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ENVIRONMENTAL PRODUCT DECLARATION (EPD)

In conformity with ISO 14025, NF EN 15804+A2 standard

and its national complement NF EN 15804+A2/CN

Styrisol® GR-300 and GR-500

XPS insulation boards of Abriso-Jiffy

between 60 - 120 mm thick and with a thermal resistance between R = 1.7 - 3.4 K.m²/W (excluding installation accessories)



Registration number: **20240940216**

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Version: 1.0

1. Warning

The information contained in this declaration is provided under the responsibility of Abriso-Jiffy in accordance with ISO 14025, NF EN 15804+A2 and the national supplement NF EN 15804+A2/CN.

Any exploitation, in whole or in part, of the information provided in this document must at least be accompanied by the full reference of the EPD of origin as well as its producer, who may provide a complete copy.

The EN 15804+A2 standard of the CEN and the national supplement NF EN 15804+A2/CN serve as rules for the definition of product categories (SPC).

NOTE The literal translation of "EPD (Environmental Product Declaration)" into French is "DEP" (Déclaration Environmentale du Produit). However, in France, the term FDES (Fiche de Déclaration Environmentale et Sanitaire) is commonly used, which includes both the Environmental Declaration and health information for the product subject to this FDES. The FDES is therefore an "EPD" supplemented by health information.

2. Reading guide

Example reading: -9,0 E -03 = $-9{,}0 \times 10^{-3}$

The following display rules apply:

— When the calculation result of the inventory is null and void, the value of zero is displayed.

— Abbreviation used:

N/A: Not Applicable

FU: Functional Unit

— The units used are specified in front of every flow: kilogram “kg”, gram “g”, kilowatt hour “kWh”, megajoule “MJ”, square metre “m^2”, kelvin “K”, watt “W”, kilometer “km”, millimeter “mm”.

3. Precaution when using the EPD for product comparison

The EPD of construction products may not be comparable if they do not comply with the NF EN 15804+A2 standard.

The NF EN 15804+A2 standard defines in *§ 5.3 Comparability of EPDs* for construction products* under which conditions they can be compared, based on the information provided by the EPD:

“Therefore, a comparison of the environmental performance of construction products using EPD information must be based on the use of the products and their impacts on the building, and must take into account the entire life cycle (all information modules)”

NOTE 1 Outside of the environmental assessment of a building, EPDs are not tools for comparing construction products and services.

NOTE 2 For the assessment of the contribution of buildings to sustainable development, a comparison of environmental aspects and impacts should be undertaken in conjunction with the socio-economic aspects and impacts of the building.

NOTE 3 For the interpretation of a comparison, reference values are required.

General information

- **Name and address of the manufacturer:** Abriso-Jiffy, Gijzelbrechtegemstraat 8-10, Anzegem, Belgium.
- Contact: www.abrisojiffy.com, info.be@abrisojiffy.com
- Contact person: Geert Saelens (gsaelens@abrisojiffy.com)
- **Site:** Abriso-Jiffy in Anzegem, Belgium.
- Geographical application: production in Belgium, implementation in France.
- **Type of EPD:** "From cradle to grave, with Module D" (A1-A3, A4-A5, B, C1-C4, D)
- **Type of EPD:** EPD range
- Product identification by its name or by an explicit designation or by the commercial reference(s): Styrisol® GR-300 (70 – 120 mm) et Styrisol® GR-500 (60 – 100 mm)
- Validity framework: This declaration Styrisol® GR-300 (70 – 120 mm) et Styrisol® GR-500 (60 – 100 mm) is valid until 31.12.2029 (validity period of 5 years).
- Independent external verification carried out according to ISO 14025 compliant environmental declaration programme by:

The EN 15804 standard of the ECS serves as the SPC[a].
Independent verification of the declaration and data in accordance with EN ISO 4025:2010 ☐ Internal ☒ External
Third party verification (depending on the case[b]): Marcel Gómez Ferrer (Marcel Gómez Consultoria Ambiental. info@marcelgomez.com)
Registration number in the ISO 14025 compliant program:
Date of 1st publication: 18.09.2024
Last update (specify in case of minor or major update): -
Verification date: 18.09.2024
Validity period: 5 years (31.12.2029)
a) Product categories defining rules b) Optional for business-to-business communication, mandatory for communication between a company and its customers (see EN ISO 14025:2010, 9.4)

• Description of the functional unit and product

— Description of the functional unit:

1 m² of isolation with an XPS insulation plate between 60 mm and 120 mm thick, allowing to ensure the thermal insulating function with a thermal resistance of R = 1.7 – 3.4 K.m²/W (excluding installation accessories) for insulation placement from the inside, based on a lifespan of 50 years.

Products covered by this EPD:

— GR-300 with a 33 kg/m3 density and 70 mm (2.31 kg/FU), 80 mm (2.64 kg/FU), 90 mm (2.97 kg/FU), 100 mm (3.3 kg/FU), 120 mm (4.08 kg/FU) thick.

— GR-500 with a 38 kg/m3 density and 60 mm (2.28 kg/FU), 70 mm (2.66 kg/FU), 80 mm (3.04 kg/FU), 90 mm (3.42 kg/FU), 100 mm (3.8 kg/FU) thick.

— **Reference product quantity**: 3.05 kg/FU (the medium weight)

Results of this EPD are **based on the average** of all products covered by this EPD.

A variability study was carried out to ensure that the products covered by this EPD fall within a 35% variability margin.

The only difference between the products covered for this EPD is the density or the thickness, in other terms: the weight per FU.

— Product and packaging description

This LCA concerns a range of XPS insulation products produced in Anzegem, Belgium.
Products in the same range have the same composition and are produced in the same way, but have different dimensions and densities. These products are listed in the table below.

Name	Thickness, mm	Length, mm	Width, mm	Density, kg/m³
GR-300	60 (GR-500), 70, 80, 90, 100, 120 (GR-300)	1250, 2500 2450 3000	600 1200 1000, 1200	33
GR-500				38

The only difference between the products covered for this EPD is the density or the thickness and, by extension, the weight per 1 m², the amount of raw materials used, the energy required to produce it, et cetera.

The packaging for 1 m² of XPS panels consists of:

Name	Quantity, kg
XPS pallet	6.34E-02
Corners in LDPE foam	4.65E-03
Retractable foil (LDPE)	3.20E-02
Stretchable foil (LDPE)	8.35E-03

— Product use description (fields of application):

XPS thermal insulation foams are suitable for a wide range of applications such as:

- perimetric insulation
- reversed insulation for roofs and terraces
- insulation for pitched roofs
- insulation of floors, including insulation of heavily used industrial floors
- thermal bridge insulation for exterior walls
- ETICS

- cavity wall insulation
- insulation of farm building ceilings
- insulation of building equipment and industrial installations
- prefabricated elements, e.g. sandwich panels for construction, sandwich panels in many different applications such as door systems, vehicle and container construction, partition wall systems, et cetera.

— Other technical characteristics not included in the declared unit:

Property	Unit	GR 300	GR 500
Density	kg/m3	33 +/-3	38 +/-3
Lambda Value	W/m.K (EN 12667)	0.035	0.035
Compressive strength by 10% deformation	kPa (EN826)	300	500
Capacities		-	-
Water absorption by immersion	%vol (EN 12087)	≤ 0.7	≤ 0.7
Water absorption by diffusion	%vol (EN12088)	≤ 3.0	≤ 3.0
Linear expansion coefficient	mm/mK	0.07	0.07
Fire class	Euroclass	E	E
Temperature resistance	°C	+70/-60	+70/-60

— Description of main product components and/or materials:

Components	**Quantity**
Polystyrene	>95%
Additives	<5%

— Specify if the product contains substances from the REACH candidate list (if mass exceeds 0,1 %):
The product does not contain substances from the REACH candidate list in a percentage greater than 0.1% by mass.

— Proof of suitability for use:
Recommendations for handling XPS foams can be found in product and application documentation, brochures and data sheets supplied directly by suppliers or available on the Internet.
Certification ACERMI: 19/068/1415 Edition 2.
Depending on the application, if fastening to the surface is required, suitable adhesives, adhesive tape or plastic plugs can be used.

— Distribution: B2B

— Description of reference service life (if applicable and in accordance with 7.3.3.2 of NF EN 15804):

Description of reference service life

Parameter	**Unities (expressed per functional unit or per unit)**
Reference service life	50
Declared product properties (when leaving the factory)	The declared properties appear on the DOP (declaration of performance) drawn up in accordance with NF EN 13164 standard in compliance with European regulations on construction products. The DOP can be requested from the supplier or manufacturer

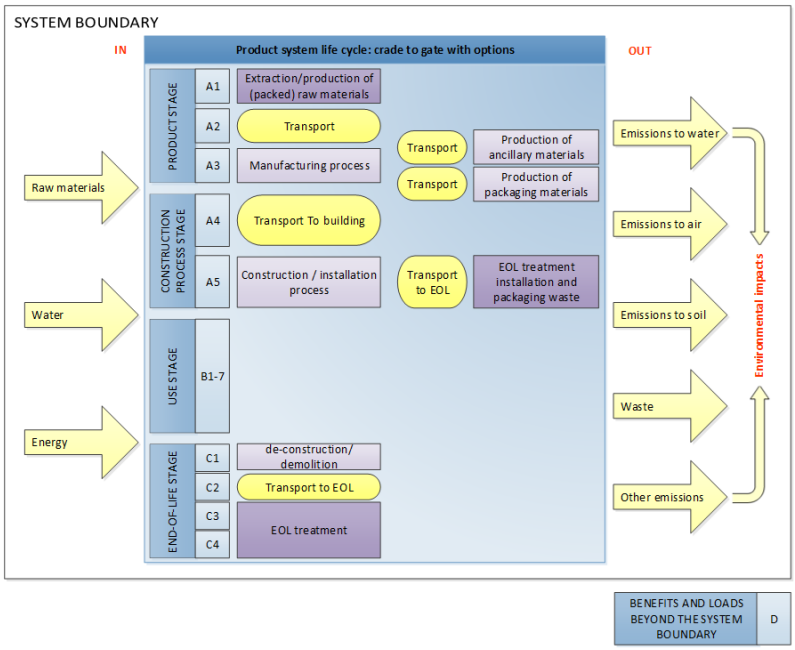
Theoretic application parameter (if imposed by the manufacturer), including references to appropriate requirements and application codes)	The use, installation and storage precautions, as well as the expected quality of the work, are defined in ATG Technical Approvals, which can be consulted on the Abriso-Jiffy website (www.abrisojiffy.com). Compliant with DTU 25.41
Presumed quality of work	The work quality is presumed to comply with the recommendations on the product data sheet. Complies with EN 13162:2012+A1:20.
Indoor environment (for indoor products)	Not relevant
Outdoor environment (for outdoor products)	Not relevant
Terms of use	Use of the product is assumed to be in accordance with the strong recommendations on the product data sheet
Service scenario for maintenance	Not relevant

Information on biogenic carbon content

Biogenic carbon content	Unit (expressed per functional unit or per unit)
Biogenic carbon content of the product (when leaving the factory)	0 kg C
Biogenic carbon content of the associated packaging (when leaving the factory)	0 kg C

- Service life stages

Service life schedule



The principal processes are: raw materials (polystyrene), manufacturing (electrical mix) and emissions during manufacturing (CO_2, DME, isobutane).

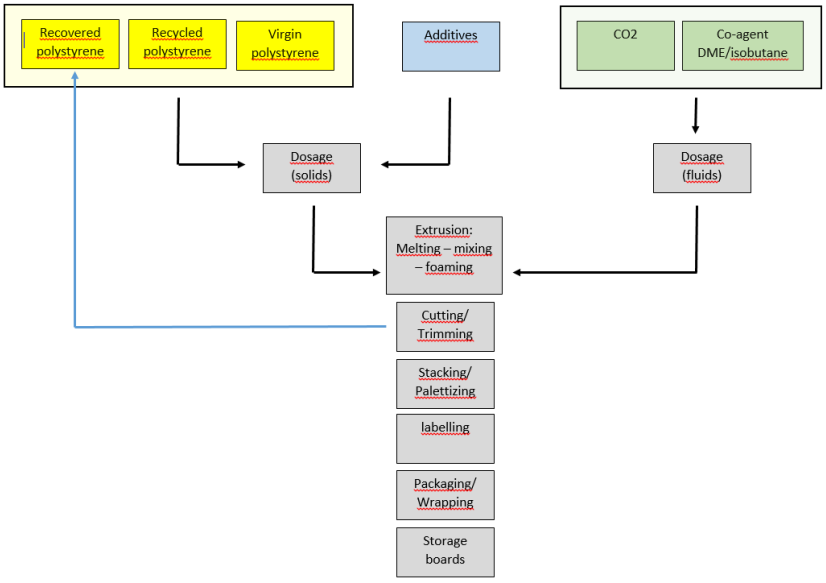
DESCRIPTION OF SYSTEM BOUNDARIES (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED														
PRODUCTION STAGE	CONSTRUCTION PROCESS STAGE		USE STAGE							END-OF-LIFE STAGE				PROFITS AND EXPENSES BEYOND SYSTEM BOUNDARIES
Product	Transport	Construction/installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Demolition/ Deconstruction	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
A1-A3	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X							X	X	X	X	X

Production stage, A1-A3

The insulation board consists of polystyrene (>95%), minor additives such as colourants, a blowing agent and a co-agent (carbon dioxide, DME, isobutane).
XPS is produced by a continuous extrusion process using electricity as the main energy source: polystyrene granules and additives are mixed and melted in an extruder, and a blowing agent is injected into the extruder under high pressure.
Due to the pressure drop at the exit, the polystyrene foams into a sheet with a homogeneous and closed cell structure.The plate edges are then trimmed and the product is cut to size.

The plant in Anzegem is certified according to ISO 9001 (No. BE013542 from 20.07.2023) and ISO 14001 (No. BE013541 from 20.07.2023).

The electric mix used for the production pattern making is a registration of the Ecoinvent data for the production mix in Belgium: Electricity, medium voltage {BE}| electricity, medium voltage, production mix | Cut-off, U (0.185 kg CO_2 eq/kWh).
Fout! Verwijzingsbron niet gevonden. shows the steps for the manufacturing process in the Abriso-Jiffy factory at Gijzelbrechtegemstraat 8-10, Anzegem, Belgium.



— **Attribution Information**
At Abriso-Jiffy, the energy consumption can be measured at machine level, which means that there was no need for any electricity allocation. The firm manufactures several types of insulation boards. The assignment of the packaging to the end product was achieved using a physical relationship - annual packaging use vs. annual volume of XPS sold.
Material inputs and outputs that were not available at product level, such as waste, were allocated in the same way.

"Recycled content (attribution) and/or biomass balance (BMB) allocation approaches such as the "mass balance credits" method and/or the "Book and Claim" method in accordance with ISO 22095 have not been used in this EPD.

— **Not taken into account:**
- Advantages and expenses of recycling, incineration and reuse of packaging waste of the raw materials in module D.
- Pallet as packaging of the raw materials, on which the big bags (PP) can be placed that are always collected and several times reused by the suppliers.
- Storage of liquid CO_2 and other blowing agents.
- Recycling of the raw materials packaging.
- All activities and the energy consumption for offices and staff.

Construction stage, A4-A5

— Stage description:

- For the transport (A4), a scenario of 3500 km was used. This is the worst-case scenario.
- The installation of the insulation boards (A5) is a manual process. As a result, no inputs such as energy, water or auxiliary materials are required.
- However, certain material waste is produced during installation and must be treated:
  1. Installation losses – we have assumed that installation losses amount to 5 %,
  2. Packaging of the insulation boards.

The waste processing scenario for the installation losses that was used in this project follows a default scenario for XPS insulation provided in CN EN15804+A2:

- 100% landfill, with 50 km of transport to the site.

The packaging waste processing was modelled according to a European scenario (Eurostat[1] data).

Transport to the building site

Information about the scenario	Units (expressed per functional unit or per unit)
Type of fuel and consumption of vehicle or type of vehicle used for transport, e.g. long-distance truck, boat, et cetera	Type of vehicle: Truck 16-32 t, EURO6 (38 l diesel /100 km)
Distance	3500 km
Capacity use (including unloaded returns)	50 % including the unloaded returns – Ecoinvent scenario used
Bulk volume of transported goods	33 kg/m^3 et 38 kg/m^3
Volume capacity use coefficient (coefficient : =1 or <1 or ≥1 for the compressed or packaged products)	1

Installation in the building

Information about the scenario	Unities (expressed per functional unit or per unit)
Auxiliary inputs for the installation (specified per material)	Not relevant
Water use	0 l
Use of other resources	0 kg
Quantitative description of the type of energy (regional mix) and consumption during the installation process	Not relevant
Material waste at the construction site before processing of the waste generated by the installation of the product (specified per type)	0.153 kg of XPS (installation losses) 6.34E-02 kg of XPS (packaging) 4.50E-02 kg of LDPE (packaging)
Material output (specified per type) produced by waste processing on the construction site, e.g. collection in view of recycling, energy recovery, disposal (specified per processing chain)	Recycling: 6.34E-02 kg of XPS (packaging), 1.71E-02 kg of LDPE Energy recovery: 1.72E-02 kg of LDPE Landfill: 1.65E-02 of XPS, 1.07E-02 kg of LDPE
Direct emissions into ambient air, soil and water	Not relevant

Use stage (excluding potential savings), B1-B7

This stage is equal to 0, because the product is always between other materials.

[1] https://ec.europa.eu/eurostat/databrowser/view/ENV_WASPAC__custom_4382061/default/table

End-of-life stage, C1-C4

Stage description:

This stage includes the following different end-of-life modules: C1, deconstruction, demolition; C2, transport to the waste processing plant; C3, waste processing in view of reuse, recovery and/or recycling; C4, disposal.

— **C1**: The deconstruction process of the insulation boards does not require any input such as electricity, tools or materials.
As a result, the environmental impact of this module is set at 0.

— **C2**: The default scenario provided in the French CN of the EN15804+A2 standard was used for modelling the transport to the waste processing plant.
This scenario assumes that all XPS insulation is 100% landfill at end-of-life and foresees that the non-hazardous waste is transported over a distance of 50 km.
As a result, module C2 was modelled in the following manner: 3,3 kg transported over 50 km, using the "Transport, freight, lorry 16-32 metric ton, EURO6 {RER}| transport, freight, lorry 16-32 metric ton, EURO6 | Cut-off, U" data registration.

— **C3**: As the XPS insulation boards are not recycled at the end of their service life, no input or output is taken into account in C3, that is set at 0.

— **C4:** The default scenario provided in the French CN of the EN15804+A2 standard was used - This scenario assumes that all XPS insulation is 100% landfill at end-of-life.

— Emission of biogenic carbon dioxide resulting from the residual biogenic carbon in landfill: 0 kg.

Process	Unities (expressed per functional unit of the components. Products or materials specified per type of material)
Collection process specified per type	3.05 kg collected individually
	0 kg collected with mixed construction waste
Recovery system specified per type	0 kg intended for reuse
	0 kg intended for recycling
	0 kg intended for energy recovery
Disposal specified per type	3.05 kg of product for final disposal

Profit and expense, D

— Stage description:

The following waste flows are recycled after their end-of-life: plastic packaging in A5.

— The stages and/or input and output taken into account:

Valorised substances/ materials exceeding system boundaries	Recycling process exceeding system boundaries	Saved substances /materials / energy	Associated quantities
LDPE	Recycling	LDPE	1.71E-02 kg recycled
	Incineration	Saved energy (<60% efficiency)	1.72E-02 kg de LDPE incinerated
XPS (pallet)	Recycling	XPS	6.34E-02 kg recycled

• Information for the calculation of the life cycle analysis

RCP used	The standards NF EN 16783, EN 15804+A2 of the ECS (November 2019) and the national supplement NF EN 15804+A2/CN 2022-10 (October 2022)
System boundaries	From cradle to grave (modules A1-A5, B, C1-C4, D)
Allocations	Allocation per unit of mass where required. The allocation approaches of recycled content (attribution) and/or BMB (biomass balance) such as the "mass balance credits" method and/or the "Book and Claim" method in compliance with ISO 22095 cannot be used in the framework of the ECO EPD.
Geographic and temporal representativity	Country of production: **Belgium** Year of the production data: **2021** Secondary database: **Ecoinvent 3.9, Industry 2.0.** Only data younger than 10 years were used.
Variability (for the non-specific EPD, i.e. collective, range, multi-site EPDs)	The variability study was carried out to ensure that the difference between the boards with a density of 33 kg/m^3 and 38 kg/m^3 does not exceed the authorised limits. The variation lies between -30% and +24%. Details are provided in the following chapter.

Data	Description of the data quality
Specific data	The qualitative evaluation of the principal specific data is the following: — 66.6 % of data with "very good" as average score — 33.3% of data with "good" as average score
General data	The qualitative evaluation of the principal general data is the following: — 66.6 % of data with "good" as average score For the third most important factor (emissions in the air), there was no general data registration used and it was therefore impossible to make this evaluation.

Representativity of the EDP	
Geographic	This EDP is representative of the XPS insulation boards manufactured in Belgium and used in France.
Technologic	This EDP is representative of the XPS insulation boards
Temporal	This EDP is representative of manufacture in 2021
Variability	The declared environmental impacts are effects of a representative product. The other products covered by this EPD are subject to a variability of +/-35%.

• Results of the life cycle analysis

Hereafter, the tables synthetizing the results of the LCA.

The following results are **based on the average** of 1 m² of a XPS insulation board of all the products covered by this EPD.

The variation of the results (in relation to the average value) for the products covered by this EPD is presented in the following table:

Product - Thickness	Climate Change	Use of fossil resources/PENRT	Photochemical ozone formation	Disposed non-hazardous waste
GR-300 120 mm – highest impact	**25%**	**25%**	**25%**	**25%**
Average	**0%**	**0%**	**0%**	**0%**
GR-500 60 mm – lowest impact	**-34%**	**-34%**	**-34%**	**-34%**

- Totals may not correspond to the sum of rounded-off figures due to this rounding-off.
- The total neglected input flows per module are less than 5% of the energy consumption and mass and less than 1% of the total energy consumption and mass in accordance with the EN15804 + A2 standard.
- For energy indicators used as raw material: a negative value corresponds to the change in use from raw materials to fuels (in the case of incineration, for example). Application of Annex I of NF EN 15804+A2/CN.

- Exoneration of responsibility with regard to the uncertainties in the methods used to calculate reference and additional environmental impact indicators in accordance with the EN15804+A2:2019 standard (§5.4.2 ; §7.2.3.3):
  - Exoneration of type 1: This impact category concerns mainly the possible impact on human health of low-dose ionising radiation from the nuclear fuel. It does not take into account the consequences of possible nuclear accidents, occupational exposure or the disposal of radioactive waste in underground installations. Potential ionising radiation from soil, radon and certain building materials is also not measured by this indicator. Indicator(s) concerned: Ionising radiation (human health).
  - Exoneration of type 2: The results of these indicators should be used with caution because the uncertainties of these results are high or because the experience related to these indicators is limited.
    Indicator(s) concerned:: Depletion of abiotic resources (minerals and metals); Depletion of abiotic resources (fossils); The need for water; Ecotoxicity (freshwater); Human toxicity, cancerogenic effects; Human toxicity, non-cancerogenic effects; Impacts linked to land use/Soil quality.

REFERENCE ENVIRONMENTAL IMPACT INDICATORS

Environmental Impacts	Production stage	Construction stage		Use stage							End-of-life stage				D Profits and expenses beyond system boundaries
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Climate change - total *kg CO_2 equiv/FU or DU*	9,14E+00	1,97E+00	6,45E-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	2,82E-02	0,00E+00	4,02E-01	-1,53E-01
Climate change – fossil fuels *kg CO_2 equiv/FU or DU*	9,13E+00	1,97E+00	6,45E-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	2,82E-02	0,00E+00	4,02E-01	-1,53E-01
Climate change - biogenic *kg CO_2 equiv/FU or DU*	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
Climate change – land use and land use transformation *kg CO_2 equiv/FU or DU*	2,87E-03	9,74E-04	2,05E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,39E-05	0,00E+00	6,97E-06	-1,29E-05
Ozone depletion *kg CFC 11 equiv/FU or UD*	1,37E-07	4,29E-08	1,11E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,13E-10	0,00E+00	8,99E-10	-1,94E-09
Acidification *mol of H+ equiv/FU or DU*	2,50E-02	4,31E-03	1,54E-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	6,16E-05	0,00E+00	2,03E-04	-4,29E-04
Water eutrophication, freshwaters *kg of P equiv/FU or DU*	5,07E-05	1,60E-05	3,62E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,29E-07	0,00E+00	2,44E-07	-9,93E-07
Marine water eutrophication *kg of N equiv/FU or DU*	5,00E-03	1,06E-03	3,31E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,52E-05	0,00E+00	1,99E-04	-8,51E-05
Terrestrial water eutrophication *mol of N equiv/FU or DU*	5,49E-02	1,11E-02	3,54E-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	1,58E-04	0,00E+00	9,10E-04	-9,27E-04
Photochemical ozone formation *kg of NMCOV equiv/FU or DU*	7,52E-02	6,69E-03	4,18E-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	9,56E-05	0,00E+00	4,44E-04	-3,40E-04
Depletion of abiotic resources (minerals & metals) *kg Sb equiv/FU or DU*	9,14E-06	6,45E-06	8,52E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,21E-08	0,00E+00	6,26E-08	-9,31E-08
Depletion of abiotic resources (fossil fuels) *MJ/FU or DU*	2,87E+02	2,80E+01	1,60E+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	4,00E-01	0,00E+00	7,11E-01	-4,94E+00
Water demand *m^3 of deprivation equiv in the world/FU orDU*	2,19E+00	1,15E-01	1,19E-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	1,65E-03	0,00E+00	3,16E-03	-4,05E-02

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

Environmental Impacts	Production stage	Construction stage		Use stage							End-of-life stage				D Profits and expenses beyond system boundaries
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	
Emissions of fine particles *Diseases index/FU or DU*	2,15E-07	1,46E-07	1,97E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,09E-09	0,00E+00	4,92E-09	-3,22E-09
Ionising radiation (human health) *kBq of U235 equiv/FU or DU*	2,00E+00	1,42E-02	1,01E-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	2,03E-04	0,00E+00	7,62E-04	-3,12E-02
Ecotoxicity (freshwaters) *CTUe/FU or DU*	3,02E+01	1,38E+01	2,33E+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	1,98E-01	0,00E+00	7,22E-01	-5,61E-01
Human toxicity, cancerogenic effects *CTUh/FU or DU*	1,72E-09	8,99E-10	1,58E-10	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,28E-11	0,00E+00	1,80E-11	-8,83E-11
Human toxicity, non-cancerogenic effects *CTUh/FU or DU*	4,54E-08	1,99E-08	3,53E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,84E-10	0,00E+00	8,23E-10	-6,38E-10
Impacts linked to land use /Soil quality *Without dimension/FU or DU*	1,19E+01	1,69E+01	1,71E+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	2,42E-01	0,00E+00	1,74E+00	-5,18E-02

UTILISATION DES RESSOURCES															
Utilisation des ressources	**Etape de production**	**Etape de construction**		**Etape d'utilisation**							**Etape de fin de vie**				**D Bénéfices et charges au-delà des frontières du**
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Utilisation	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction / démolition	C2 Transport	C3 Traitement des déchets	C4 Elimination	
Utilisation de l'énergie primaire renouvelable, à l'exclusion des ressources d'énergie primaire renouvelables utilisées comme matières, MJ/UF ou UD	5,89E+00	4,33E-01	3,27E-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	6,19E-03	0,00E+00	3,16E-02	-2,87E-02
Utilisation des ressources d'énergie primaire renouvelables en tant que matières premières, MJ/UF ou UD	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
Utilisation totale des ressources d'énergie primaire renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières) - MJ/UF ou UD	5,89E+00	4,33E-01	3,27E-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	6,19E-03	0,00E+00	3,16E-02	-2,87E-02
Utilisation de l'énergie primaire non renouvelable, à l'exclusion des ressources d'énergie primaire non renouvelables utilisées, MJ/UF ou UD	8,12E+01	2,80E+01	1,97E+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	4,00E-01	0,00E+00	7,11E-01	-3,88E+00
Utilisation des ressources d'énergie primaire non renouvelables en tant que matières, MJ/UF ou UD	2,06E+02	0,00E+00	-3,63E+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	3,58E+00
Utilisation totale des ressources d'énergie primaire non renouvelables (énergie primaire et ressources d'énergie primaire utilisées comme matières premières), MJ/UF ou UD	2,87E+02	2,80E+01	1,60E+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	4,00E-01	0,00E+00	7,11E-01	-3,05E-01
Utilisation de matière secondaire - kg/UF ou UD	6,10E-02	0,00E+00	3,05E-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
Utilisation de combustibles secondaires renouvelables - MJ/UF ou UD	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
Utilisation de combustibles secondaires non renouvelables - MJ/UF ou UD	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
Utilisation nette d'eau douce - *m^3/UF ou UD*	2,04E+00	3,78E-03	1,02E-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	5,40E-05	0,00E+00	8,66E-04	1,99E-03

CATEGORIE DE DECHETS															
Catégorie de déchets	**Etape de production**	**Etape de construction**		**Etape d'utilisation**							**Etape de fin de vie**				**D Bénéfices et charges au-delà des frontières du**
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Utilisation	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction / démolition	C2 Transport	C3 Traitement des déchets	C4 Elimination	
Déchets dangereux éliminés - *kg/UF ou UD*	1,45E-04	1,78E-04	1,69E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,55E-06	0,00E+00	3,31E-06	-9,17E-07
Déchets non dangereux éliminés - *kg/UF ou UD*	3,45E-01	1,39E+00	1,53E-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	1,99E-02	0,00E+00	3,05E+00	-6,34E-04
Déchets radioactifs éliminés - *kg/UF ou UD*	4,27E-04	9,21E-06	2,28E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,32E-07	0,00E+00	4,20E-07	-8,20E-07

FLUX SORTANTS															
Flux sortants	**Etape de production**	**Etape de construction**		**Etape d'utilisation**							**Etape de fin de vie**				**D Bénéfices et charges au-delà des frontières du**
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Utilisation	B2 Maintenance	B3 Réparation	B4 Remplacement	B5 Réhabilitation	B6 Utilisation de l'énergie	B7 Utilisation de l'eau	C1 Déconstruction / démolition	C2 Transport	C3 Traitement des déchets	C4 Elimination	
Composants destiné à la réutilisation, kg/UF ou UD	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
Matériaux destinés au recyclage, kg/UF ou UD	1,50E-02	0,00E+00	8,12E-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
Matériaux destinés à la récupération d'énergie, kg/UF ou UD	7,39E-04	0,00E+00	1,72E-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
Energie Electrique fournie à l'extérieur, MJ/UF ou UD	2,24E-03	0,00E+00	7,31E-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
Energie Vapeur fournie à l'extérieur, MJ/UF ou UD	4,48E-03	0,00E+00	1,46E-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
Energie gaz et process fournie à l'extérieur, MJ/UF ou UD	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

ENVIRONMENTAL IMPACTS Aggregation of the various modules to produce a "Stage Total" or "Lifecycle Total"						
Impacts/Flow	Production stage	Construction stage	Use stage	End-of-life stage	**Lifecycle total**	**Stage Profits and expenses beyond system boundaries**
Reference environmental impacts indicators						
Climate change - total *kg CO_2 equiv/FU or DU*	9,14E+00	2,62E+00	0,00E+00	4,30E-01	1,22E+01	-1,53E-01
Climate change – fossil fuels *kg CO_2 equiv/FU or DU*	9,13E+00	2,62E+00	0,00E+00	4,30E-01	1,22E+01	-1,53E-01
Climate change - biogenic *kg CO_2 equiv/FU or DU*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Climate change – land use and land use transformation *kg CO_2 equiv/FU or DU*	2,87E-03	1,18E-03	0,00E+00	2,09E-05	4,07E-03	-1,29E-05
Ozone depletion *kg CFC 11 equiv/FU or UD*	1,37E-07	5,41E-08	0,00E+00	1,51E-09	1,93E-07	-1,94E-09
Acidification *mol of H+ equiv/FU or DU*	2,50E-02	5,85E-03	0,00E+00	2,64E-04	3,11E-02	-4,29E-04
Aquatic eutrophication, freshwater *kg of P equiv/FU or DU*	5,07E-05	1,96E-05	0,00E+00	4,73E-07	7,08E-05	-9,93E-07
Marine aquatic eutrophication *kg of N equiv/FU or DU*	5,00E-03	1,39E-03	0,00E+00	2,14E-04	6,60E-03	-8,51E-05
Terrestrial aquatic eutrophication *mol of N equiv/FU or DU*	5,49E-02	1,46E-02	0,00E+00	1,07E-03	7,05E-02	-9,27E-04
Photochemical ozone formation *kg of NMCOV equiv/FU or DU*	7,52E-02	1,09E-02	0,00E+00	5,40E-04	8,66E-02	-3,40E-04
Depletion of abiotic resources (minerals & metals) *kg Sb equiv/FU or DU*	9,14E-06	7,30E-06	0,00E+00	1,55E-07	1,66E-05	-9,31E-08
Depletion of abiotic resources (fossil fuels) *MJ/FU or DU*	2,87E+02	4,41E+01	0,00E+00	1,11E+00	3,33E+02	-4,94E+00
Water demand *m^3 of deprivation equiv in the world/FU or DU*	2,19E+00	2,34E-01	0,00E+00	4,81E-03	2,43E+00	-4,05E-02

Additional environmental impacts indicators						
Emissions of fine particles *Diseases index/FU or DU*	2,15E-07	1,66E-07	0,00E+00	7,02E-09	3,88E-07	-3,22E-09
Ionising radiation (human health) *kBq of U235 equiv/FU or DU*	2,00E+00	1,15E-01	0,00E+00	9,65E-04	2,11E+00	-3,12E-02
Ecotoxicity (freshwaters) *CTUe/FU or DU*	3,02E+01	1,62E+01	0,00E+00	9,20E-01	4,73E+01	-5,61E-01
Human toxicity, cancerogenic effects *CTUh/FU or DU*	1,72E-09	1,06E-09	0,00E+00	3,08E-11	2,81E-09	-8,83E-11
Human toxicity, non-cancerogenic effects *CTUh/FU or DU*	4,54E-08	2,34E-08	0,00E+00	1,11E-09	6,99E-08	-6,38E-10
Impacts linked to land use /Soil quality *Without dimension/FU or DU*	1,19E+01	1,86E+01	0,00E+00	1,98E+00	3,25E+01	-5,18E-02

ENVIRONMENTAL IMPACTS

Aggregation of the various modules to produce a "Stage Total" or "Lifecycle Total"

Impacts/Flow	Production stage	Construction stage	Use stage	End-of-life stage	**Lifecycle total**	**Stage Profits and expenses beyond system boundaries**
Consumption of resources						
Use of renewable primary energy excluding renewable primary energy resources used as raw materials - *MJ/FU or DU*	5,89E+00	7,60E-01	0,00E+00	3,78E-02	6,69E+00	-2,87E-02
Use of renewable primary energy resources used as raw materials - *MJ/FU or DU*	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 (primary energy and primary energy resources used as raw materials) - *MJ/FU or DU*	5,89E+00	7,60E-01	0,00E+00	3,78E-02	6,69E+00	-2,87E-02
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - MJ/FU *or DU*	8,12E+01	4,77E+01	0,00E+00	1,11E+00	1,30E+02	-3,88E+00
Use of non-renewable primary energy resources used as raw materials - *MJ/FU or DU*	2,06E+02	-3,63E+00	0,00E+00	0,00E+00	2,03E+02	3,58E+00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - *MJ/FU or DU*	2,87E+02	4,41E+01	0,00E+00	1,11E+00	3,33E+02	-3,05E-01
Use of secondary material - *kg/FU or DU*	6,10E-02	3,05E-03	0,00E+00	0,00E+00	6,41E-02	0,00E+00
Use of renewable secondary fuels - *MJ/FU or DU*	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/FU or DU*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water - *m^3/FU or DU*	2,04E+00	1,06E-01	0,00E+00	9,20E-04	2,15E+00	1,99E-03

ENVIRONMENTAL IMPACTS Aggregation of the various modules to produce a "Stage Total" or "Lifecycle Total"						
Impacts/Flow	Production stage	Construction stage	Use stage	End-of-life stage	**Lifecycle total**	**Stage Profits and expenses beyond system boundaries**
Waste categories						
Hazardous waste disposed -*kg/FU or DU*	1,45E-04	1,95E-04	0,00E+00	5,85E-06	3,46E-04	-9,17E-07
Non-hazardous waste disposed - *kg/FU or DU*	3,45E-01	1,54E+00	0,00E+00	3,07E+00	4,84E+00	-6,34E-04
Radioactive waste disposed - *kg/FU or DU*	4,27E-04	3,20E-05	0,00E+00	5,52E-07	4,59E-04	-8,20E-07
Output flows						
Components for re-use - *kg/FU or DU*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling - *kg/FU or DU*	1,50E-02	8,12E-02	0,00E+00	0,00E+00	9,62E-02	0,00E+00
Materials for energy recovery - *kg/FU or DU*	7,39E-04	1,72E-02	0,00E+00	0,00E+00	1,79E-02	0,00E+00
Exported electrical energy - *MJ/FU or DU*	2,24E-03	7,31E-02	0,00E+00	0,00E+00	7,53E-02	0,00E+00
Exported steam energy - *MJ/FU or DU*	4,48E-03	1,46E-01	0,00E+00	0,00E+00	1,51E-01	0,00E+00
Exported gas energy and process - *MJ/FU or DU*	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional information about the spread of dangerous substances in the interior air, soil and water during the use stage

Interior air

VOC and formaldehyde

Styrisol® can be used indoors, but is generally not exposed to indoor air, but covered by a finishing element or system.

The emissions of Styrisol were tested by Eurofins Product Testing A/S, Smedeskovvej 38, 8464 Galten, Denmark - voc@eurofins.com, www.eurofins.com/voc-testing in October 2011 in accordance with EN ISO 16000.

The tested product obtained an A+ rating from the French labelling system for volatile organic components (VOC).

This recommendation is based on French regulations published on 25 March 2011 (decree DEVL1101903D) and 13 May 2011 (decree DEVL1104875A).

For more information, please consult www.eurofins.com/france-voc



Resistance against fungus growth development

The product does not claim any performance in that respect.

Radioactive emissions

The product does not claim any performance in that respect.

Soil and water

The product does not claim any performance in that respect.

Product contribution to the life quality inside the buildings

- This product does not contribute to visual, olfactory or acoustic comfort.
- Product characteristics participating in creating hygrothermal comfort conditions in the building.
  Hydrophily, hygroscopicity, water vapour permeance and water absorption are indicated in the technical description above and in the ACERMI certificate (No. 19/068/1415).
  Styrisol products have a lambda value of 0.035 W/mK in accordance with the EN 12667 standard and are certified by ACERMI (No. 19/068/1415).

Additional information (optional)