EPD - ENVIRONMENTAL PRODUCT DECLARATION

Tensile composite membranes for interior and exterior applications

SOLAR PROTECTION

(excluding installation accessories)

Environmental product declaration in accordance with standards NF EN ISO 14025, NF EN 15804+A1 and its French national complement NF EN 15804/CN

Advertisement

The information contained in this declaration is provided under the responsibility of Serge Ferrari (producer of the EPD) in accordance with NF EN 15804+A1 and its French national supplement NF EN 15804/CN.

Any use, in whole or in part, of the information provided in this document must at least be accompanied by a complete reference to the original EPD and to its producer, who may supply a complete copy.

GUIDE DE LECTURE

The display of inventory data complies with the requirements of NF EN 15804+A1.

In the following tables 2.53E-06 should be read: 2.53x10 -6 (scientific writing).

The units used are specified before each flow, they are:

- the kilogram « kg »,
- the cubic meter « m3»,
- the kilowatt-hour « kWh »,
- the mega joule « MJ »,
- square meter «m²».

Abbreviations:

LCA: Life Cycle Analysis
RSL: Reference Service Life
FU : Functional Unit
FDES: « Fiche de Déclaration Environnementale et Sanitaire » (Environmental And Health Product Declaration)
EPD: Environmental Product Declaration

PRECAUTIONARY USE OF THE EPD FOR PRODUCT COMPARISON

The FDES of construction products may not be comparable if they do not comply with the NF EN 15804+A1 standard.

The standard NF EN 15804+A1 defines in § 5.3 Comparability of EPDs for construction products, the conditions under which construction products can be compared, based on the information provided by the EPD:

"A comparison of the environmental performance of construction products using EPD information should be based on the use of the products and their impacts on the building and should consider the entire life cycle (all information modules)."

* Note 1 of the foreword to the National Supplement defines *"the literal translation in French of EPD (Environmental Product Declaration) is DEP (Déclaration Environnementale de Produit). However, in France, the term FDES (Fiche de Déclaration Environnementale et Sanitaire) is commonly used, which includes both the Environmental Declaration and the Health information for the product that is the subject of this FDES.*
The FDES is therefore a ''EPD'' completed by health information."

GENERAL INFORMATION

Name and address of the manufacturer	**Commercial references**
SERGE FERRARI Zone industrielle – 246 Rue des Sétives 38110 ST JEAN DE SOUDAIN France	SOLTIS 86 ; SOLTIS 88 ; SOLTIS 92 ; SOLTIS 96 ; SOLTIS 99 ; SOLTIS B99 ; SOLTIS B990 ; SOLTIS B92 ; SOLTIS W96 ; 302 ; 432 ; 502 V2 ; 582 ; 371 ; 381
Type of EPD	**Distribution channel**
- "from cradle to gate, with options" - individual	Professionals (BtoB)
Contact information of the declarant's person	**Auditor's name:**
julien.lance@sergeferrari.com	Cécile Beaudard (Solinnen)
Date of publication	**Validity end date**
April 2021	April 2026
Verification program	
FDES-INIES program http://www.inies.fr/ Association HQE 4, avenue du Recteur Poincaré 75016 PARIS FRANCE	
CEN standard EN 15804 and its national complement NF EN 15804/CN serves as the Product Category Definition Rules (PCR). Independent verification of the declaration, in accordance with EN ISO 14025 and EN 15804 as well as the specific PCR mentioned above: ☐ Internal ☒ External Registration number : 4-534:2021	

DESCRIPTION OF THE FUNCTIONAL UNIT AND THE PRODUCT

FUNCTIONAL UNIT

«To ensure a function of 1m² of tensile composite membrane coverage in interior or exterior application for 15 years»

PRODUCT DESCRIPTION

The products covered by this EPD are heavy composite membranes, plain or perforated, manufactured by SERGE FERRARI on its site in La Tour du Pin.

The reference product used in the study is an arithmetic average of the products in the range.

The commercial references covered by this EPD are quoted above. All the products of this family are manufactured on the site of La Tour du Pin with the same raw materials, the same manufacturing processes and have the same applications. Only the design of the products differs. The variability is presented below.

All calculations are related to the functional unit, i.e. to 1m² of product.

PRODUCT USE (FIELD OF APPLICATION)

The products are used in the manufacture of finished products for the solar protection.

MAIN PERFORMANCE OF THE FUNCTIONAL UNIT

To provide a function of 1m² of tensile composite membrane coverage in interior or exterior application.

TECHNICAL CHARACTERISTICS

Parameter		
Average product weight	0,462	kg
Weight of the average packaging	0,050	kg
Average total weight	**0,512**	**kg**

The reference product is a fictitious product, whose values have been calculated from the arithmetic average of all the products in the range.

DESCRIPTION OF THE MAIN COMPONENTS AND/OR MATERIALS OF THE PRODUCT

Polyester fabric, PVC, acrylic varnish.

COMPOSITION / REACH SUBSTANCES

SERGE FERRARI membranes respect the REACH regulation. The products do not contain any substance from the "candidate list of substances with very high concern subject to authorization" at more than 0.1% in mass.

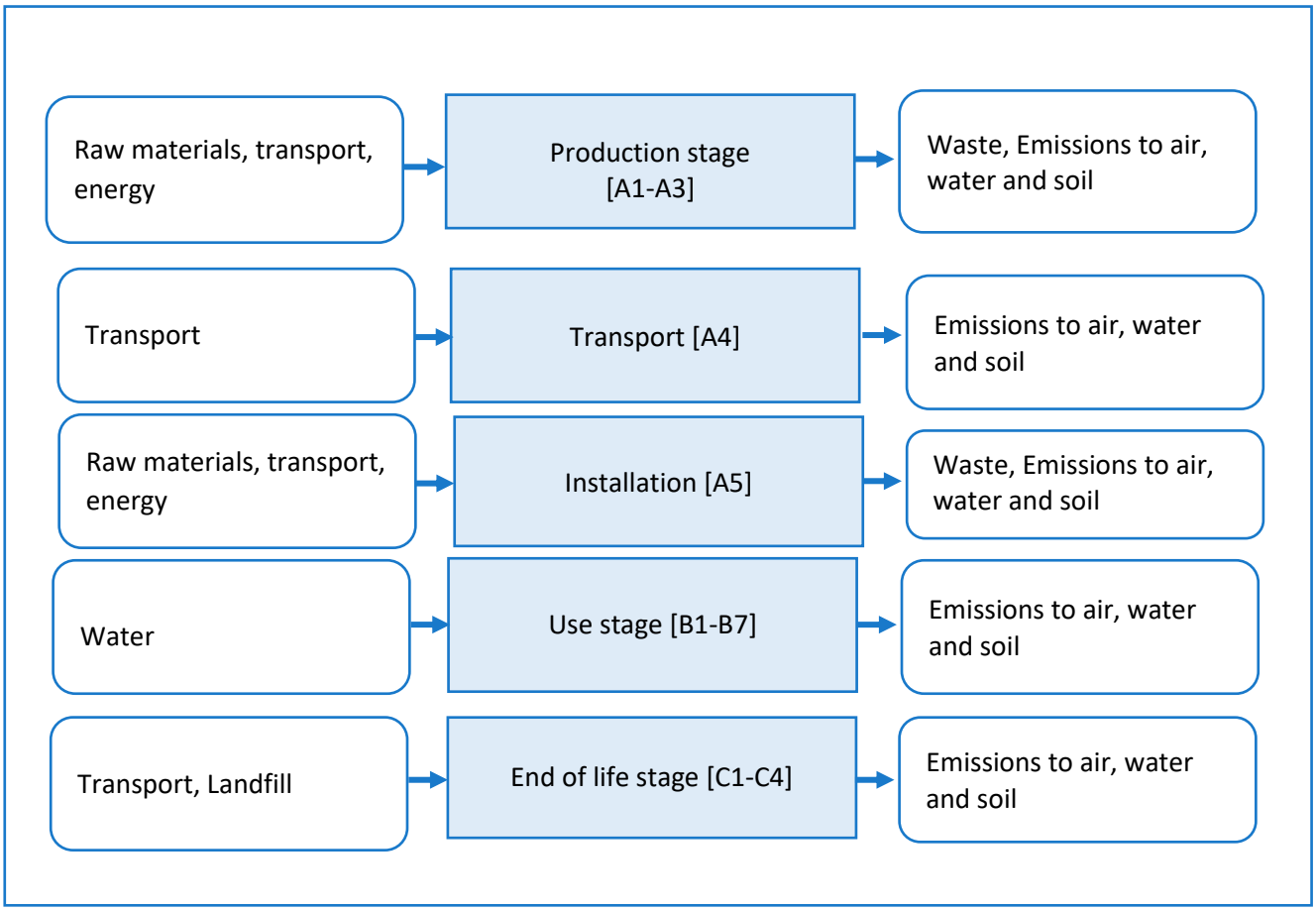
TECHNICAL SPECIFICATIONS

Parameter	Value
Reference Service Life	15 years (minimum). Some of the products in the range have life spans that can exceed 15 years. See table below.
Declared product properties (at the exit of the factory) and finishes, etc.	Tensile membrane for the building envelope (roof and/or façade)
Theoretical application parameters (if required by the manufacturer), including references to appropriate practices	Blinds on fixed or mobile structures, motorized or not
Assumed quality of the work, when the installation complies with the manufacturer's instructions	Not concerned
Outdoor environment (for outdoor applications). e.g. inclement weather, pollutants, UV and wind exposure, building orientation, shade, temperature	Outdoor resistance to bad weather, UV rays. Protects against glare, heat and bad weather without depriving yourself of natural light. See technical data sheet.
Indoor environment (for indoor applications) e.g. temperature, humidity, exposure to chemicals	Protects from glare and heat without depriving yourself of natural light. Low VOC emissions and no formaldehyde release
Conditions of use, e.g. frequency of use, mechanical exposure	None
Maintenance. e.g. frequency required, type and quality and replacement of replaceable components	Once installed, the products do not require any particular maintenance except cleaning if necessary and according to the use. 1 cleaning every 5 years with soapy water is recommended in certain cases (included in the cut-off criteria).

Parameter	Reference Service Life	
SOLTIS 86 ; SOLTIS 88 ; SOLTIS 92 ; SOLTIS 96 ; SOLTIS 99 ; SOLTIS B99 ; SOLTIS B990 ; SOLTIS B92 ; SOLTIS W96 ; 302 ; 432 (same compo as 302 with stripes); 502 V2 ; 582	15	years
371	20	years
381	25	years

STAGES OF THE LIFE CYCLE

LIFE CYCLE DIAGRAM



[A1-A3] PRODUCTION STAGE

Parameters	Information
Product	
General information	- All the substances and constituent materials necessary for the manufacture of the product have been taken into account. - The modules used to model the raw materials do not contain secondary materials. - Upstream transportation was included in the study. It was modeled by transport via a 27-ton articulated truck loaded to 80% with an empty return rate of 30%. - Energy consumption at the production site was modeled by the French electricity mix Source: IEA - 2018 - Waste from the manufacturing stage was considered. Transportation to the site was modeled by a 17.3 ton dump truck loaded at 80% with a 100% empty return rate and for some, by air transport.
Weaving of the wires	The weaving is made in La Tour du Pin (France). It uses polyester.
PVC coating	The coating is carried out at La Tour du Pin (France). It involves plasticizers, stabilizers, PVC, and compounds such as silica, antimony trioxide, a mineral filler, a fungicide, a flame retardant and acrylic varnish.
Packaging	
Packaging of the finished product	- Plastic film - Wooden cardboard box - Wooden pallets - Cardboard tube
Allocation	The quantities needed to manufacture a product in terms of raw materials, energy and waste are based on one year of production and brought proportionally to a product (mass allocation).
Specific information	Impacts related to the generation of production scrap and waste were accounted for when generated. Thus, production wastes were modeled in phase A1-A3.

[A4] TRANSPORTATION TO THE CONSTRUCTION SITE

Parameter	Unit	Value
Type of fuel and consumption of the vehicle or type of vehicle used for transportation, e.g. long distance truck, boat, etc.		Transport by 27t truck, from the manufacturing plant (La Tour du Pin) to the construction site.
Distance to the construction site	km	262
Capacity utilization (including empty returns)	%	80% loading rate et 30% empty return rate
Bulk density of transported products	kg/m^3	-
Volume capacity utilization coefficient	Coefficient: = 1 or < 1 or ≥ 1 for compressed or nested products	1

[A5] INSTALLATION IN THE BUILDING

Parameter	Unit	Value
Auxiliary inputs for the installation (specified by material)	%	5% waste rate that is treated as non-hazardous waste and transported 100 km by truck
Water use	m^3	-
Use of other resources	kg	-
Quantitative description of energy type (regional mix) and consumption during the installation process	kWh ou MJ	
Waste generated at the construction site prior to treatment of waste generated by the product installation (specified by type)	kg	
Materials (specified by type) generated by the processing of waste at the construction site, e.g. collection for recycling, energy recovery, disposal (specified by route)	kg	
Direct emissions to ambient air, soil and water	kg	-

[B1-B7] PRODUCT USE

MAINTENANCE

Parameter	Unit	Value
Maintenance process	The product only needs to be cleaned occasionally with water.	
Maintenance cycle	1 washing every 5 years	
Auxiliary inputs for maintenance (e.g. cleaning product, specify materials)	L	2L of water for 1m², representing 6L of water over the entire life cycle
Waste generated during maintenance (specify materials)	kg	-
Net consumption of fresh water during maintenance	L	2L of water for 1m², representing 6L of water over the entire life cycle
Energy input during maintenance (e.g. vacuum cleaning), type of energy carrier, e.g. electricity, and quantity, if applicable and relevant	kWh	-

REPAIR

Parameter	unit	Value
Repair process	The life of the product does not require any particular action. There are no inputs and outputs related to the repair.	
Inspection process	The life of the product does not require any particular action. There are therefore no inputs and outputs related to the inspection process.	
Repair cycle	Number by RSL or year	-
Auxiliary inputs (e.g. lubricant, specify materials)	kg or kg/cycle	-
Waste generated during repair (specify materials)	kg	-
Net consumption of fresh water during repair	m^3	-
Energy input during repair (e.g. craning activity), type of energy carrier, e.g. electricity, and amount	kWh/RSL, kWh/cycle	-

REPLACEMENT

Parameter	Unit	Value
Replacement cycle	The life of the product does not require any particular action. There are no inputs and outputs related to replacement.	
Energy input during replacement (e.g., crane activity), type of energy carrier (e.g., electricity), and quantity, if applicable and relevant	kWh	-
Replacement of used parts during the life cycle of the product, specify materials	kg	-

REHABILITATION

Parameter	Unit	Value
Rehabilitation process	The life of the product does not require any particular action. There are therefore no inputs and outputs related to the rehabilitation.	
Rehabilitation cycle	Number by RSL or year	-
Material input for rehabilitation (e.g. bricks), including auxiliary inputs for the rehabilitation process (e.g. lubricant, specify materials)	kg or kg/cycle	-
Waste generated during rehabilitation (specify materials)	kg	-
Energy input during rehabilitation (e.g. crane activity), type of energy carrier, e.g. electricity, and quantity, if applicable and relevant	kWh	-
Other assumptions for scenario elaboration (e.g., frequency and duration of use, number of occupants)	Appropriate unit	-

ENERGY AND WATER USE

Parameter	Unit	Value
Auxiliary inputs specified by material	kg or appropriate units	The life of the product does not require any particular action. There is therefore no input and output related to the use of energy.
Net freshwater consumption	m3	The life of the product does not require any particular action. There are no inputs and outputs related to the use of water.
Type of energy carrier (e.g. electricity, natural gas, district heating)	kWh	-
Output power of the equipment	kWh	-
Characteristic performance (e.g. energy efficiency, emissions, performance variation according to capacity utilization, etc.)	appropriate units	-
Other assumptions for scenario development (e.g., frequency and duration of use, number of occupants)	appropriate units	-

[C1-C4] END-OF-LIFE STAGE

Parameter	Unit	Value
Collection process specified by type	kg collected individually kg collected with mixed construction waste	0,462
Recovery system specified by type	kg for reuse	-
	kg for recycling	-
	kg for energy recovery	-
Elimination specified by type	kg of product or material for final disposal	0,462 (landfilling)
Assumptions for scenario elaboration (e.g. transportation)	km	100 km by truck 17,3t

[D] RECYCLING/REUSE/RECOVERY POTENTIAL, D

Module D is not considered.

INFORMATION FOR THE CALCULATION OF THE LIFE CYCLE ASSESSMENT

Used PCR	NF EN 15804+A1 - April 2014, NF EN 15804/CN – June 2016
System boundaries	The boundaries of the system respect the limits imposed by the NF EN 15804+A1 standard and its national complement NF EN 15804/CN.
Allocations	The quantities needed to manufacture a product in terms of raw materials, energy and waste are based on one year of production and brought back by a cross product to a product (mass allocation).
Geographical and temporal representativeness of primary data	The data was collected in relation to the annual production of the SERGE FERRARI plant. The collection was launched in September 2020. It is representative of the technologies used for the year 2019. The database used is the database BDD CODDE-2018-11 (updated November 2018) and ELCD version 3.2. EIME software, Version 5.9. Database version: December 2020
Variability of results	An analysis of variability was performed between the products covered by the EPD of the range. The results show that the impacts are homogeneous within the product family. The environmental impacts declared in the EPD are therefore based on an average between all the products in the range.

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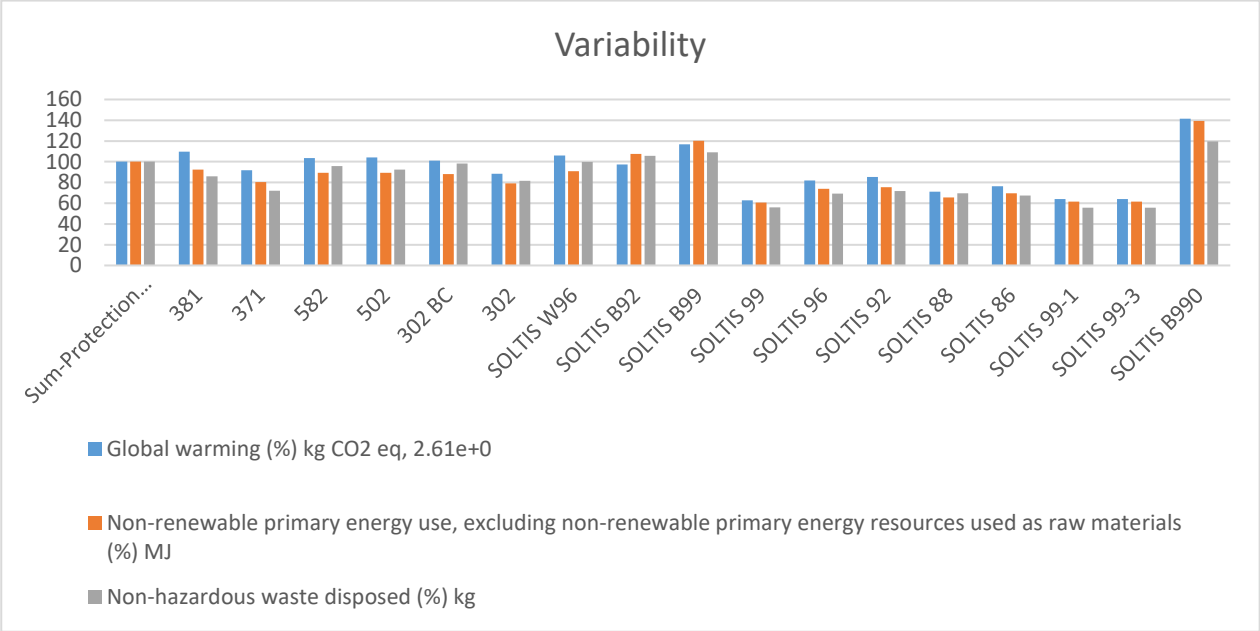
VARIABILITY



LIFE CYCLE ASSESSMENT RESULTS

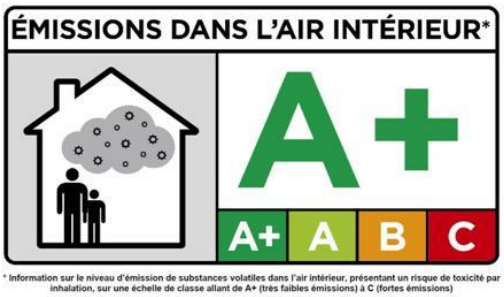
Impact Indicators	Production stage	Construction stage			Use stage								End of life stage					Total Life Cycle	D Profits and costs beyond the system's borders
	Total A1-A3	A4 Transport	A5 Installation	**Total A4-A5**	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Rehabilitation	B6 Use of energy	B7 Water consumption	**Total B1-B7**	C1 Deconstruction/ demolition	C2 Transport	C3 Waste treatment	C4 Elimination	**Total C1-C4**		
Global Warming kg CO2 eq/FU	**2,16E+00**	9,93E-03	1,46E-01	**1,56E-01**	0,00E+00	1,75E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**1,75E-01**	0,00E+00	4,30E-03	0,00E+00	4,15E-01	4,19E-01	**2,91E+00**	ND
Ozone Depletion kg CFC 11 eq/FU	**3,21E-07**	2,01E-11	1,62E-08	**1,62E-08**	0,00E+00	1,14E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**1,14E-09**	0,00E+00	8,71E-12	0,00E+00	1,37E-09	1,38E-09	**3,40E-07**	ND
Acidification of soil and water kg SO2 eq/FU	**4,13E-03**	4,46E-05	2,24E-04	**2,68E-04**	0,00E+00	3,81E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**3,81E-04**	0,00E+00	2,04E-05	0,00E+00	1,76E-04	1,96E-04	**4,97E-03**	ND
Eutrophication kg (PO4)3- eq/FU	**5,49E-03**	1,03E-05	3,45E-04	**3,55E-04**	0,00E+00	1,20E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**1,20E-04**	0,00E+00	4,71E-06	0,00E+00	1,26E-03	1,26E-03	**7,23E-03**	ND
Photochemical ozone creation Ethene eq/FU	**3,75E-04**	3,17E-06	2,72E-05	**3,04E-05**	0,00E+00	2,05E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**2,05E-05**	0,00E+00	1,47E-06	0,00E+00	9,21E-05	9,36E-05	**5,20E-04**	ND
Depletion of abiotic resources (elements) kg Sb eq/FU	**2,47E-02**	3,97E-10	1,24E-03	**1,24E-03**	0,00E+00	6,09E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**6,09E-09**	0,00E+00	1,72E-10	0,00E+00	2,65E-09	2,82E-09	**2,59E-02**	ND
Depletion of abiotic resources (fossils) MJ/FU	**3,85E+01**	1,40E-01	1,97E+00	**2,11E+00**	0,00E+00	4,93E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**4,93E-01**	0,00E+00	6,04E-02	0,00E+00	4,68E-01	5,28E-01	**4,17E+01**	ND
Water pollution m3/FU	**2,48E+02**	1,63E+00	1,27E+01	**1,43E+01**	0,00E+00	1,75E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**1,75E+00**	0,00E+00	7,07E-01	0,00E+00	2,07E+00	2,78E+00	**2,67E+02**	ND
Air pollution m3/FU	**2,88E+02**	4,07E-01	1,54E+01	**1,58E+01**	0,00E+00	2,12E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**2,12E+00**	0,00E+00	1,98E-01	0,00E+00	1,12E+01	1,14E+01	**3,18E+02**	ND

Use of resources	Production stage	Construction stage			Use stage								End of life stage					Total Life Cycle	D Profits and costs beyond the system's borders
	Total A1-A3	A4 Transport	A5 Installation	**Total A4-A5**	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Rehabilitation	B6 Use of energy	B7 Water consumption	**Total B1-B7**	C1 Deconstruction/ demolition	C2 Transport	C3 Waste treatment	C4 Elimination	**Total C1-C4**		
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials MJ/FU	**3,17E+00**	1,87E-04	1,60E-01	1,60E-01	0,00E+00	5,68E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,68E-03	0,00E+00	8,10E-05	0,00E+00	1,48E-02	1,48E-02	**3,36E+00**	ND
Use of renewable primary energy resources used as raw materials MJ/FU	**4,51E-01**	0,00E+00	2,26E-02	2,26E-02	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**4,74E-01**	ND
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) MJ/FU	**3,63E+00**	1,87E-04	1,83E-01	1,83E-01	0,00E+00	5,68E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,68E-03	0,00E+00	8,10E-05	0,00E+00	1,48E-02	1,48E-02	**3,83E+00**	ND
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials MJ/FU	**4,82E+01**	1,40E-01	2,46E+00	2,60E+00	0,00E+00	5,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,33E-01	0,00E+00	6,07E-02	0,00E+00	5,16E-01	5,77E-01	**5,19E+01**	ND
Use of non-renewable primary energy resources used as raw materials MJ/FU	**9,72E+00**	0,00E+00	4,86E-01	4,86E-01	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**1,02E+01**	ND
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) MJ/FU	**5,80E+01**	1,40E-01	2,95E+00	3,09E+00	0,00E+00	5,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,33E-01	0,00E+00	6,07E-02	0,00E+00	5,16E-01	5,77E-01	**6,22E+01**	ND
Use of secondary material kg/FU	**2,44E-02**	0,00E+00	1,22E-03	1,22E-03	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**2,56E-02**	ND
Use of secondary renewable fuels MJ/FU	**2,06E-01**	0,00E+00	1,03E-02	1,03E-02	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**2,16E-01**	ND
Use of non-renewable secondary fuels MJ/FU	**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	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**	ND
Net use of fresh water m3/FU	**1,90E-01**	8,89E-07	1,27E-01	1,27E-01	0,00E+00	6,27E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,27E-04	0,00E+00	3,85E-07	0,00E+00	1,37E-04	1,38E-04	**3,18E-01**	ND

Waste category	Production stage	Construction stage			Use stage								End of life stage					Total Life Cycle	D Profits and costs beyond the system's borders
	Total A1-A3	A4 Transport	A5 Installation	Total A4-A5	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Rehabilitation	B6 Use of energy	B7 Water consumption	Total B1-B7	C1 Deconstruction/ demolition	C2 Transport	C3 Waste treatment	C4 Elimination	Total C1-C4		
Hazardous waste disposed kg/FU	**2,45E-02**	0,00E+00	1,24E-03	**1,24E-03**	0,00E+00	2,11E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**2,11E-05**	0,00E+00	0,00E+00	0,00E+00	2,46E-04	**2,46E-04**	**2,60E-02**	ND
Non-hazardous waste disposed kg/FU	**6,62E-01**	3,53E-04	7,50E-02	**7,54E-02**	0,00E+00	4,38E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**4,38E-02**	0,00E+00	1,53E-04	0,00E+00	5,15E-01	**5,16E-01**	**1,30E+00**	ND
Radioactive waste disposed kg/FU	**3,16E-03**	2,51E-07	1,60E-04	**1,60E-04**	0,00E+00	1,34E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**1,34E-05**	0,00E+00	1,09E-07	0,00E+00	1,71E-05	**1,72E-05**	**3,35E-03**	ND

Output flow		Production stage	Construction stage			Use stage								End of life stage					Total Life Cycle	D Profits and costs beyond the system's borders
		Total A1-A3	A4 Transport	A5 Installation	Total A4-A5	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Rehabilitation	B6 Use of energy	B7 Water consumption	Total B1-B7	C1 Deconstruction/ demolition	C2 Transport	C3 Waste treatment	C4 Elimination	Total C1-C4		
Components for reuse kg/FU		**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	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**	ND
Materials for recycling kg/FU		**4,12E-02**	0,00E+00	3,47E-02	**3,47E-02**	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	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**	**7,59E-02**	ND
Materials for energy recovery kg/FU		**2,10E-02**	0,00E+00	6,57E-03	**6,57E-03**	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	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**	**2,76E-02**	ND
Energie fournie à l'extérieur (par vecteur) J/FU	**Electricity**	**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	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**	ND
	Steam	**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	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**	ND
	Gas and process	**0,00E+00**	0,00E+00	2,39E-02	**2,39E-02**	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	0,00E+00	0,00E+00	2,72E-01	**2,72E-01**	**2,96E-01**	ND

ADDITIONAL INFORMATION ON THE RELEASE OF HAZARDOUS SUBSTANCES INTO INDOOR AIR, SOIL AND WATER DURING USE

Sanitary characteristics	
VOCs and formaldehyde	 A+ : SOLTIS 88 ; SOLTIS 92 ; SOLTIS 96 ; SOLTIS 99 ; SOLTIS B990 ; SOLTIS B92  GREENGUARD GOLD : SOLTIS 86 ; SOLTIS 88 ; SOLTIS 92 ; SOLTIS 96 ; SOLTIS 99 ; SOLTIS B99 ; SOLTIS B990 ; SOLTIS B92 ; 302 ; 432 ; 502 V2 ; 582 ; 371 ; 381
Indoor air emissions of hazardous substances	SERGE FERRARI membranes comply with REACH regulations. They do not contain any substance from the SHVC list (list updated on 19/01/2021) at a rate higher than 0.1% by mass.
Behavior towards micro-organisms	Contact the Serge Ferrari commercial teams, some products are covered and others not, depending on the commercial references
Odors	No test performed
Radioactive emissions	No test performed
Water quality characteristics	Not applicable because this product is not in contact with water intended for human consumption, nor with runoff water, seepage water, groundwater or surface water.

Comfort characteristics

Hygrothermal comfort

The SOLTIS screens and plain blinds for awnings and the FRONTSIDE screens for bioclimatic facades contribute to the hygrothermal comfort in the building.

They are evaluated according to the EN14500 and EN14501 standards:

SOLTIS or FRONTSIDE articles	Minimum INTERIOR solar factor g_{tot}^{i} with glazing D – Method 2	% solar heat stopped (maximum value)	Thermal comfort - Class EN14501
SOLTIS 86	0.13	87%	Classe 3
SOLTIS 88	0.12	88%	Classe 3
SOLTIS 92	0.10	90%	Classe 3
SOLTIS 99	0.10	90%	Classe 3
SOLTIS B99	0.10	90%	Classe 3
SOLTIS B990	0.07	93%	Classe 4
SOLTIS B92	0.10	90%	Classe 3

SOLTIS or FRONTSIDE articles	Minimum EXTERIOR solar factor g_{tot}^{e} with glazing D – Method 2	% solar heat stopped (maximum value)	Thermal comfort - Class EN14501
SOLTIS 86	0.07	93%	Classe 4
SOLTIS 88	0.06	94%	Classe 4
SOLTIS 92	0.03	97%	Classe 4
SOLTIS B92	0.01	99%	Classe 4
371	0.14	86%	Classe 3
381	0.15	85%	Classe 2

The solar factor of Soltis and FRONTSIDE blinds is included in the calculation of the solar factor of the window unit (glazing + frame + opaque wall + solar protection + casing) and therefore impacts the final thermal performance of the system. An efficient solar protection blinds contributes to reach the performances of the RT2012 / RE2020.
The use of SOLTIS and FRONTSIDE blinds contributes to obtaining credits in the HQE building certification program.

(source: internal laboratory test - internal report))

Acoustic comfort

Slightly openwork fabrics (Soltis 99) are slightly sound-absorbing (aw = 0.20 with an air gap > 100 mm), thus contributing to the acoustic comfort of the premises.

(Report LNE - J020457 – Document CQPE/30)

The more strongly openworked blinds (Soltis 86, 88, 96 ...) are transparent to sound. This can be interesting for applications with stretched blinds in walls or ceilings. In this case, the blind is used in combination with traditional absorbents such as wool or absorbent foam. The sound transparency of the blind allows the wall to be covered without affecting the absorption potential of the wool or foam behind it.

(Report CTTM N° A130015_01_A - Soltis 86 and 92 associated with mineral wool).

The stretched plain blinds have a negligible level of absorption (aw = 0.10, CTTM report n° A110075). When used in separation, the plain blinds have a sound attenuation level Rw = 10 dB

(Report CTTM N° A100194 plain blind 590g/m2)

Visual comfort

The product contributes to the visual comfort in the building. The visual performances of SOLTIS and FRONTSIDE are evaluated according to the EN 14500 and EN 14501 standards.

SOLTIS or FRONTSIDE articles	TVnh value (%)	Glare control - Class EN14501	View on the outside - Class EN14501	Natural light use - Class EN14501	Privacy at night - Class EN14501	Opacity - Class EN14501
SOLTIS 86	From 14 to 28	Class 0	Class 4	Class 2	Class 0	NC
SOLTIS 88	From 8 to 22	Class 1	Class 3	Class 2	Class 1	NC
SOLTIS 92	From 2 to 17	Class 3	Class 2	Class 2	Class 2	NC
SOLTIS 96	From 4 to 19	Class 3	Class 2	Class 2	Class 2	NC
SOLTIS 99	From 3 to 21	Class 3	Class 2	Class 2	Class 2	NC
SOLTIS B99	0	Class 4	Class 0	Class 0	Class 4	Class 4
SOLTIS B990	0	Class 4	Class 0	Class 0	Class 4	Class 3
SOLTIS B92	0	Class 4	Class 0	Class 0	Class 4	Class 4
SOLTIS W96	From 3 to 17	Class 3	Class 0	Class 2	Class 4	NC
302	From 0 to 11	Class 4	Class 0	Class 1	Class 4	NC
502 VC	From 0 to 10	Class 4	Class 0	Class 1	Class 4	NC
582	From 0 to 10	Class 4	Class 0	Class 0	Class 4	NC
371	28	Class 0	Class 4	Class 2	Class 0	NC
381	From 26 to 35	Class 0	Class 4	Class 2	Class 0	NC

Classes may vary depending on the color. The classes indicated are the best levels achievable with the product in question

Olfactive comfort	The products do not claim any olfactory performance.

POSITIVE ENVIRONMENTAL CONTRIBUTION

No recycling channels or energy avoidance calculations are considered.