.]	7,78E-03	1,29E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-8,00E-04
Eutrophication - freshwater	[kg P eq.]	1,26E-05	3,49E-07	4,61E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,38E-06
Eutrophication - marine	[kg N eq.]	2,00E-03	4,54E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,59E-04
Eutrophication - terrestrial	[Mole of N eq.]	2,15E-02	5,40E-04	3,25E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,81E-03
Photochemical ozone formation, human health	[kg NMVOC eq.]	1,03E-02	1,13E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-1,01E-03
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	4,24E-06	6,29E-09	7,90E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,89E-08
Resource use - fossil	[MJ]	8,31E+01	1,30E+00	7,63E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,18E+01
Water use	[m³ world equiv.]	1,71E+00	1,15E-03	1,84E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,58E-02
<b>Resource use indicators</b>									
Use of renewable primary energy (PERE)	[MJ]	4,35E+01	9,47E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,46E+00
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,81E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT)	[MJ]	4,35E+01	9,47E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,46E+00
Use of non-renewable primary energy (PENRE)	[MJ]	4,97E+01	1,31E+00	7,63E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	3,35E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8,32E+01	1,31E+00	7,63E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01
Use of secondary material (SM)	[MJ]	1,80E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	[m3]	3,16E-02	1,04E-04	4,38E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,45E-03
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

**RENOLIT ALKORPLAN F Smart:**

Environmental impact indicators	Module	Manufacture		Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
<b>EN 15804 +A2</b>									
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3,40E+00	9,78E-02	4,59E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,51E-01
Global warming potential (GWP) - Total	[kg CO2 eq.]	3,33E+00	9,65E-02	4,47E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-4,84E-01
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3,40E+00	9,69E-02	4,59E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,51E-01
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-6,55E-02	-1,34E-03	-1,27E-02	0,00E+00	-3,95E-04	1,88E-04	-4,83E-04	8,67E-02
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2,19E-03	8,66E-04	4,25E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-2,38E-04
Ozone depletion	[kg CFC-11 eq.]	8,41E-11	1,24E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-4,71E-12
Acidification	[Mole of H+ eq.]	7,21E-03	1,30E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-7,55E-04
Eutrophication - freshwater	[kg P eq.]	1,39E-05	3,50E-07	4,57E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,29E-06
Eutrophication - marine	[kg N eq.]	1,94E-03	4,54E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,38E-04
Eutrophication - terrestrial	[Mole of N eq.]	2,09E-02	5,41E-04	3,26E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,58E-03
Photochemical ozone formation, human health	[kg NMVOC eq.]	1,02E-02	1,13E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-9,46E-04
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	4,41E-06	6,30E-09	7,90E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,83E-08
Resource use - fossil	[MJ]	8,48E+01	1,30E+00	7,62E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,17E+01
Water use	[m³ world equiv.]	1,71E+00	1,16E-03	1,87E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,31E-02
<b>Resource use indicators</b>									
Use of renewable primary energy (PERE)	[MJ]	4,52E+01	9,48E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-3,41E+00
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy resources (PERT)	[MJ]	4,52E+01	9,48E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-3,41E+00
Use of non-renewable primary energy (PENRE)	[MJ]	4,98E+01	1,31E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,17E+01
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	3,50E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8,48E+01	1,31E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,17E+01
Use of secondary material (SM)	[MJ]	1,54E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water (FW)	[m3]	3,28E-02	1,04E-04	4,45E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,40E-03
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

**Assessment procedure**

The building is assessed against this criterion through the development of a building LCA for stages A1-A3, B4, B6, C3, C4 and D according to UNE-EN 15978:2012.

Four possible ranges are proposed for the system boundary:

- Analysis of building elements (as an aid to design)
- Partial analysis of the building, scope 1 (including structure, envelope, and interior partitions)
- Partial analysis of the building, scope 2 (includes envelope, structure, interior partitions and heating, ventilation, and cooling systems).

**Example analysis**            *n/a*

**Supporting documentation**    *Environmental Product Declaration (EPD)*

**Reference standard**            *n/a*





## CATEGORY NATURAL RESOURCES

### ◆ NR 12, Product ecolabelling (VERDE Buildings 2022)

<b>Objective</b>	Encourage the use of products with Type I or Type III ecolabels.
<b>Compliance information</b>	<b>RENOLIT ALKORPLAN A</b> , <b>RENOLIT ALKORPLAN L</b> and <b>RENOLIT ALKORPLAN F</b> , have their respective EPDs, so these products contribute to gaining this credit.
<b>Assessment procedure</b>	<p>The building is assessed against this criterion by calculating the percentage by mass of materials that have a type I or type III ecolabel.</p> <p>The percentage of materials with a Type I ecolabel should be between 10% and 20%.</p> <p>Between 70 and 100% by mass of the ceramic, aggregate, stone, and concrete elements should have EPDs. Between 20% and 40% (by mass) of the other materials (excluding ceramic, aggregate, stone, and concrete elements) should have EPDs. Among the materials with EPDs there should be at least the following families: structural elements, insulation, and coatings. Among the EPDs provided, at least 50% should have an LCA in all phases of the life cycle or consider all the indicators identified in the UNE-EN 15804 standard.</p>
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<i>Environmental Product Declaration (EPD)</i>
<b>Reference standard</b>	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

### 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** (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

<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>	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. The <b>RENOLIT ALKORPLAN Green</b> system includes most of the components necessary to build a green roof.
<b>Assessment procedure</b>	1. Restore 30% of the altered site with native or adapted plants. Justify the soil composition: - Soils (imported or in situ) must be reused for functions comparable to their original function. - Restored soils must meet soil criteria in terms of 1. Organic content, 2. Compaction, and 3. Infiltration rate. They must also comply with one of the following two categories: 4. Biological function of the soil and 5. Chemical characteristics of the soil.
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<b><i>DT_RENOLIT ALKORPLAN Green.pdf</i></b>
<b>Reference standard</b>	<ul style="list-style-type: none"> <li>• <i>U.S. EPA ecoregions: <a href="http://epa.gov">epa.gov</a></i></li> <li>• <i>Land Trust Alliance accreditation: <a href="http://landtrustalliance.org">landtrustalliance.org</a></i></li> <li>• <i>Natural Resources Conservation Service, web soil survey: <a href="http://websoilsurvey.nrcs.usda.gov">websoilsurvey.nrcs.usda.gov</a></i></li> <li>• <i>Sustainable Sites Initiative (SITES™): <a href="http://sustainablesites.org">sustainablesites.org</a></i></li> </ul>



## CATEGORY SUSTAINABLE SITES (SS)

### SSc3, Open space (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

<b>Objective</b>	To promote biodiversity via a high proportion of open spaces.
<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).</p> <p>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>	<i>DT_ RENOLIT ALKORPLAN Green.pdf</i>
<b>Reference standard</b>	n/a



## CATEGORY SUSTAINABLE SITES (SS)

### SSc4, Rainwater management (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

<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>Option 1. Percentage of precipitation events. 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><i>DT_RENOLIT ALKORPLAN Green.pdf</i></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 (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

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

**Compliance information** If the waterproofing membranes are the outermost layer of the roof, they can determine the solar reflectance index (SRI) of the roof. **RENOLIT** has the SRI tests according to ASTM E1980-11 for the following products:

PRODUCT	SRI (%)
RENOLIT ALKORPLAN Bright	115
RENOLIT ALKORPLAN Smart Grey	62.8
RENOLIT ALKORPLAN Smart Ivory	82.5

\* The LEED guide proposes ASTM E903 E892 as a reference. The manufacturer provides values according to ASTM E1980-11. According to the accredited laboratories (CRRC Label and EELab) the difference does not exceed 1.5% in any case. The most restrictive value is used.

### Assessment procedure

#### Option 1. Non-roof and roof

##### 1. Non-roof (BD+C, CI)

(Option 3, Existing Buildings):

- 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.
- Provide shade or paving with planted structures.
- Use an open-grid pavement system (at least 50% unbound).

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

##### 2. Roof: (BD+C, CI)

(Option 2. Roof Existing Buildings)

- 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

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

> Roof installations and skylights are excluded from the calculation.

**Option 2. Covered parking**

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**

**Test for each membrane according to ASTM E1980-11**

**Reference standard**

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





## CATEGORY MATERIALS AND RESOURCES (MR)

### MRp2 and MRc5, Construction and demolition waste management planning (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

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

**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	WEIGHT	DESTINATION
<b>RENOLIT ALKORPLAN A – 1.5 mm</b>	0.148	Reuse
	0.007	Recycling
<b>RENOLIT ALKORPLAN L – 1.5 mm</b>	0.060	Reuse
	0.006	Recycling
<b>RENOLIT ALKORPLAN F Bright</b>	0.118	Reuse
	0.013	Recycling
	0.011	Energy recovery
<b>RENOLIT ALKORPLAN F Smart</b>	0.057	Reuse
	0.011	Recycling
	0.022	Energy recovery
<b>RENOLIT ALKORPLAN F – 1.5 mm (1.6 m)</b>	0.097	Reuse
	0.010	Recycling
	0.009	Energy recovery

Due to their fixing systems, the products **RENOLIT ALKORPLAN L**, **RENOLIT ALKORPLAN F** and **RENOLIT ALKORPLAN A** 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.

PRODUCT	% REUSABLE MATERIAL	% RECYCLABLE MATERIAL
Alkorplan A	0%	10%
Alkorplan L	0%	10%
Alkorplan F	0%	10%

**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. (BD+C, CI)

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**

*Environmental Product Declaration (EPD) for each product (3.2.2 A5)*

**Reference standard**

n/a



## CATEGORY MATERIALS AND RESOURCES (MR)

### MRc1, Building life-cycle impact reduction (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

**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 its ALKORPLAN products. The impacts of stages A1-A3 are shown below, reflected in the EPDs of each product that can be used to calculate the building’s LCA (life cycle assessment). However, this is only a partial contribution as the result will depend on all the materials to be included in the building’s LCA. The environmental impact and resource use data for the different products are:

#### RENOLIT ALKORPLAN A – 1.5 mm:

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3.40E+00	1.11E-01	6.10E-03	0.00E+00	3.68E-02	1.27E+00	2.10E-01	-6.23E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3.19E+00	1.09E-01	6.05E-03	0.00E+00	3.61E-02	1.27E+00	2.09E-01	-3.90E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3.40E+00	1.10E-01	6.07E-03	0.00E+00	3.62E-02	1.27E+00	2.10E-01	-6.22E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-2.07E-01	-1.52E-03	-5.07E-05	0.00E+00	-4.59E-04	2.18E-04	-5.82E-04	2.32E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2.41E-03	1.00E-03	3.52E-05	0.00E+00	3.25E-04	9.68E-05	5.32E-05	-3.61E-04	
Ozone depletion	[kg CFC-11 eq.]	6.71E-11	1.41E-14	2.83E-14	0.00E+00	4.56E-15	9.03E-13	1.97E-13	-5.23E-12	
Acidification	[Mole of H+ eq.]	6.29E-03	1.47E-04	1.05E-05	0.00E+00	5.14E-05	2.82E-04	1.85E-04	-9.04E-04	
Eutrophication - freshwater	[kg P eq.]	1.23E-05	3.99E-07	1.70E-08	0.00E+00	1.28E-07	2.65E-07	9.64E-06	-1.42E-06	
Eutrophication - marine	[kg N eq.]	1.86E-03	5.14E-05	3.51E-06	0.00E+00	1.91E-05	9.17E-05	4.57E-05	-2.94E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1.99E-02	6.12E-04	4.00E-05	0.00E+00	2.22E-04	1.21E-03	5.28E-04	-3.20E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	9.52E-03	1.28E-04	8.86E-06	0.00E+00	4.85E-05	2.61E-04	1.41E-04	-1.18E-03	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3.54E-06	7.12E-09	6.50E-10	0.00E+00	2.31E-09	7.94E-09	2.31E-09	-4.29E-08	
Resource use - fossil	[MJ]	8.30E+01	1.47E+00	1.02E-01	0.00E+00	4.78E-01	2.01E+00	9.97E-01	-1.32E+01	
Water use	[m³ world equiv.]	1.29E+00	1.31E-03	2.64E-03	0.00E+00	4.24E-04	1.25E-01	1.49E-02	-4.99E-02	
Resource use indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
Use of renewable primary energy (PERE)	[MJ]	3.80E+01	1.07E-01	3.53E-02	0.00E+00	3.48E-02	4.71E-01	1.26E-01	-5.27E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2.29E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	3.80E+01	1.07E-01	3.53E-02	0.00E+00	3.48E-02	4.71E-01	1.26E-01	-5.27E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	5.76E+01	1.48E+00	1.02E-01	0.00E+00	4.80E-01	2.01E+00	9.97E-01	-1.32E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2.54E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8.31E+01	1.48E+00	1.02E-01	0.00E+00	4.80E-01	2.01E+00	9.97E-01	-1.32E+01	
Use of secondary material (SM)	[MJ]	4.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use of net fresh water (FW)	[m3]	2.81E-02	1.17E-04	3.95E-05	0.00E+00	3.81E-05	3.14E-03	4.00E-04	-2.69E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

# FLEXIBLE PVC-P WATERPROOFING MEMBRANES – RENOLIT

## RENOLIT ALKORPLAN L – 1.5 mm:

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	2,36E+00	8,72E-02	3,90E-03	0,00E+00	1,53E-02	1,06E+00	1,78E-01	-5,08E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	2,28E+00	8,60E-02	3,88E-03	0,00E+00	1,51E-02	1,06E+00	1,75E-01	-4,12E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	2,35E+00	8,84E-02	3,89E-03	0,00E+00	1,52E-02	1,06E+00	1,78E-01	-5,05E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-7,61E-02	-1,20E-03	-2,04E-05	0,00E+00	-1,92E-04	1,81E-04	-4,70E-04	9,32E-02	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	1,78E-03	7,90E-04	1,52E-05	0,00E+00	1,38E-04	8,10E-05	4,45E-05	-2,30E-04	
Ozone depletion	[kg CFC-11 eq.]	4,80E-11	1,11E-14	2,80E-14	0,00E+00	1,91E-15	7,56E-13	1,65E-13	-4,28E-12	
Acidification	[Mole of H+ eq.]	4,86E-03	1,16E-04	6,65E-06	0,00E+00	2,15E-05	2,36E-04	1,55E-04	-6,98E-04	
Eutrophication - freshwater	[kg P eq.]	5,83E-06	3,12E-07	9,14E-09	0,00E+00	5,37E-08	2,22E-07	8,07E-08	-1,14E-06	
Eutrophication - marine	[kg N eq.]	1,34E-03	4,05E-05	2,16E-06	0,00E+00	7,89E-06	7,67E-05	3,83E-05	-2,22E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1,45E-02	4,82E-04	2,42E-05	0,00E+00	9,27E-05	1,01E-03	4,42E-04	-2,41E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	7,34E-03	1,01E-04	5,66E-06	0,00E+00	1,95E-05	2,18E-04	1,18E-04	-8,92E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3,67E-06	5,61E-09	5,08E-10	0,00E+00	9,67E-10	6,65E-09	1,94E-09	-3,44E-08	
Resource use - fossil	[MJ]	5,94E+01	1,10E+00	7,29E-02	0,00E+00	2,00E-01	1,69E+00	8,34E-01	-1,08E+01	
Water use	[m³ world equiv.]	9,65E-01	1,03E-03	2,61E-03	0,00E+00	1,77E-04	1,05E-01	1,25E-02	-3,89E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	2,62E+01	8,45E-02	3,32E-02	0,00E+00	1,46E-02	3,94E-01	1,06E-01	-3,25E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	1,09E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	2,62E+01	8,45E-02	3,32E-02	0,00E+00	1,46E-02	3,94E-01	1,06E-01	-3,25E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	3,37E+01	1,17E+00	7,30E-02	0,00E+00	2,01E-01	1,69E+00	8,35E-01	-1,08E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2,57E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	5,94E+01	1,17E+00	7,30E-02	0,00E+00	2,01E-01	1,69E+00	8,35E-01	-1,08E+01	
Use of secondary material (SM)	[MJ]	3,92E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m³]	2,02E-02	9,26E-05	3,73E-05	0,00E+00	1,59E-05	2,63E-03	3,35E-04	-2,18E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

## RENOLIT ALKORPLAN F – 1.5 mm (1.6 m):

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	2,81E+00	9,61E-02	4,21E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,44E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	2,88E+00	9,48E-02	4,08E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-3,93E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	2,81E+00	9,53E-02	4,21E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,44E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-1,33E-01	-1,32E-03	-1,28E-02	0,00E+00	-3,95E-04	1,86E-04	-4,83E-04	1,51E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	1,85E-03	8,71E-04	4,86E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-2,82E-04	
Ozone depletion	[kg CFC-11 eq.]	5,26E-11	1,22E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-4,80E-12	
Acidification	[Mole of H+ eq.]	5,79E-03	1,27E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-7,72E-04	
Eutrophication - freshwater	[kg P eq.]	8,26E-06	3,44E-07	4,56E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,31E-06	
Eutrophication - marine	[kg N eq.]	1,58E-03	4,47E-05	5,46E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,48E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1,70E-02	5,32E-04	3,25E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,69E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	8,38E-03	1,11E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-9,79E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3,41E-06	6,19E-09	7,00E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,78E-08	
Resource use - fossil	[MJ]	6,99E+01	1,28E+00	7,62E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,16E+01	
Water use	[m³ world equiv.]	1,11E+00	1,14E-03	1,83E-01	0,00E+00	3,85E-04	1,08E-01	1,28E-02	-4,37E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	2,94E+01	9,32E-02	8,92E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,05E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,32E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	2,94E+01	9,32E-02	8,92E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,05E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,22E+01	1,29E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,16E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	6,99E+01	1,29E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,16E+01	
Use of secondary material (SM)	[MJ]	3,44E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m³]	2,30E-02	1,02E-04	4,36E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,38E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F Bright:**

Environmental impact indicators	Module Unit	Manufacture			Installation		End of life			
		A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3,39E+00	9,77E-02	4,28E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,54E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3,22E+00	9,63E-02	4,15E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-3,69E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3,39E+00	9,68E-02	4,28E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,54E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-1,84E-01	-1,34E-03	-1,28E-02	0,00E+00	-3,95E-04	1,86E-04	-4,83E-04	1,85E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2,16E-03	8,65E-04	5,44E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-3,09E-04	
Ozone depletion	[kg CFC-11 eq.]	7,87E-11	1,24E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-5,08E-12	
Acidification	[Mole of H+ eq.]	7,78E-03	1,29E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-8,00E-04	
Eutrophication - freshwater	[kg P eq.]	1,26E-05	3,49E-07	4,61E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,38E-06	
Eutrophication - marine	[kg N eq.]	2,00E-03	4,54E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,59E-04	
Eutrophication - terrestrial	[Mole of N eq.]	2,15E-02	5,40E-04	3,25E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,81E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	1,03E-02	1,13E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-1,01E-03	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	4,24E-06	6,29E-09	7,90E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,89E-08	
Resource use - fossil	[MJ]	8,31E+01	1,30E+00	7,63E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,18E+01	
Water use	[m³ world equiv.]	1,71E+00	1,15E-03	1,84E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,58E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	4,35E+01	9,47E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,46E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,81E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	4,35E+01	9,47E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,46E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,97E+01	1,31E+00	7,63E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	3,35E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8,32E+01	1,31E+00	7,63E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01	
Use of secondary material (SM)	[MJ]	1,80E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m3]	3,16E-02	1,04E-04	4,38E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,45E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F Smart:**

Environmental impact indicators	Module Unit	Manufacture			Installation		End of life			
		A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3,40E+00	9,78E-02	4,59E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,51E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3,33E+00	9,65E-02	4,47E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-4,64E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3,40E+00	9,69E-02	4,59E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,51E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-6,55E-02	-1,34E-03	-1,27E-02	0,00E+00	-3,95E-04	1,86E-04	-4,83E-04	8,67E-02	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2,19E-03	8,66E-04	4,25E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-2,38E-04	
Ozone depletion	[kg CFC-11 eq.]	8,41E-11	1,24E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-4,71E-12	
Acidification	[Mole of H+ eq.]	7,21E-03	1,30E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-7,55E-04	
Eutrophication - freshwater	[kg P eq.]	1,39E-05	3,50E-07	4,57E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,29E-06	
Eutrophication - marine	[kg N eq.]	1,94E-03	4,54E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,38E-04	
Eutrophication - terrestrial	[Mole of N eq.]	2,08E-02	5,41E-04	3,26E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,58E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	1,02E-02	1,13E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-9,48E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	4,41E-06	6,30E-09	7,90E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,83E-08	
Resource use - fossil	[MJ]	8,48E+01	1,30E+00	7,62E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,17E+01	
Water use	[m³ world equiv.]	1,71E+00	1,16E-03	1,87E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,31E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	4,52E+01	9,48E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-3,41E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,98E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	4,52E+01	9,48E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-3,41E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,98E+01	1,31E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,17E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	3,50E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8,48E+01	1,31E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,17E+01	
Use of secondary material (SM)	[MJ]	1,54E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m3]	3,28E-02	1,04E-04	4,45E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,40E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

<b>Assessment procedure</b>	<p>For new construction, only these two options are valid:</p> <p>Option 3. Material reuse Permanent elements are included: structure, envelope, interior distribution, etc. (25-50-75% of the material with respect to the total surface area of the materials)</p> <p>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.</p> <ul style="list-style-type: none"> <li>- global warming potential (greenhouse gases), in CO<sub>2</sub>e</li> <li>- depletion of the stratospheric ozone layer, in kg CFC-11</li> <li>- acidification of land and water sources, in moles H<sup>+</sup> or kg SO<sub>2</sub></li> <li>- eutrophication, in kg nitrogen or kg phosphate</li> <li>- use of non-renewable energy resources, in MJ</li> </ul>
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<b><i>Environmental Product Declaration (EPD)</i></b>
<b>Reference standard</b>	n/a





## CATEGORY MATERIALS AND RESOURCES (MR)

### MRc2, Building product disclosure and optimisation – Environmental Product Declarations (EPD) (LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)

<b>Objective</b>	Promote the use of materials with life cycle information and details of their environmental, economic and social impacts.
<b>Compliance information</b>	<b>RENOLIT ALKORPLAN A</b> , <b>RENOLIT ALKORPLAN L</b> and <b>RENOLIT ALKORPLAN F</b> have their respective EPD and therefore these products contribute to the achievement of option 1 of this credit.
<b>Assessment procedure</b>	<p>Option 1: Environmental Product Declarations (EPD) 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>– Industry-wide EPD (generic) (valued ½)</li> <li>– Product-specific Type III EPD (valued 1)</li> </ul> </li> </ul>
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<b>Environmental Product Declaration (EPD)</b>
<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/gnrule/guides980427.htm</i></li> </ul>



**CATEGORY**  
**MATERIALS AND RESOURCES (MR)**

**MRc3, Building product disclosure and optimisation – Sourcing of raw materials**  
**(LEED BD+C: NC, CS, SNC, RNC, HC, HNC, DCNC, WNC)**

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

**Compliance information** The production plant for all **RENOLIT** ALKORPLAN products is located at Carretera de Montnegre, s/n - 08470 Sant Celoni - Spain  
However, the raw material comes from more than 160 km away.

**RENOLIT** ALKORPLAN membranes contain recycled material which is always of pre-consumer origin and present in a variable percentage depending on the characteristics of the product.  
**RENOLIT** provides self-declarations of recycled content.

PRODUCT	% POST-CONSUMPTION RECYCLED MATERIAL	% PRE-CONSUMPTION RECYCLED MATERIAL
RENOLIT ALKORPLAN A	0%	20-30%
RENOLIT ALKORPLAN L	0%	20-30%
RENOLIT ALKORPLAN F	0%	20-60%
RENOLIT ALKORPLAN F Smart	0%	10-15%
RENOLIT ALKORPLAN F Bright	0%	10-20%

\* PVC-P is the only component that incorporates recycled content.  
The above values are calculated on the total.

**Assessment procedure**

**Option 1. Raw material source and extraction reporting**

Use a minimum of 20 materials (from 5 different suppliers), which have verifiable information on their extraction process and commitment to the preservation of the environment.

They must comply with at least one of the following programmes and requirements:

- Third-party verified Corporate Sustainability Reports (CSR)
- GRI Sustainability report, OECD guidelines for Multinational Enterprises, UN Global Compact, ISO 26000 etc.
- Self-declarations (valued ½)

**Option 2. Leadership extraction practices**

At least 25% of the products used in the works (by cost) must comply with at least one of the following points:  
products of organic origin, FSC and CoC certified timber, reused materials, materials with recycled content.  
Materials extracted and produced at less than 160 km from the construction site will be valued at 200%.

**Example analysis**

n/a

**Supporting documentation**

*Environmental Product Declaration (EPD)*

**Reference standard**

*International Standards ISO 14021–1999, Environmental Labels and Declarations—Self Declared Environmental Claims (Type II Environmental Labeling): [iso.org/iso/catalogue\\_detail.htm?csnumber=23146](http://iso.org/iso/catalogue_detail.htm?csnumber=23146)*

# 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

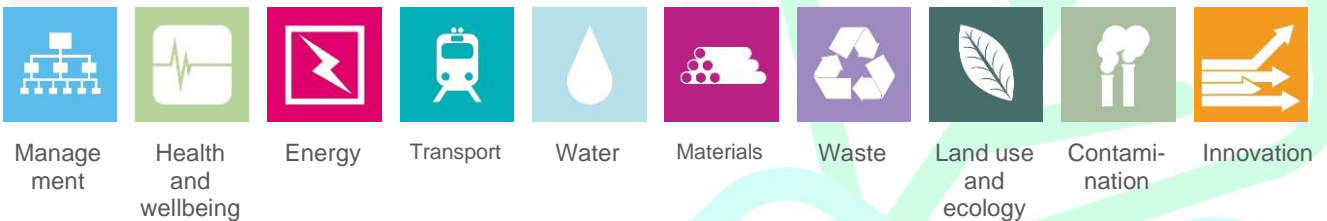
- ◆ MAT 01 Life cycle impacts
- ◆ MAT 03 Responsible sourcing of construction products (BREEAM ES New Construction 2015)
- ◆



### WASTE

- ◆ WST 01 Construction waste management

### BREEAM ES environmental categories



Management

Health and wellbeing

Energy

Transport

Water

Materials

Waste

Land use and ecology

Contamination

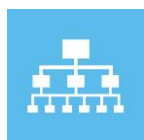
Innovation

### BREEAM ES certification standards

UR BREEAM ES Urban Planning      VIV BREEAM ES Home      USO BREEAM ES In-use  
 NC BREEAM ES New Construction

# CREDIT SHEET

## BREAME S



### CATEGORY MANAGEMENT

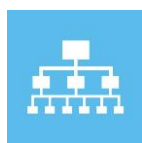
- ◆ **MAN 03 Construction site impacts**  
(BREEAM ES NEW CONSTRUCTION 2015)
- ◆ **MAN 03 Responsible building practices**  
(BREEAM ES HOME 2020)

<b>Objective</b>	To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption and pollution. Criteria relevant to: <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>Regarding the supply of RENOLIT ALKORPLAN products, the company <b>RENOLIT</b> uses wood material supplied by Embalajes del Vallés S.L. which follows a forestry product chain-of-custody control system N°: PEFC/14-35-00391.</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><u>Transport of construction materials and waste (one point)</u> 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><u>Timber procurement (one point)</u> 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>	The transport credit calculation should be made on a case-by-case basis depending on the location of the building, the intermediate storage and its distribution.
<b>Supporting documentation</b>	<b><i>Declaration of location provided by the manufacturer ISO 9001 EN</i></b>

**R- 31-C DECLARACION SDD PEFC - EMBALAJES DEL VALLÉS - RENOLIT  
IBERICA, S.A. - 2023.pdf  
AEN-PEFC-COC-0069\_ES.pdf**

**Reference  
standard**

- National Atmospheric Emissions Inventory (Netcen, 2005) based on DTI data combined with TRL factors such as functions of the average speed of the vehicles, derived from data from tests carried out in real test cycles.
- UK Energy Statistics Summary (DTI, 2004) and carbon factors for fuels (UKPIA, 2004).
- Guidelines for Corporate Reporting of 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)**

<b>Objective</b>	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.
<b>Compliance information</b>	To check product prices, please contact <b>RENOLIT</b> (Jennifer Che - 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.
<b>Assessment procedure</b>	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: i. Construction: includes investment costs. ii. Operation: includes, as a minimum, installation, cleaning, and management costs. iii. Maintenance: includes, as a minimum, planned maintenance, replacement, and repair costs.
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<i>Selective demolition plan provided by the manufacturer</i>
<b>Reference standard</b>	<ul style="list-style-type: none"> <li>• UNE-EN 15643-4:2012 Sustainability of construction works. Sustainability assessment of buildings. Part 4: Framework for the assessment of economic performance.</li> <li>• UNE-EN 15978:2012 Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method</li> </ul>



**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** **Type I, II and III environmental labels:** **RENOLIT** has developed EPDs for its ALKORPLAN products (Label Type III), valid until 06/09/2028. The data contained in the EPDs complies with UNE EN ISO 14025 and has been verified according to the UNE EN 15804 standard.

**Life cycle assessment:** Impacts shown in the EPDs can be used for the LCA, contributing to compliance with option 2. The table below shows the impacts reflected in the EPDs of each product. These results can be used to calculate the LCA of the building.

However, this is only a partial contribution as the result will depend on all the materials to be included in the building’s LCA.

**RENOLIT ALKORPLAN A – 1.5 mm:**

Environmental impact indicators	Module Unit	Manufacture			Installation		End of life			
		A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3.40E+00	1.11E-01	6.10E-03	0.00E+00	3.68E-02	1.27E+00	2.10E-01	-6.23E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3.18E+00	1.09E-01	6.05E-03	0.00E+00	3.61E-02	1.27E+00	2.09E-01	-3.90E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3.40E+00	1.10E-01	6.07E-03	0.00E+00	3.62E-02	1.27E+00	2.10E-01	-6.22E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-2.07E-01	-1.52E-03	-5.07E-05	0.00E+00	-4.59E-04	2.16E-04	-5.62E-04	2.32E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2.41E-03	1.00E-03	3.52E-05	0.00E+00	3.25E-04	9.68E-05	5.32E-05	-3.61E-04	
Ozone depletion	[kg CFC-11 eq.]	6.71E-11	1.41E-14	2.83E-14	0.00E+00	4.66E-15	9.03E-13	1.97E-13	-5.23E-12	
Acidification	[Mole of H+ eq.]	6.28E-03	1.47E-04	1.05E-05	0.00E+00	5.14E-05	2.82E-04	1.85E-04	-9.04E-04	
Eutrophication - freshwater	[kg P eq.]	1.23E-05	3.99E-07	1.70E-08	0.00E+00	1.28E-07	2.65E-07	9.64E-06	-1.42E-06	
Eutrophication - marine	[kg N eq.]	1.88E-03	5.14E-05	3.51E-06	0.00E+00	1.91E-05	9.17E-05	4.57E-05	-2.94E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1.99E-02	6.12E-04	4.00E-05	0.00E+00	2.22E-04	1.21E-03	5.28E-04	-3.20E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	9.52E-03	1.28E-04	8.86E-06	0.00E+00	4.65E-05	2.61E-04	1.41E-04	-1.18E-03	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3.54E-06	7.12E-09	6.50E-10	0.00E+00	2.31E-09	7.94E-09	2.31E-09	-4.29E-08	
Resource use - fossil	[MJ]	8.30E+01	1.47E+00	1.02E-01	0.00E+00	4.78E-01	2.01E+00	9.97E-01	-1.32E+01	
Water use	[m³ world equiv.]	1.28E+00	1.31E-03	2.64E-03	0.00E+00	4.24E-04	1.25E-01	1.49E-02	-4.99E-02	
Resource use Indicators	Module Unit	Manufacture			Installation		End of life			
Use of renewable primary energy (PERE)	[MJ]	3.80E+01	1.07E-01	3.53E-02	0.00E+00	3.48E-02	4.71E-01	1.26E-01	-5.27E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2.29E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	3.80E+01	1.07E-01	3.53E-02	0.00E+00	3.48E-02	4.71E-01	1.26E-01	-5.27E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	5.76E+01	1.48E+00	1.02E-01	0.00E+00	4.80E-01	2.01E+00	9.97E-01	-1.32E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2.54E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8.31E+01	1.48E+00	1.02E-01	0.00E+00	4.80E-01	2.01E+00	9.97E-01	-1.32E+01	
Use of secondary material (SM)	[MJ]	4.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use of net fresh water (FW)	[m3]	2.81E-02	1.17E-04	3.96E-05	0.00E+00	3.81E-05	3.14E-03	4.00E-04	-2.69E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	



**RENOLIT ALKORPLAN L – 1.5 mm:**

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	2,38E+00	8,72E-02	3,90E-03	0,00E+00	1,53E-02	1,08E+00	1,78E-01	-5,08E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	2,28E+00	8,60E-02	3,88E-03	0,00E+00	1,51E-02	1,08E+00	1,75E-01	-4,12E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	2,35E+00	8,84E-02	3,89E-03	0,00E+00	1,52E-02	1,08E+00	1,78E-01	-5,05E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-7,81E-02	-1,20E-03	-2,04E-05	0,00E+00	-1,92E-04	1,81E-04	-4,70E-04	9,32E-02	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	1,78E-03	7,90E-04	1,52E-05	0,00E+00	1,38E-04	8,10E-05	4,45E-05	-2,30E-04	
Ozone depletion	[kg CFC-11 eq.]	4,80E-11	1,11E-14	2,80E-14	0,00E+00	1,91E-15	7,68E-13	1,65E-13	-4,28E-12	
Acidification	[Mole of H+ eq.]	4,88E-03	1,18E-04	6,95E-08	0,00E+00	2,15E-05	2,38E-04	1,55E-04	-8,88E-04	
Eutrophication - freshwater	[kg P eq.]	5,83E-06	3,12E-07	9,14E-09	0,00E+00	5,37E-08	2,22E-07	8,07E-06	-1,14E-06	
Eutrophication - marine	[kg N eq.]	1,34E-03	4,05E-05	2,16E-06	0,00E+00	7,88E-06	7,67E-05	3,83E-05	-2,22E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1,45E-02	4,82E-04	2,42E-05	0,00E+00	9,27E-05	1,01E-03	4,42E-04	-2,41E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	7,34E-03	1,01E-04	5,69E-08	0,00E+00	1,95E-05	2,18E-04	1,18E-04	-8,92E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3,67E-06	5,81E-09	5,08E-10	0,00E+00	9,87E-10	6,65E-09	1,94E-09	-3,44E-08	
Resource use - fossil	[MJ]	5,94E+01	1,18E+00	7,29E-02	0,00E+00	2,00E-01	1,69E+00	8,34E-01	-1,08E+01	
Water use	[m³ world equiv.]	9,65E-01	1,03E-03	2,61E-03	0,00E+00	1,77E-04	1,05E-01	1,25E-02	-3,89E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	2,82E+01	8,45E-02	3,32E-02	0,00E+00	1,48E-02	3,94E-01	1,08E-01	-3,25E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	1,09E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	2,82E+01	8,45E-02	3,32E-02	0,00E+00	1,48E-02	3,94E-01	1,08E-01	-3,25E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	3,37E+01	1,17E+00	7,30E-02	0,00E+00	2,01E-01	1,69E+00	8,35E-01	-1,08E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2,57E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	5,94E+01	1,17E+00	7,30E-02	0,00E+00	2,01E-01	1,69E+00	8,35E-01	-1,08E+01	
Use of secondary material (SM)	[MJ]	3,82E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m3]	2,02E-02	9,29E-05	3,73E-05	0,00E+00	1,59E-05	2,63E-03	3,35E-04	-2,18E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F – 1.5 mm (1.6 m):**

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	2,81E+00	9,61E-02	4,21E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,44E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	2,68E+00	9,48E-02	4,08E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-3,93E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	2,81E+00	9,53E-02	4,21E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,44E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-1,33E-01	-1,32E-03	-1,28E-02	0,00E+00	-3,85E-04	1,88E-04	-4,83E-04	1,51E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	1,85E-03	8,71E-04	4,88E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-2,82E-04	
Ozone depletion	[kg CFC-11 eq.]	5,26E-11	1,22E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-4,80E-12	
Acidification	[Mole of H+ eq.]	5,78E-03	1,27E-04	3,38E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-7,72E-04	
Eutrophication - freshwater	[kg P eq.]	8,26E-06	3,44E-07	4,56E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-06	-1,31E-06	
Eutrophication - marine	[kg N eq.]	1,58E-03	4,47E-05	5,49E-04	0,00E+00	1,04E-05	7,89E-05	3,94E-05	-2,48E-04	
Eutrophication - terrestrial	[Mole of N eq.]	1,70E-02	5,32E-04	3,25E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,69E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	8,38E-03	1,11E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-9,79E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	3,41E-06	6,19E-09	7,80E-08	0,00E+00	1,98E-09	8,84E-09	1,99E-09	-3,78E-08	
Resource use - fossil	[MJ]	6,99E+01	1,28E+00	7,62E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,18E+01	
Water use	[m³ world equiv.]	1,11E+00	1,14E-03	1,83E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,37E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	2,94E+01	9,32E-02	8,92E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,05E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,32E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	2,94E+01	9,32E-02	8,92E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,05E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,22E+01	1,29E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	2,77E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	6,99E+01	1,29E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01	
Use of secondary material (SM)	[MJ]	3,44E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m3]	2,30E-02	1,02E-04	4,38E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,38E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F Bright:**

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3,39E+00	9,77E-02	4,28E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,54E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3,22E+00	9,63E-02	4,15E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-3,69E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3,39E+00	9,68E-02	4,28E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,54E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-1,84E-01	-1,34E-03	-1,28E-02	0,00E+00	-3,95E-04	1,86E-04	-4,83E-04	1,85E-01	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2,16E-03	8,85E-04	5,44E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-3,09E-04	
Ozone depletion	[kg CFC-11 eq.]	7,87E-11	1,24E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-5,08E-12	
Acidification	[Mole of H+ eq.]	7,78E-03	1,29E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-8,00E-04	
Eutrophication - freshwater	[kg P eq.]	1,28E-05	3,49E-07	4,61E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-08	-1,38E-08	
Eutrophication - marine	[kg N eq.]	2,00E-03	4,54E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,59E-04	
Eutrophication - terrestrial	[Mole of N eq.]	2,15E-02	5,40E-04	3,25E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,81E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	1,03E-02	1,13E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-1,01E-03	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	4,24E-08	6,29E-09	7,90E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,89E-08	
Resource use - fossil	[MJ]	8,31E+01	1,30E+00	7,63E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,18E+01	
Water use	[m³ world equiv.]	1,71E+00	1,15E-03	1,84E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,58E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	4,35E+01	9,47E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,46E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,81E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	4,35E+01	9,47E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-4,46E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,97E+01	1,31E+00	7,63E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	3,35E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8,32E+01	1,31E+00	7,63E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,18E+01	
Use of secondary material (SM)	[MJ]	1,80E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m³]	3,16E-02	1,04E-04	4,38E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,45E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

**RENOLIT ALKORPLAN F Smart:**

Environmental impact indicators	Module	Manufacture			Installation		End of life			
	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D	
<b>EN 15804 +A2</b>										
Global warming potential (GWP) - GHG	[kg CO2 eq.]	3,40E+00	9,78E-02	4,59E-01	0,00E+00	3,15E-02	1,09E+00	1,81E-01	-5,51E-01	
Global warming potential (GWP) - Total	[kg CO2 eq.]	3,33E+00	9,65E-02	4,47E-01	0,00E+00	3,11E-02	1,09E+00	1,80E-01	-4,84E-01	
Global warming potential (GWP) - fossil	[kg CO2 eq.]	3,40E+00	9,69E-02	4,59E-01	0,00E+00	3,12E-02	1,09E+00	1,81E-01	-5,51E-01	
Global warming potential (GWP) - biogenic	[kg CO2 eq.]	-6,55E-02	-1,34E-03	-1,27E-02	0,00E+00	-3,95E-04	1,86E-04	-4,83E-04	8,67E-02	
Global warming potential (GWP) - luluc	[kg CO2 eq.]	2,19E-03	8,86E-04	4,25E-05	0,00E+00	2,79E-04	8,33E-05	4,58E-05	-2,38E-04	
Ozone depletion	[kg CFC-11 eq.]	8,41E-11	1,24E-14	8,42E-09	0,00E+00	3,93E-15	7,77E-13	1,69E-13	-4,71E-12	
Acidification	[Mole of H+ eq.]	7,21E-03	1,30E-04	3,39E-03	0,00E+00	4,42E-05	2,42E-04	1,59E-04	-7,55E-04	
Eutrophication - freshwater	[kg P eq.]	1,39E-05	3,50E-07	4,57E-07	0,00E+00	1,10E-07	2,28E-07	8,29E-08	-1,29E-08	
Eutrophication - marine	[kg N eq.]	1,94E-03	4,54E-05	5,49E-04	0,00E+00	1,64E-05	7,89E-05	3,94E-05	-2,38E-04	
Eutrophication - terrestrial	[Mole of N eq.]	2,09E-02	5,41E-04	3,26E-03	0,00E+00	1,91E-04	1,04E-03	4,54E-04	-2,58E-03	
Photochemical ozone formation, human health	[kg NMVOC eq.]	1,02E-02	1,13E-04	1,03E-03	0,00E+00	4,01E-05	2,24E-04	1,22E-04	-9,48E-04	
Resource use, mineral and metals - minerals&metals	[kg Sb eq.]	4,41E-08	6,30E-09	7,90E-06	0,00E+00	1,99E-09	6,84E-09	1,99E-09	-3,83E-08	
Resource use - fossil	[MJ]	8,48E+01	1,30E+00	7,62E+00	0,00E+00	4,11E-01	1,73E+00	8,58E-01	-1,17E+01	
Water use	[m³ world equiv.]	1,71E+00	1,16E-03	1,87E-01	0,00E+00	3,65E-04	1,08E-01	1,28E-02	-4,31E-02	
<b>Resource use indicators</b>										
Use of renewable primary energy (PERE)	[MJ]	4,52E+01	9,48E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-3,41E+00	
Use of renewable primary energy resources used as raw materials (PERM)	[MJ]	2,89E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy resources (PERT)	[MJ]	4,52E+01	9,48E-02	8,93E-01	0,00E+00	2,99E-02	4,05E-01	1,09E-01	-3,41E+00	
Use of non-renewable primary energy (PENRE)	[MJ]	4,98E+01	1,31E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,17E+01	
Use of non-renewable primary energy resources used as raw materials (PENREM)	[MJ]	3,50E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy resources (PENRT)	[MJ]	8,48E+01	1,31E+00	7,62E+00	0,00E+00	4,13E-01	1,73E+00	8,58E-01	-1,17E+01	
Use of secondary material (SM)	[MJ]	1,54E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of net fresh water (FW)	[m³]	3,26E-02	1,04E-04	4,45E-03	0,00E+00	3,28E-05	2,70E-03	3,44E-04	-2,40E-03	
Use of renewable secondary fuels (RSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels (NRSF)	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

<b>Assessment procedure</b>	<p><b>Type I, II and III environmental labels:</b></p> <ul style="list-style-type: none"> <li>• BREEAM ES Home: specify products with ecolabels Type I, II or III.</li> <li>• BREEAM ES New Construction: specify products with Environmental Product Declarations (EPD) (Type III Label).</li> </ul> <p><b>Life cycle assessment (LCA):</b> The project uses a BREEAM-compliant life cycle assessment (LCA) tool to measure the environmental impact of building elements over their life cycle.</p> <p><b>Exemplary level (1 extra point):</b></p> <ul style="list-style-type: none"> <li>• BREEAM ES Home: 85% of the points are scored for both new construction and refurbishments according to the BREEAM ES MAT 01 calculator.</li> <li>• BREEAM ES New Construction: 85% of the BREEAM points are scored according to the BREEAM ES MAT calculator.</li> </ul>
<b>Example analysis</b>	n/a
<b>Supporting documentation</b>	<i>Environmental Product Declaration (EPD)</i>
<b>Reference standard</b>	<ul style="list-style-type: none"> <li>• <i>UNE-EN ISO 14025:2010. Environmental labels and declarations. Environmental declarations type III. Principles and procedures. (ISO 14025:2006)</i></li> <li>• <i>UNE-EN 15804:2012. Sustainability of construction works. Environmental product declarations. Core product category rules for construction products.</i></li> <li>• <i>UNE-EN 15978:2012. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation methods.</i></li> </ul>



## 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 site for all **RENOLIT** ALKORPLAN products is located at Carretera de Montnegre, s/n - 08470 Sant Celoni - Spain and has an environmental management system (EMS), certified by a third party, for manufacture of the products (EMS certified for the key process phase).

**RENOLIT** ALKORPLAN membranes also contain recycled material which is always of pre-consumer origin and present in a variable percentage depending on the characteristics of the product. **RENOLIT** provides self-declarations of recycled content.

PRODUCT	% POST-CONSUMPTION RECYCLED MATERIAL	% PRE-CONSUMPTION RECYCLED MATERIAL
<b>RENOLIT</b> ALKORPLAN A *	0%	20-30%
<b>RENOLIT</b> ALKORPLAN L	0%	20-30%
<b>RENOLIT</b> ALKORPLAN F	0%	20-60%
<b>RENOLIT</b> ALKORPLAN F Smart	0%	10-15%
<b>RENOLIT</b> ALKORPLAN F Bright	0%	10-20%

\* PVC-P is the only component that incorporates recycled content. The above values are calculated on the total.

For **BREEAM ES New Construction 2015** the Environmental Management System certificate (EMS) for the key process phase corresponds to level 3 certification of responsible sourcing and, as material containing recycled content, it corresponds to level 2.

For **BREEAM ES Home 2020** it will be necessary to use the MAT 03 Calculator and NT 25 “Responsible procurement certification schemes recognised by BREEAM”.

**Assessment procedure**

**Prerequisite:**

Confirmation that all timber used in the project has been “legally harvested and sold”.

**Requirement** Responsibly sourced construction products:

Points are awarded for compliance with responsible sourcing requirements for major building elements. To justify compliance, each product must be certified in accordance with one of the responsible sourcing systems approved by BREEAM.

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**  
**Environmental Product Declaration (EPD)**  
**Declaration of location**

**Reference standard**

- For a list of products approved under the BES6001 standard, as well as additional information on the standard, please visit the website: [www.greenbooklive.com/](http://www.greenbooklive.com/)
- Document to determine the validity of the FSC and PEFC certifications. <http://www.pefc.org/index.php/certification-services/find-certified>
- Databases to search for holders of certifications obtained in accordance with individual certification systems: <http://info.fsc.org/>  
<http://www.pefc.es>

- *UNE-EN ISO 14006:2011. Environmental management systems. Guidelines for the incorporation of ecodesign.*
- *ISO 14001 standard*





**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	WEIGHT	DESTINATION
RENOLIT ALKORPLAN A – 1.5 mm	0.148	Reuse
	0.007	Recycling
RENOLIT ALKORPLAN L – 1.5 mm	0.060	Reuse
	0.006	Recycling
RENOLIT ALKORPLAN F Bright	0.118	Reuse
	0.013	Recycling
	0.011	Energy recovery
RENOLIT ALKORPLAN F Smart	0.057	Reuse
	0.011	Recycling
	0.022	Energy recovery
RENOLIT ALKORPLAN F – 1.5 mm (1.6 m)	0.097	Reuse
	0.010	Recycling
	0.009	Energy recovery

**Assessment procedure** **BREEAM ES New Construction 2015** requirements for construction resource efficiency and the diversion of resources from landfill are as follows:

One point: Compliance with criteria 1-6 is justified by a Site Waste Management Plan (SWMP) that meets certain requirements that ensure the minimisation of hazardous and non-hazardous waste produced.

One point: Compliance with criteria 7-8 is justified by the implementation of procedures for sorting, reusing, and recycling construction waste of at least the proportions of waste identified in the applicable legislation, on-site or off-site, through an authorised external waste manager. Each type of waste must be specified by its code and associated with a waste manager with accredited waste management and recovery capabilities.

One point: Compliance with criteria 9-11 justified by reports/controls that confirm the total waste produced and the key waste groups defined and demonstrating that a significant amount (at least 80%) of demolition waste (if relevant) and non-hazardous construction waste generated in the project have been diverted from landfill.

The **BREEAM ES Home 2020** requirements are:

One point: Compliance with criteria 3-7 justified by a Site Waste Management Plan (SWMP) that meets certain requirements that ensure the minimisation of hazardous and non-hazardous waste produced.

One point: Compliance with criteria 8-9 justified by the implementation of procedures for sorting, reusing, and recycling construction waste from at least at least the groups indicated in the Checklists and Tables section both on-site and off-site through an authorised external waste manager.

One point: Compliance with criteria 10-12 justified with monitoring reports/records confirming that a significant amount (at least 80%) of demolition waste (where applicable) and non-hazardous construction waste generated by the project has been diverted from landfill, in accordance with the figures included in Table 30 of the BREEAM ES Home manual shown below:

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

**Exemplary level:** When a minimum of 95% of non-hazardous construction and demolition waste (if relevant) generated in the project has been diverted from landfill.

**Example analysis** n/a

**Supporting documentation** *Environmental Product Declaration (EPD) for each product (3.2.2 A5)*

**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>