ecophon SAINT-GOBAIN | CLIPSO®

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804 and ISO 14025

CLIPSO 495D

EPD® THE GREEN YARDSTICK

Programme: The International EPD® System, www.environdec.com
Programme operator: EPD International AB
Version: 1.0
Registration number: S-P-12289

Date of publication (issue): 07/12/2023
Date of revision:
Date of validity: 07/12/2028

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com.

EPD VERIFIED
The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.

ECO PLATFORM EPD VERIFIED

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CONTENT

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SUMMARY ENVIRONMENTAL PRODUCT DECLARATION

Content summary	
Verified by (external third-party verifier)	Martin Erlandsson, IVL Swedish Environmental Research Institute
Programme used	The International EPD System. For more information see www.environdec.com
Registration No	S-P-12289
Owners declaration by	Saint-Gobain Ecophon AB Box 500 265 03 Hyllinge Sweden
Declaration as construction products	The products to be verified herein technical textiles made for walls and ceilings.. The present environmental product declaration complies with standard ISO 14025 and describes the environmental impact. Its purpose is to promote compatible and sustainable environmental development of related construction methods. Reference PCR documents: EN 15804 as the core PCR + International EPD System Product Category Rules – PCR for constructions products, Acoustical ceiling and wall solutions (c-PCR-014; appendix to PCR 2019:14). EPD of construction products may not be comparable if they do not comply with EN 15804.
Validity	07/12/2028
Content of the declaration	This is an environmental product declaration containing environmental information of the Ecophon Clipso product 495D Supplemental product information can be found at www.ecophon.com
Issued date	07/12/2023

Product responsible:

Thomas Roul
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PRODUCT DESCRIPTION

Product description and description of use:

This Environmental Product Declaration (EPD) describes the environmental impact of 1 m² of technical textile with the intended use to increase sound absorption in a room to create a better indoor environment.

CLIPSO designs and manufactures technical textiles based on polyurethane-coated polyester knitwear. The raw materials used for production are all from the European Union. The products obtained are in the form of screened coatings available up to 5.10m in width.
Thanks to its perforated structure, the coating contributes to the absorption of ambient noise and allows acoustic correction to be carried out inside the premises. The coating is equally suitable for installation on walls or ceilings and can be printed.
Use: sound absorption.

The lifespan of a CLIPSO product is similar to that of a building, as long as the component is part of it (often set at 50 years).

Description of the main product components and materials for 1 m² of product:

Parameter	Value
Textile weight [kg]	0,3
Total product weight [kg]	0,3
Product thickness [mm]	0,4
Plastic wrapping [g]	16
Cardboard [g]	49
Pallet [g]	12

The total weight of the product is calculated to 0,3 kg / m². The product does not contain any biogenic carbon. The packaging contains 0,03 kg C / m².

All raw materials contributing more than 5% to any environmental impact are listed in the table above. At the date of issue of this environmental declaration, there is no substance of very high concern (SVHC) in concentration above 0.01% by weight.

If there in future occur production changes that generate an increased impact larger than 10% the EPD will be updated and re-verified.

OTHER ENVIRONMENTAL INDICATORS

Regarding the indoor environment, the 495 D product are certified for or fulfil regulations according to the following table:

Certificate and Regulations
French VOC A
Greenguard Gold
Eurofins Indoor Air Comfort

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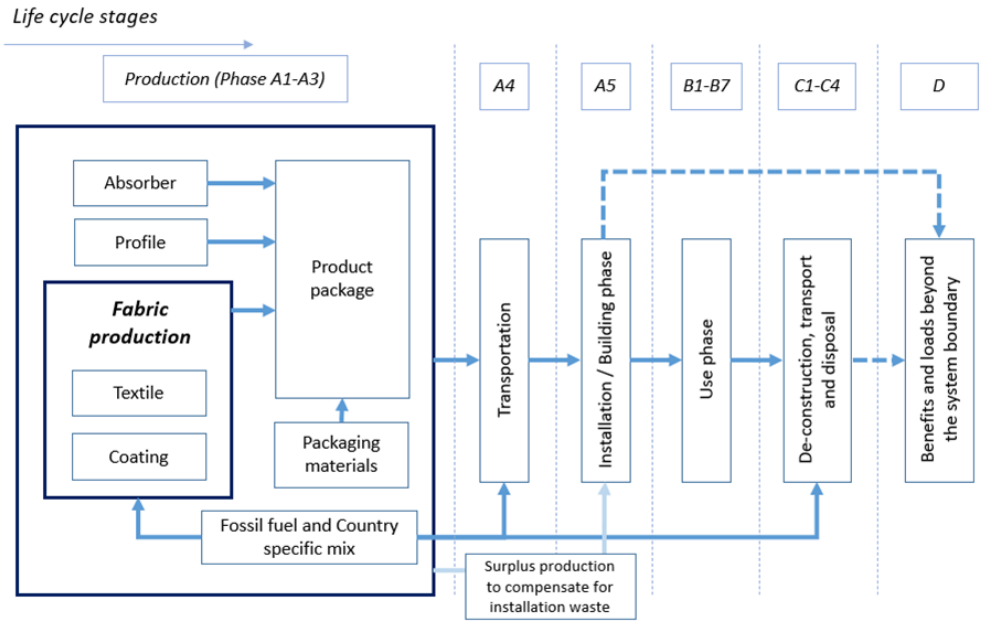
LCA CALCULATION INFORMATION

Declared unit	1m² of acoustic celling panel.
Functional unit	1m² technical textile with sound absorption class C installed at an ODS of 55 mm, according to ISO 354.
System boundaries	Cradle to grave: A1-A3, A4-A5, B, C1-C4 and D This EPD covers the environmental impact of technical textiles.
Reference Service Life (RSL)	50 years
Cut-off rules	The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%). Flows related to human activities such as employee transport are excluded. Biogenic carbon storage is accounted for in the LCA result related to GWP and included in the “Use of renewable primary energy used as raw materials” All energy stored in “Use of renewable primary energy used as raw materials” is balanced out to zero over the whole life cycle (A to C). The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
Allocations	Allocation criteria are based on mass in the manufacturing process A3.
Geographical coverage and time period	For A1-A3: Global For A4: European covering (2019)

According to EN 15804, EPD of construction products might not be comparable if they do not comply with this standard. According to ISO 21930, EPD’s might not be comparable if they are from different EPD administrating schemes.

LIFE CYCLE STAGES

Flow diagram of the Life Cycle



Product stage, A1-A3

Description of the stage:
The stretched canvas production stage is divided into three modules: A1, supply of raw materials; A2, transportation and A3, manufacturing.
The aggregation of modules A1, A2 and A3 is a possibility given by standard EN 15 804+A2. This rule is applied to this EPD.

A1 Raw material supply
This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process.

In particular, it covers the supply of raw materials for the manufacture of knitting and paste for coating.

A2 Transport to the manufacturer
Raw materials are transported to the manufacturing site. The modelling includes, for each of the raw materials of road transport (average values).

A3 Manufacturing
The technical textiles are produced on a continuously moving line, starting with mixing the necessary components into the paste that comprise the coating. The latter is then applied to the knit to give it the desired properties. After drying, the products are packaged on rolls or cut to the desired size and then packaged.

Manufacturing includes production-related processes including coating, drying, cutting, packaging and internal transport. The manufacturing process includes combustion data for refined products, such as natural gas, gasoline and diesel. All the electricity used in the manufacturing site is the residual mix of the French grid. The impact of it is of 0,055 kgCO2/kWh (calculated according to the indicator GWP-GHG).

The packaging flows linked to the production process are included in the manufacturing module: wooden pallets, cardboard and PE film. Apart from the production of packaging material, the delivery and transport of packaging materials are also included in the LCA model. They are reported and allocated in the module where the packages are used. Data on packaging waste generated during this step is recorded. 100% of the waste generated in the production cycle is collected and recycled or incinerated with energy recovery in relation to the material and its quality.

Construction process stage, A4-A5

The construction process is divided into 2 modules: A4 “Transport to the building site” and A5 “Installation in the building.
Description of scenarios and additional technical information:

A4 Transport to the building site
This module includes transport from the production gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

Parameter	Value
Fuel type, consumption of fuel and vehicle or vehicle type used for transport	Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km
Distance	717 km by truck and 803 km by ship (based on transports in 2019)
Capacity utilisation (including empty returns)	100% of the capacity in volume 30% of empty returns
Bulk density of transported products (if available)	97 - 183 kg/m^3
Volume capacity utilisation factor (if available)	0.45

The transport distance has been calculated from a European average transport from Ecophon Clipso manufacturing in Vieux-Thann in 2019 from the parameters in the table above.

A5:1 Installation in the building
This module includes waste of products during the implementation, i.e. the additional production processes to compensate the loss and the waste processing which occur in this stage.

Scenarios used for quantity of product wastage and waste processing are:

Parameter	Value
Waste of materials on the building site before waste processing, generated by the product's installation	10 % of the stretched canvas 16g polyethylene (emballage) 12 g pallet (emballage) 49 g cardboard (emballage)
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal	Packaging waste is collected and mostly recycled for polyethylene (79%). It is incinerated (55.6%) and the rest (44.4%) is landfilled. The recovery rate for the wooden pallets is 87%, (With 7% material recovery and 80 % energy recovery). The rest is incinerated. The cardboard recovery rate consists of 93% material recovery, 3% is landfilled and the rest is incinerated. The stretched canvas waste is incinerated for 46% and landfilled for 54%

A5:2 Energy usage
As a general figure the time to install 1 m² ceiling is considered to be 20 minutes. During this time the installer is considered to use handheld appliances for about 5% of this time which in this case results in 1 minute. A handheld device such as a cordless screwdriver is considered to have a power of 0.7 kilowatt. Therefore, in one minute it will consume a total energy of 0.7*60 = 4.2 kilojoule = 0.0042 MJ, per m² ceiling. In this context it is a negligible contribution and will not be part of the LCA calculation (lower than 0.1% of the total energy consumption).

Use stage (excluding potential savings), B1-B7

Description of the stage:
The use stage is divided into 7 modules, B1 “Use”, B2 “Maintenance”, B3 “Repair”, B4 “Replacement”, B5 “Refurbishment”, B6 “Operational energy use”, B7 “Operational water use”

Description of scenarios and additional technical information:
Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore, acoustic ceiling panels have no impact (excluding potential energy savings) on this stage.

End-of-life stage C1-C4

Description of the stage:
The end-of life stage is divided into 4 modules; C1 “De-construction, demolition”, C2 “Transport to waste processing”, C3 “Waste processing for reuse, recovery and/or recycling”, C4 “Disposal”.

Description of scenarios and additional technical information:

C1, De-construction, demolition
The dismantling of acoustic ceiling panels takes part during renovation or demolition of the building. In this case, the environmental impact is assumed to be very small and can be neglected.

C2, Transport to waste processing
The model for transportation (see A4, Transportation to the building site) is applied.

C3, Waste processing for reuse, recovery and/or recycling;
The profiles are considered to be recycled.

C4, Disposal;
The stretched canvas and absorber are considered to be incinerated (46%), with energy recovery and landfilled (54%).

Parameter	Value/description
Collection process specified by type	0,3 kg of stretch fabric (collected with mixed construction waste)
Recovery system specified by type	Energy recovery 0,12 kg
Disposal specified by type	Landfill, 0,14 kg Incineration 0,12 kg
Assumptions for scenario development (e.g. transportation)	Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km 50 km (distance to landfill)

Reuse/recovery/recycling potential, D

The following table describes the steps and/or incoming outgoing taken into account:				
Materials valued as outgoing of the system borders	Module of origine	Recycling process beyond system boundaries	Materials / Energy saved	495 D
Transparent polyethylene films (mostly LDPE)	A5	Regeneration of PE granules by sorting, casing and pelletizing	PE granules	0,013
Wood pallet	A5	Preparation of wood cuttings for reintegration into the manufacture of wood products (particle board types)	Shredded pallets for panels	0,0008
	A5	Energy recovery in biomass boiler	Crushed pallets for energy, replacing natural gas on the energy grid	0,0096
	A5	Incineration with energy recovery, electrical + thermal (23%)	Crushed pallets for energy, replacing natural gas on the energy grid	0,0016
Cardboard	A5	Regeneration of paper pulps by chemical means	Pulp (chemical route)	0,045
	A5	Incineration with energy recovery, electrical + thermal (23%)	Crushed paper for energy replacing natural gas on the energy grid	0,002
Technical textile	C4	Incineration with energy recovery, electrical + thermal (23%)	Polyethylene for energy replacing natural gas on the energy grid	0,12

LCA RESULTS

LCA model, aggregation of data and environmental impact are calculated through the GaBi Professional software. Secondary data is mainly taken from Ecoinvent 3.6 with some GaBi datasets.

Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plants of Saint-Gobain Ecophon in 2019.

Modules declared, geographical scope, share of specific data, and variation between sites (last two percentages given in GWP indicator) are stated in the following table. For stages A1-A3 (largest contribution to total GWP), the raw materials are modelled with very low amount of generic data – over 90% of the GWP comes from specific data.

	Product phase			**Construction process phase**		**Use phase**							**End of life phase**				**Resource recovery phase**
	Raw material and supply	Transport to the manufacturer	Manufacturing	Transport to the building site	Installation in the building	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport to waste processing	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	x	X	X	X	X	X	X	X	X	X	X	X
Geography	FR, DE, EU, GLO	FR, DE, EU, GLO	FR	EU, GLO	EU, GLO								GB, EU, GLO	GB, EU, GLO	GB, EU, GLO	GB, EU, GLO	-
Specific data	>60 %			-													-
Variation sites	0%			-													-

Summary of the LCA results are detailed in the tables below.

All results in the EPD are written in logarithmic base of ten. Reading example: 5.2E -03 = $5.2*10^{-3}$ = 0,0052.

ENVIRONMENTAL IMPACT

Environmental impacts									
Parameters	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Climate change - total *[kg CO2 eq.]*	1,48E+00	2,34E-02	2,81E-01	0,00E+00	0,00E+00	1,06E-03	0,00E+00	2,81E-01	-1,57E-01
Climate change - fossil *[kg CO2 eq.]*	1,51E+00	2,34E-02	2,50E-01	0,00E+00	0,00E+00	1,06E-03	0,00E+00	2,81E-01	-1,17E-01
Climate change - biogenic *[kg CO2 eq.]*	-3,12E-02	0,00E+00	3,12E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,01E-02
Climate change - land use and land use change *[kg CO2 eq.]*	1,19E-03	1,91E-06	1,19E-04	0,00E+00	0,00E+00	1,01E-07	0,00E+00	5,24E-06	2,03E-05
Ozone depletion *[kg CFC 11 eq]*	2,19E-06	2,87E-15	2,20E-07	0,00E+00	0,00E+00	1,33E-16	0,00E+00	1,91E-09	2,05E-09
Acidification *[Mole of H+ eq.]*	6,17E+06	1,41E-04	6,17E+05	0,00E+00	0,00E+00	1,43E-06	0,00E+00	5,17E-05	2,63E-05
Eutrophication, freshwater *[kg P eq.]*	4,03E-04	7,07E-09	3,89E-05	0,00E+00	0,00E+00	3,48E-10	0,00E+00	1,79E-06	2,04E-05
Eutrophication, marine *[kg N eq.]*	2,83E+06	5,27E-05	2,83E+05	0,00E+00	0,00E+00	8,80E-07	0,00E+00	3,66E-05	4,20E-05
Eutrophication, terrestrial *[Mole of N eq.]*	5,23E+07	5,78E-04	5,23E+06	0,00E+00	0,00E+00	9,71E-06	0,00E+00	3,26E-04	-1,38E-04
Photochemical ozone formation, human health *[kg NMVOC eq.]*	6,88E+06	1,36E-04	6,88E+05	0,00E+00	0,00E+00	1,86E-06	0,00E+00	8,32E-05	-7,58E-05
Resource use, mineral and metals *[kg Sb eq.]*	1,38E-05	1,25E-09	1,42E-06	0,00E+00	0,00E+00	5,78E-11	0,00E+00	7,61E-08	-2,14E-08
Resource use, fossils *[MJ]*	3,97E+01	3,15E-01	4,23E+00	0,00E+00	0,00E+00	1,45E-02	0,00E+00	6,35E-02	-1,54E+00

RESOURCE USE

Resource use									
Parameters	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ]	1,63E+00	7,15E-03	2,40E-01	0,00E+00	0,00E+00	3,71E-04	0,00E+00	4,91E-03	-7,20E-01
Use of renewable primary energy used as raw materials [MJ]	1,19E+00	0,00E+00	-1,19E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,57E-01
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) [MJ]	2,82E+00	7,15E-03	-9,47E-01	0,00E+00	0,00E+00	3,71E-04	0,00E+00	4,91E-03	-5,63E-01
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw material [M]	3,97E+01	3,16E-01	4,23E+00	0,00E+00	0,00E+00	1,46E-02	0,00E+00	6,35E-02	-1,54E+00
Use of non-renewable primary energy used as raw materials [MJ]	6,75E+00	0,00E+00	-4,83E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-6,26E+00	0,00E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) [MJ]	4,65E+01	3,16E-01	3,75E+00	0,00E+00	0,00E+00	1,46E-02	0,00E+00	-6,20E+00	0,00E+00
Use of secondary material [kg]	0,00E+00	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 renewable secondary fuels [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	0,00E+00
Use of non-renewable secondary fuels [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	0,00E+00
Use of net fresh water [m³]	2,48E-02	1,92E-06	2,59E-03	0,00E+00	0,00E+00	9,30E-08	0,00E+00	1,37E-04	-3,27E-04

All energy stored in “Use of renewable primary energy used as raw materials” is balanced out to zero over the whole life cycle (A to C). This indicator shows how much energy that is stored in the product or packaging at any given time.

WASTE CATEGORIES

Waste categories									
Parameters	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Hazardous waste disposed [kg]	6,46E-12	7,73E-13	3,81E-11	0,00E+00	0,00E+00	3,60E-14	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed [kg]	9,66E-02	8,26E-06	2,07E-01	0,00E+00	0,00E+00	3,86E-07	0,00E+00	1,20E-01	0,00E+00
Radioactive waste disposed [kg]	3,07E-03	3,74E-07	3,18E-04	0,00E+00	0,00E+00	1,73E-08	0,00E+00	0,00E+00	0,00E+00

OUTPUT FLOW

Output flows									
Parameters	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Components for re-use [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling [kg]	2,17E-02	0,00E+00	6,29E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-01	0,00E+00
Exported energy [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	0,00E+00

ADDITIONAL VOLUNTARY INDICATORS FROM EN 15804

Environmental impacts

Parameters	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
GWP-GHG *[kg CO2 eq.]*	1,51E+00	2,34E-02	2,50E-01	0,00E+00	0,00E+00	1,06E-03	0,00E+00	2,81E-01	0,00E+00

GWP-GHG is calculated with the same characterisation factors as in EN 15804+A2 (EF 3.0), but uptake and release of biogenic carbon dioxide is zero.

APPENDIX: ENVIRONMENTAL IMPACTS ACCORDING TO EN 15804:2012+A1

Parameters	Product stage	Construction process stage		Use stage	End-of-life stage				Reuse, recovery, recycling
	A1–A3	A4	A5	B1–B7	C1	C2	C3	C4	D
Global Warming Potential (GWP) *[kg CO2 eq.]*	1,44E+00	2,31E-02	2,37E-01	0,00E+00	0,00E+00	1,05E-03	0,00E+00	2,80E-01	0,00E+00
Ozone Depletion Potential (ODP) *[kg R11 eq.]*	2,19E-06	2,87E-15	2,20E-07	0,00E+00	0,00E+00	1,33E-16	0,00E+00	1,91E-09	0,00E+00
Acidification potential (AP) [kg SO_2 eq.]	6,17E+06	1,41E-04	6,17E+05	0,00E+00	0,00E+00	1,43E-06	0,00E+00	5,17E-05	0,00E+00
Eutrophication potential (EP) [kg $(PO_4)^3$ eq.]	1,49E+06	1,78E-05	1,49E+05	0,00E+00	0,00E+00	3,02E-07	0,00E+00	6,09E-05	0,00E+00
Photochemical ozone creation (POPC)[Ethene eq.]	1,93E+05	-1,78E-06	1,93E+04	0,00E+00	0,00E+00	-4,20E-07	0,00E+00	5,16E-06	0,00E+00
Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.]	1,39E-05	1,25E-09	1,42E-06	0,00E+00	0,00E+00	5,80E-11	0,00E+00	7,62E-08	0,00E+00
Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ/FU]	2,94E+01	3,11E-01	3,18E+00	0,00E+00	0,00E+00	1,43E-02	0,00E+00	5,68E-02	0,00E+00

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REFERENCE LIST

ISO 354:2003: Acoustics – Measurement of sound absorption in a reverberation room

Reach: EU REACH Regulation (EC) No 1907/2006

LCA report: Project report on LCA for Clipso

EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations

c-PCR-014 “Acoustical ceiling and wall solutions” (complementary PCR; complementary to to PCR 2019:14)

PCR 2019:14 Construction products (EN 15804+A2), version 1.3.2

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