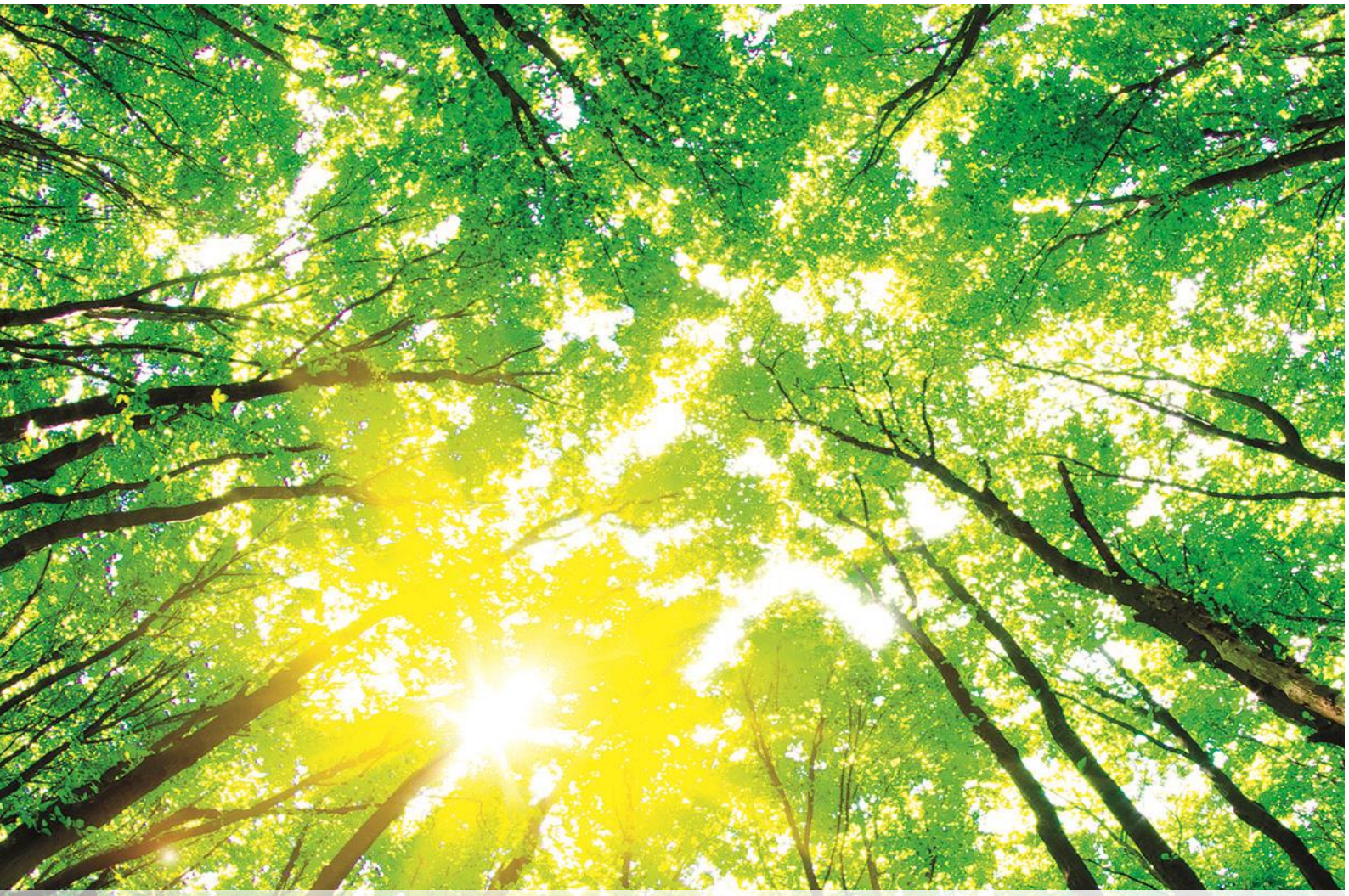
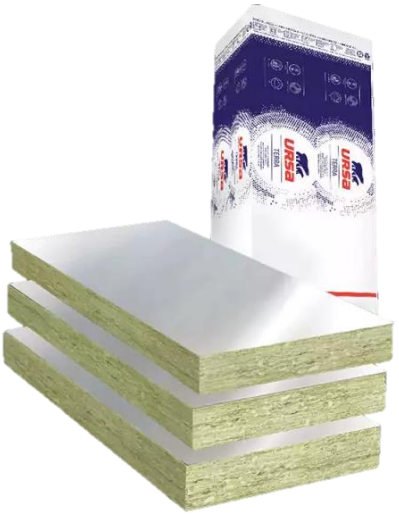


Environmental and Health Product Declaration

ENVIRONMENTAL AND HEALTH PRODUCT DECLARATION (EPD & HPD) *In conformance with Standard NF EN 15804+A1 and its*



2. Rolls and panels naked or covered in medium density glass wool URSA

URSA TERRA WALLTEC REFLEX / UGW32AL

131 mm

R= 4,05 m^2·K/W

Completion date January 2017

Publication date: January 2021

Contents

Warning

This Environmental product Declaration (EPD) is a translation from the French FDES

The information contained in this declaration has been submitted with the full responsibility of: **URSA** (FDES producer) in accordance with NF EN 15804+A1 and complementary national standard NF 15 804/CN.

All use made, albeit total or partial, of the information provided in this document shall be accompanied by the complete original FDES reference as a minimum and shall include the name of its producer who may submit a complete copy.

CEN Standard EN 15804+A1 complementary national standard NF 15 804/CN serve as regulations for defining the categories of products (RCP).

This declaration has been compiled on the basis of the commonly used methods developed by PWC for the National Association of Insulation materials and mineral wools (FILMM) N° : April 2015

NOTE: In France « EPD (Environmental Product Declaration) » is translated as « DEP » (Déclaration Environnementale de Produit). However, in France FDES is the term most commonly used (*Fiche de Déclaration Environnementale et Sanitaire -Environmental and Health Product Declaration*) which groups together the Environmental Declaration and Health information for the product, which is the subject of this FDES. The FDES is therefore an EPD complemented with health information.

Informative guide

Example of a reading: -9.0 E -03 = -9.0 x 10-3

The following display information applies:

- When the inventory calculation result is nil, the zero value is displayed
- Abbreviation used
- **…**

Precautions when using FDES for comparison of products

The FDES of construction products cannot be compared if they do not conform to standard NF EN 15804+A1.

Standard NF EN 15804 in section § 5.3 « Comparability of Product Environmental Declarations for construction products », defines the conditions in which construction products may be compared based on the information provided by the FDES:

“A comparison of the environmental performance of construction products using EPD should be based on use of the products and their impact on the building and should take into account the full life cycle (all the information modules)."

General information

« Environmental Product Declaration pursuant to Standard NF EN ISO 14025 and NF EN 15804+A1 »
NOTE: The FDES for construction products cannot be compared if they do not conform to standard NF EN 15804+A1.

Type of Environmental Declaration	"From cradle to grave" Individual FDES for the commercial reference with the product name declared below:
Identification of Product Category Regulation	Standard EN 15804+A1 complementary national standard NF 15 804/CN serve as regulations for defining the categories of products (RCP). (PCR)
EPD publisher	Josep Sole (Sustainability & Technical manager URSA Insulation) josep.sole@ursa.com
Declared product name	URSA TERRA WALLTEC REFLEX / UGW32AL 131 mm R= 4,05 m2·K/W
Declaration proprietor	URSA France SAS. Noisy Le Grand 93160 Maille Nord III 7 porte de Neuilly www.ursa.fr URSA INSULATION SA www.ursa.com
Manufacturer represented in the declaration	URSA Product manufactured at the Desselguem
Programme logo and website address	AFNOR-INIES www.inies.fr
Date of publication	January 2017
Validity period (5 years)	January 2022
Product composition (reference flow)	Quantity of mineral wool: 3904 g Thickness: 131 mm Surfacing 48 g/m² aluminum micro-perforated Packaging for transport and distribution: 0,05 kg/m² LDPE Palletisation (51,84 m²/pallet) 1,62 kg/pallet HDLPE 1,61 kg/pallet HDLPE 0,01 kg/pallet HDLPE 24 kg/ wood pallet HDLPE

Completion and checking

The standard EN 15804 is used as PCR		
Independent check according to EN ISO 14025	☑ External	Attestation no.:
Name expert checker	Yannick Le Guern yannick.leguern@cegetel.net	

Description of functional unit and the product

Description of functional unit

Given the purposes of this product, the functional unit is described as follows:

It performs the function of thermal isolation on 1 m^2 de wall ensuring thermal resistance of R = 4,05 K.m².W-1 for application Insulation of facades and cavity walls.

Description of the product and its use:

This Environmental and Health Product Declaration (FDES / EPD) describes the environmental impacts of 1m² glass wool insulation.

URSA France SAS manufactures glass wool using natural and plentiful raw materials (sand) or recycled materials (Cullet) in a fusion and fibre formation process. The products obtained are presented in the form of a "mineral wool mattress" composed of a flexible airy structure.

On Earth, the best insulator is dry immobile air at 10°C : its thermal conductivity is 0.025 W/(m.K) (watts per Kelvin degree metre). Thermal conductivity of mineral wools is close to that of immobile air as their lambda varies from 0.030 W/(m.K) for the highest performing to 0.040 W/(m.K) for the lowest performance.

Thanks to their intertwined structure, mineral wools (glass wool or stone wool) are porous materials which trap air, thus providing an insulation solution. The porous and elastic structure of the mineral wool also absorbs aerial noise, impact sounds and enables acoustic correction inside buildings and premises. Finally, as they are based on naturally incombustible minerals, mineral wools are incombustible and do not propagate fire.

Insulation with mineral wool (glass wool) is used in buildings and in industrial installations. It ensures a high level of comfort, reduces energy costs, reduces carbon dioxide emissions (CO_2), prevents heat loss through sloping roofs, walls, ceilings, pipes and boilers, reduces sound pollution and protects houses and industrial installations from risk of fire.

The service life of a glass wool product is similar to that of a building, as it is a component of that installation (often established at 50 years).

Technical data and physical characteristics

Reference standard for declaring product performance: EN 13162

Planned use: thermal insulation for building / Insulation of facades and cavity walls

CE designation codes: MW-EN 13162-T3-MU1-WS-WL(P)-AFr10

Thermal resistance of the product: 4,05 K.m².W-1

Thermal conductivity of the product: 0,032 W / (m.K)

Reaction to fire: Euroclasse A1

Acoustic properties: resistance to air flow is ≥ 10 kPa·s/m^2

Description of main components and/or materials for 1m² of product.

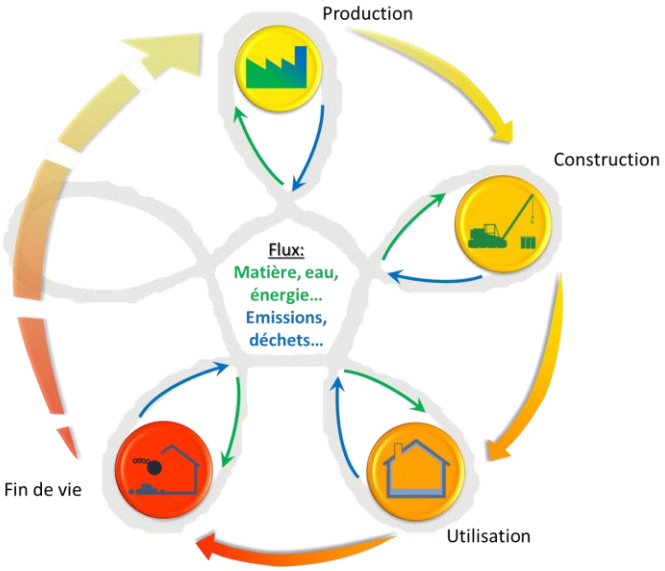
Parameter	Value
Quantity of mineral wool:	3904 g
Thickness:	131 mm
Surfacing	48 g/m² aluminum micro-perforated
Packaging for transport and distribution:	0,05 kg/m² LDPE Palletisation (51,84 m² /pallet) 1.62 kg/pallet HDLPE 1.61 kg/pallet HDLPE 0.01 kg/pallet HDLPE 24 kg/ wood pallet
Hazardous substances	No hazardous substances to be declared

Description of reference service life

Reference service life (RSL)	50 years
Justification	The chosen RSL is a period which on expiry will require renovation of the building, due to requirements other than this product's service life (which may exceed 50 years). The product retains its technical performance during the full-service life.
Declared properties of the product (on release from the factory) and finishes etc.	Panels or rolls of glass wool with a 131 mm surfaced with a coating aluminum micro-perforated
Theoretical parameters of application (if imposed by the manufacturer) including the references to the appropriate practices	---
Presumed quality of the works, when the installation conforms to the manufacturer's instructions.	Installation should be made in accordance with the regulations in the field or applicable (DTU or DTA in France)
External environment (for outside applications) for example, weather conditions, pollutants, exposure to UV rays and wind, building orientation, shade, temperature	Mineral wool products are not used directly on the exterior of buildings and are therefore not affected by external conditions.
Interior environment (for indoor applications) for example, temperature, humidity, exposure to chemical products	Mineral wool products are used inside buildings with a protective covering (plasterboard/wood/…)
Conditions of use, for example frequency of use, mechanical exposure	Mineral wool products are not subject to any restrictions on use, or mechanical exposure.
Maintenance, for example, frequency required, type and quality and replacement of replaceable components.	Mineral wool products do not require maintenance during their useful life.

Lifecycle phases

Lifecycle



Phases and modules of life cycle taken into account														
Production phase	**Construction phase**		**Use phase**							**End of life phase**				**D Benefits and loads beyond the limits of the system**
A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Use of water	C1 Deconstruction / demolition	C2 Transport	C3 Waste treatment	C4 Removal	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	MNA

A1-A3 production phase

Description of the phase:

The production phase of mineral wool products is divided into three modules: A1, supply of raw materials; A2, transport and A3, manufacture.

The addition of modules A1, A2 et A3 is an option provided by standard EN 15 804+A1 and has been applied to this FDES / EPD.

A1 Supply of raw materials

This module takes into account the supply and processing of all raw materials and the energies they produce prior to the manufacturing process. In particular, it covers supply of raw materials for

manufacturing the binding and glass fibres, such as sand. In addition to these raw materials, recycled materials (cullet) are used in the process.

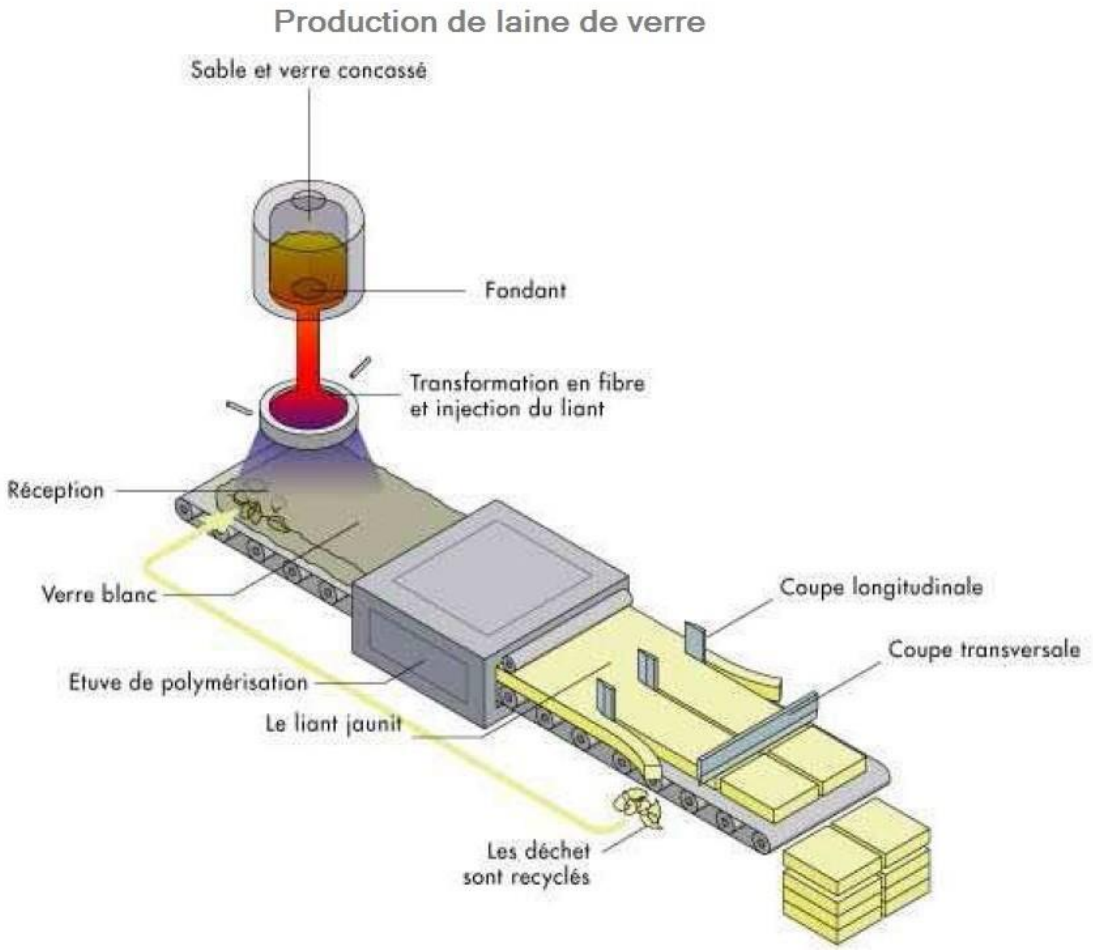
A2 Transport to manufacturer

Raw materials are transported to the manufacturing site. The modelling includes road, river or rail transport (average values) for each of the raw materials.

A3 Manufacturing

Glass wool manufacture includes stages of fusion and fibre formation (see diagram of manufacturing process). Furthermore, production of packaging is taken into account during this phase.

Diagram of manufacturing procedure



A4-A5 construction phase

Description:
The construction phase is divided into two modules: A4, transport to the construction site and A5, installation in the building.

Description of the scenarios and supplementary technical information.

A4 Transport to construction site:

This module includes transport from factory to site.
The transport is calculated on the basis of a scenario that includes the following parameters:

Parameter	Value
Type of fuel and consumption of the vehicle or type of vehicle used for the transport for example, long distance lorry, boat, etc.	Lorry with useful load of 24 t diesel consumption of 38 litres per 100 km
Average distance to site	460 km
Use of capacity (including returning empty)	100 % volume capacity 30% of empty returns
Density of transported product	51,84 m² par pallet et 20 pallets per lorry Density of product = 3904 / 131 = 29,8 kg/m³
Coefficient of use of volume capacity	>1 (products compressed in the packaging)

A5 Installation in the building:

This module includes the waste products created during installation of the mineral wool in the building, supplementary production required to compensate losses and treatment of site waste. The scenarios used for the quantity of waste generated during the installation and the treatment of the site waste are as follows:

Parameter	Value
Ancillary inputs for installation (specified by material)	No ancillary inputs
Use of water	No water used
Use of other resources	No other resources
Quantitative description of the type of energy (regional mix) and consumption during the installation process	No energy required
Waste produced on the construction site prior to waste treatment generated by installation of the product (specified by type)	2 % of glass wool
Materials (specified by type) produced by waste treatment on the construction site, for example collection with a view to recycling,	All glass wool waste, its packaging and waste deriving from excess production for installation are considered as disposed of in landfill 105 gr/UF

recovery of energy, disposal (specified by channel)	
Direct emissions to atmosphere, soil and water	No emissions to be considered

Phase of use or exploitation (Excluding potential savings) B1-B7

Description of the phase:
Phase of use is divided into seven modules:

- B1 : Use or application of product installed
- B2 : Maintenance
- B3 : Repair
- B4 : Replacement
- B5 : Refurbishment
- B6 : Energy needs during exploitation phase
- B7 : Water needs during exploitation phase

Description of the scenarios and supplementary technical information.

No technical operation is required during the useful phase until the end of service life. Thus, mineral wools do not have any impact during this phase, but they permit potential energy savings (see additional information in annexe).

End of life phase C1-C4

Description:
This phase includes the different modules of the end of service life as follows: C1, deconstruction, demolition; C2, transport to waste treatment; C3, waste treatment with a view to their reuse, recovery and/or recycling ; C4, disposal.

Description of the scenarios and supplementary technical information.

C1 Deconstruction, demolition:

Deconstruction and /or dismantling of the insulation products is part of the demolition work of an entire building. In our case the environmental impact is considered to be very slight and can be ignored.

C2 Transport to waste treatment site:

Parameter	Value
Collection procedure specified by type	3,972 kg of glass wool (collected with mixed construction waste)
Recovery system specified by type	No reuse, no recycling, no energy recovery
Disposal specified by type	3,972 kg of glass wool kept in storage facility for non inert and non-hazardous waste.
Hypotheses for creating scenarios (for example transport)	Lorry with useful load of 24 t diesel consumption of 38 litres per 100 km 30 km

C3 Waste treatment with a view to reuse, recovery, and/or recycling:

The product is considered for landfill without reuse, recovery and/or recycling.

C4 Disposal:

Glass wool should be installed in a storage facility for non-inert and non-hazardous waste

Benefit and charge (refer to standard) D

Description of scenarios and supplementary technical information.

Benefits linked to recycling of packaging in A5 were not considered

• Information for calculating analysis of life cycle

RCP used	Standard EN 15804+A1 complementary national standard NF 15 804/CN serve as regulations for defining the categories of products (RCP). (PCR)
Limits of the system	from cradle to grave: phases A1-3, A4-A5, C2-4
Allocations	As there are no co products allocation criteria were not used
Geographic representativeness **Time frame**	Country of Production Belgium country of use Belgium production data 2013. Secondary databases: Generic modules base DEAM (TEAM 5.2/PWC), upgraded with a 2011 energy model and Ecoinvent V2.2 modules (2010).
Variability of results	

• Results of life cycle analysis

The ACV model, addition of data and environmental impacts are calculated using, TEAM 5.2 ™ software.

The ACV results are summarised in the following table:

ENVIRONMENTAL IMPACTS

Environmental Impacts impacts	Production phase	Construction phase		Use phase							End of life phase				D Benefits and loads beyond the limits of the system
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Use of water	C1 Deconstruction / demolition	C2 Transport	C3 Waste treatment	C4 Removal	
Global warming *kg CO_2 equiv/UF*	5.7	4.8E-01	1.2E-01	0	0	0	0	0	0	0	0	7.3E-03	0	0.0E+00	MNA
	The global warming potential of a gas refers to the total contribution to global warming resulting from emission of one unit of this gas in respect of a unit of reference gas, carbon dioxide, to which the value of 1 is attributed.														
Depletion of the ozone layer *kg CFC 11 equiv/UF*	1.7E-07	3.5E-07	1.0E-08	0	0	0	0	0	0	0	0	5.2E-09	0	0.0E+00	MNA
	Destruction of the stratospheric ozone layer which protects the Earth from ultraviolet rays harmful to life This ozone destruction is caused by the rupture of some chlorines and /or components containing bromine which break up when they reach the atmosphere which results in the destruction of the ozone molecules through catalytic reactions.														
Acidification of soils and water *kg SO_2 equiv/UF*	3.5E-02	2.2E-03	7.4E-04	0	0	0	0	0	0	0	0	1.8E-05	0	0.0E+00	MNA
	Acid pollutants have negative impacts on natural ecosystems and the environment caused by man, including buildings. The main sources of emissions of acidifying substances are agriculture and combustion and fossil fuels used for electricity production, heating and transport														
Eutrophication *kg $(PO_4)^{3-}$ equiv/UF*	6.8E-03	5.2E-04	1.5E-04	0	0	0	0	0	0	0	0	3.9E-06	0	1.6E-05	MNA
	Excessive enrichment of nutrients, waters and continental surfaces with harmful associated biological effects.														
Formation of photochemical ozone *Ethene equiv/UF*	2.0E-03	3.4E-04	4.7E-05	0	0	0	0	0	0	0	0	4.3E-06	0	0.0E+00	MNA
	Chemical reactions caused by solar energy The reaction of nitrous oxide with hydrocarbons in the presence of sunlight forming the ozone is an example of photochemical reaction														
Depletion of abiotic resources (elements) *kg Sb equiv/UF*	7.0E-07	1.3E-10	1.4E-08	0	0	0	0	0	0	0	0	2.0E-12	0	0.0E+00	MNA
Depletion of abiotic resources (fossils) *MJ/UF*	96	6.2	2.0	0	0	0	0	0	0	0	0	9.3E-02	0	0.0E+00	MNA
	Consumption of non-renewable resources, reducing their availability for future generations														
Air pollution - *m^3/UF*	1,589	31	32	0	0	0	0	0	0	0	0	4.4E-01	0	0.0	MNA
Water pollution - *m^3/UF*	0.9	1.4E-01	0.0	0	0	0	0	0	0	0	0	2.1E-03	0	1.0E-02	MNA

USE OF RESOURCES

USE OF RESOURCES	Production phase	Construction phase		Use phase							End of life phase				D Benefits and loads beyond the limits of the system
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Use of water	C1 Deconstruction / demolition	C2 Transport	C3 Waste treatment	C4 Removal	
Use of primary renewable energy, with the exclusion of primary renewable energies used as raw materials - *MJ/UF*	2.8	3.0E-03	5.6E-02	0	0	0	0	0	0	0	0	4.5E-05	0	0.0E+00	MNA
Use of renewable primary energy resources as raw materials - *MJ/UF*	7.8	0	1.6E-01	0	0	0	0	0	0	0	0	0	0	0	MNA
Total use of renewable primary energy resources (primary energy and primary energy sources used as raw materials)) - *MJ/UF*	11	3.0E-03	2.1E-01	0	0	0	0	0	0	0	0	4.5E-05	0	0.0E+00	MNA
Use of non-renewable primary energy, with the exclusion of non-renewable primary energy resources used as raw materials - *MJ/UF*	102	6.2	2.2	0	0	0	0	0	0	0	0	9.4E-02	0	0.0E+00	MNA
Use of non-renewable primary energy resources as raw materials - *MJ/UF*	15	2.8E-02	3.0E-01	0	0	0	0	0	0	0	0	4.2E-04	0	0	MNA
Total use of renewable primary energy resources (primary energy and primary energy sources used as raw materials)) - *MJ/UF*	117	6.2	2.5	0	0	0	0	0	0	0	0	9.4E-02	0	0.0E+00	MNA
Use of secondary materials - *kg/UF*	3.4	0	6.8E-02	0	0	0	0	0	0	0	0	0	0	0	MNA
Use of renewable secondary fuels - *MJ/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Use of non-renewable secondary fuels - *MJ/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Net use of fresh water - *m³/UF*	2.5E-02	5.9E-04	5.1E-04	0	0	0	0	0	0	0	0	8.9E-06	0	0.0E+00	MNA

WASTE CATEGORY

WASTE CATEGORY	Production phase	Construction phase		Use phase							End of life phase				D Benefits and loads beyond the limits of the system
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Use of water	C1 Deconstruction / demolition	C2 Transport	C3 Waste treatment	C4 Removal	
Hazardous wastes eliminated - *kg/UF*	6.4E-02	1.9E-04	1.3E-03	0	0	0	0	0	0	0	0	2.8E-06	0	0	MNA
Non-hazardous wastes eliminated - *kg/UF*	1.2	5.1E-04	1.1E-01	0	0	0	0	0	0	0	0	7.7E-06	0	4.0	MNA
Radioactive wastes eliminated - *kg/UF*	1.5E-04	9.9E-05	5.1E-06	0	0	0	0	0	0	0	0	1.5E-06	0	0	MNA

OUTFLOWS

OUTFLOWS	Production phase	Construction phase		Use phase							End of life phase				D Benefits and loads beyond the limits of the system
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Use of water	C1 Deconstruction / demolition	C2 Transport	C3 Waste treatment	C4 Removal	
Components destined for reuse - *kg/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Materials destined for recycling - *kg/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Materials destined for energy recovery - *kg/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Electricity power supplied to the exterior - *MJ/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Steam power supplied to the exterior - *MJ/UF*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA
Gas power supplied to the exterior - MJ/UF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MNA

ENVIRONMENTAL IMPACTS
Addition of different models for a "Total phase" or "Total life cycle"

Impacts/Flows *unit*	Production phase	Construction phase	Use phase	End of life phase	Total life cycle
ENVIRONMENTAL IMPACTS					
Global warming - *kg CO_2 equiv/UF*	5.7	6.1E-01	0	7.3E-03	6.3
Depletion of the ozone layer *kg CFC 11 equiv/UF*	1.7E-07	3.6E-07	0	5.2E-09	5.3E-07
Acidification of soils and water *kg SO_2 equiv/UF*	3.5E-02	3.0E-03	0	1.8E-05	3.8E-02
Eutrophication *kg $(PO_4)^{3-}$ equiv/UF*	6.8E-03	6.6E-04	0	1.9E-05	7.4E-03
Formation of photochemical ozone *Ethene equiv/UF*	2.0E-03	3.9E-04	0	4.3E-06	2.4E-03
Depletion of abiotic resources (elements) *kg Sb equiv/UF*	7.0E-07	1.4E-08	0	2.0E-12	7.1E-07
Depletion of abiotic resources (fossils) *MJ/UF*	96	8.2	0	9.3E-02	104
Air pollution - *m^3/UF*	1,589	63	0	0.4	1,653
Water pollution - *m^3/UF*	0.9	0.2	0	1.3E-02	1.1
Consumption of resources					
Use of renewable primary energy, with the exclusion of renewable primary energy resources used as raw materials - MJ/UF	2.8	5.9E-02	0	4.5E-05	2.9
Use of renewable primary energy resources as raw materials - *MJ/UF*	7.8	1.6E-01	0	0	7.9
Total use of renewable primary energy resources (primary energy and primary energy sources used as raw materials) - *MJ/UF*	11	2.1E-01	0	4.5E-05	11
Use of non-renewable primary energy, to the exclusion of non-renewable primary energy resources used as raw materials - MJ/UF	102	8.4	0	9.4E-02	111
Use of non renewable primary energy resources as raw materials - *MJ/UF*	15	2.8E-01	0	4.17E-04	16
Total use of renewable primary energy resources (primary energy and primary energy sources used as raw materials)) - *MJ/UF*	117	8.7	0	9.4E-02	126
Use of secondary material - *kg/UF*	3.4	6.8E-02	0	0	3.4
Use of renewable secondary fuels - *MJ/UF*	0	0	0	0	0
Use of non-renewable secondary fuels - *MJ/UF*	0	0	0	0	0
Net use of fresh water - *m^3/UF*	2.5E-02	1.1E-03	0	8.9E-06	2.6E-02
WASTE CATEGORIES					
Hazardous wastes eliminated - *kg/UF*	6.4E-02	1.5E-03	0	2.8E-06	6.6E-02
Non-hazardous wastes eliminated - *kg/UF*	1.2	1.1E-01	0	4.0	5.3
Radioactive wastes eliminated - *kg/UF*	1.5E-04	1.0E-04	0	1.5E-06	2.6E-04
OUTFLOWS					
Components destined for reuse - *kg/UF*	0	0	0	0	0
Materials destined for recycling - *kg/UF*	0	0	0	0	0
Materials destined for energy recovery - *kg/UF*	0	0	0	0	0
Electricity power supplied to the exterior - *MJ/UF*	0	0	0	0	0
Steam power supplied to the exterior - *MJ/UF*	0	0	0	0	0
Gas power and process supplied to the exterior - MJ/UF	0	0	0	0	0

• Interpretation of Lifecycle

URSA TERRA WALLTEC REFLEX 131 mm (Desselgem)

Impacts Environnementaux / Etapes	Etape de production (A1-A3)	Etape de construction (A4-A5)	Etape d'utilisation (B1-B7)	Etape de fin de vie (C1-C4)	Total cycle de vie	Bénéfices et charges au-delà des frontières du système (D)
Réchauffement climatique *kg CO2 equiv /UF*	5.70	0.61	0.00	0.01	6.31 kg CO_2 equiv /UF	0.00
Epuisement des ressources abiotiques (fossiles) *MJ/UF*	95.81	8.21	0.00	0.09	104.11 MJ/UF	0.00
Utilisation totale des ressources d'énergie primaire *[1]* *MJ/UF*	127.88	8.89	0.00	0.09	136.87 MJ/UF	0.00
Utilisation nette d'eau douce *m^3 /UF*	0.02	0.00	0.00	0.00	0.03 m^3/UF	0.00
Déchets éliminées *[2]* *kg/UF*	1.27	0.11	0.00	3.97	5.35 kg/UF	0.00
Epuisement des ressources abiotiques (éléments) *kg Sb equiv/UF*	6.97E-07	1.41E-08	0.00E+00	1.99E-12	7.1E-07 kg Sb equi/UF	0.00E+00
Pollution de l'air *m3/UF*	1,589.03	63.38	0.00	0.44	1653 m3 /UF	0.00
Energie primaire renouvelable *MJ/UF*	10.59	0.21	0.00	0.00	10.81 MJ /UF	0.00
Energie primaire non renouvelable *MJ / UF*	117.28	8.68	0.00	0.09	126.06 MJ /UF	0.00

[1] Somme de : "Utilisation totale des ressources d'énergie primaire non renouvelables" + "Utilisation totale des ressources d'énergie primaire renouvelables".
[2] Somme de : "Déchets dangereux éliminés" + "Déchets non dangereux éliminés" + "Déchets radioactifs éliminés".

• Additional information on discharge of hazardous substances to the interior atmosphere, soil and water during the use and exploitation phase

Interior air

VOC and formaldehyde

The health classification of the product URSA TERRA WALLTEC REFLEX / UGW32AL is A+ according to the French order of 19 April 2011 on labelling of construction documents or wall or floor coverings, and paints and varnishes, regarding their emissions and volatile pollutants.

Mineral wools and health

- *Mechanical irritation of fibres*

  Mineral wool fibres are no longer classed as R38 for skin irritation and have not been since January 2009 (Directive 2009/2/EC) and therefore are not subject to any irritant classification. The thickest of these fibres (those with a diameter exceeding approximately 5 µm) can, like any other foreign body, cause itching. This type of itching is a mechanical non chemical reaction and is temporary.

- *Carcinogenic classification of fibres*

  Mineral wool fibres have been exempted from carcinogenic classification according to: Regulation on classification and labelling of substances and mixtures Regulation (EC) n° 1272/2008 and its first update Regulation (CE) n° 790/2009. They have in fact successfully passed the tests established by this Regulation and their biopersistance is lower than the values defined in note « Q » of this text. **This exemption is certified by the EUropean CErtification Board** (EUCEB - www.euceb.org).

  The EUCEB certifies that fibres conform to note « Q » of the Regulation (EC) n° 1272/2008. The EUCEB guarantees that the exemption tests have been executed in conformance with European protocols, that industrial entities have control procedures in place during manufacture of the products, and that third parties inspect and approve the results.

  The industrial entities in respect of EUCEB undertake as follows:

  - To provide a test report compiled by a EUCEB recognised laboratory providing proof that the fibres satisfy one of the four exemption conditions established in note « Q » of Regulation (EC) n° 1272/2008,
  - Twice yearly, to undergo production inspection by an independent third party recognised by EUCEB (sample taking and conformance with initial chemical analysis),
  - To set up internal control procedures in each factory.

  The products with this certification are recognisable as they have the EUCEB logo affixed to their packaging:

➢ *Carcinogenic classification of fibres*

The recommendations for installing the insulating materials based on mineral wool are similar to those usually applicable to all sites and are as follows:

Couvrir les parties du corps exposées. Dans un endroit non ventilé, portez un masque jetable.

Se rincez à l'eau froid avant de se laver.

Nettoyez avec un aspirateur.

Ventilez le lieu de travail si possible

Respecter la réglementation sur les déchets

En cas de travail au dessus de la tête, portez des lunettes

Furthermore, measurements carried out on construction sites show lower average exposure levels of the professionals installing the mineral wool insulation than those measured on production sites. These measurements were carried out at the request of FILMM by the approved bodies on construction sites in France.

Types of application	Individual measurements carried out by operators			
	number of measurements	average (f/ml)	medium (f/ml)	probability of exceeding the limit value of professional exposure (1 fml)
Walls - glass wool on metallic structure	9.	0.1.	0.07.	0.07%
Walls- lining	7.	0.23.	0.19.	2.01%
Roofs- Blown glass wool	8.	0.09.	0.05.	0.12%
Reinforced walls-Glass wool	4.	0.08.	0.06.	0.00%
Projection -slag wool (feed operator)	6.	0.07.	0.06.	0.00%
Projection -slag wool (projector)	10.	0.07.	0.06.	0.00%

Table: Results of measurements of exposure to mineral wool fibres carried out in 2006 and 2007 on construction sites in France (source: FILMM)

- *Fibres during service life of the building*

The Indoor Air Quality Watchdog (OQAI) measured concentrations of mineral fibres in ambient air during their pilot study in 2002. These results according to OQAI did not show "apparent specificity of indoor areas. The values measured are in the order of 10-4 fibres per litre without any marked difference between the interior and the exterior for all the sites measured. »

Analysis of these results and the prioritisation of pollutants carried out by the OQAI led to the decision not to repeat measurements of fibre concentration in indoor air of domestic housing during their 2003-2005 campaign.

Mineral wool fibres represent only an infinitesimal part of the breathable particles and fibres present in the atmosphere. In premises for private or collective use, the levels of exposure are in the order of 0.0002 to 0.005 fibre/ml, that is 1/200th of the professional limit exposure value (Schneider T., 1995).

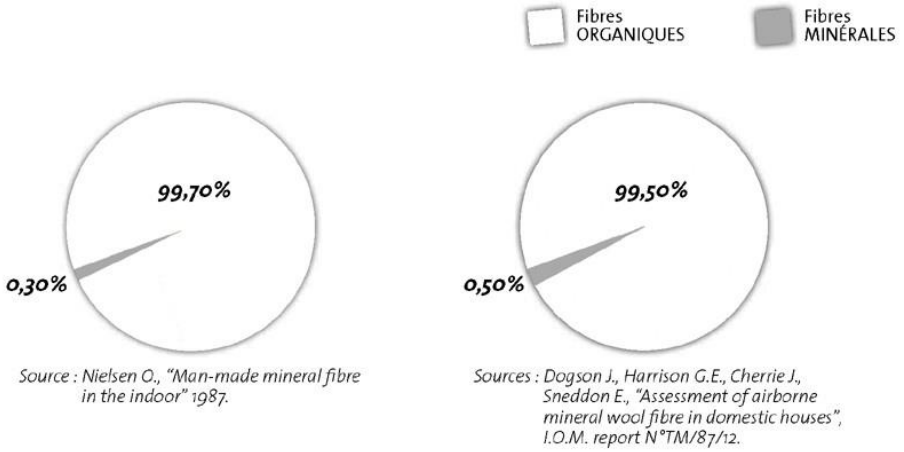


Figure . The fibres breathed in interior air

Radioactive emissions

Not tested

Soil and water

Not pertinent to the product concerned for this FDES

• Contribution of the product to quality of life in the interior of buildings

Characteristics of products contributing to the conditions of hygrothermal comfort in the building.

Wall insulation contributes to a healthy and comfortable environment and increases thermal comfort by reducing the effects of cold walls.

Fitting with a vapour barrier prevents any risk of condensation in walls.

Insulation, in addition to contributing to comfort, reduces indoor temperature which leads to reduction in energy consumption

Mineral wools offer an extensive choice of thicknesses and thermal resistance in their manufacturing processes. Thermal conductivity of mineral wools is between 0,030 W/mK and 0,040 W/mK.

The R thermal values and suitability for use have been certified by ACERMI which guarantees the reliability of the declared performances. In addition, they conform to the CE marking in accordance with standard EN 13162 for the building manufactured products.

Mineral wool is naturally rot-proof and non-hydrophilic when used in building and construction. It does not retain water and if it accidentally gets wet it recovers its initial properties once it is dry again.

The natural flexibility of the products and their dimensions make them easy to install, facilitate precision when cutting, ensuring thermal performance of the wall with perfect caulking.

Characteristics of products contributing to acoustic comfort conditions of the building.

Mineral wools are, by their nature, effective products for use in insulation and in acoustic correction as a result of their flexibility and open porosity.

In products designed for filling cavities (partitions, linings) wool has a shock absorbing role with its "mass spring mass" system. It is independent from the cladding material.

In products used on floating floors or for linings the wool ensures mechanical connection of the cladding

For products designed for corrective acoustic use (decorative ceilings, cladding, murals) the absorption coefficient αw indicates suitability for use.

Due to their constituent materials, acoustic and fire safety requirements are both met.

Characteristics of products contributing to visual comfort in the building.

Not applicable because in normal conditions of use the product is not visible, either inside or outside the building.

Characteristics of products contributing to visual olfactory comfort in the building.

Not tested

Additional information

Calculation of energy avoidance

Introduction

Calculation of energy avoidance is designed to demonstrate the main function of the product: thermal insulation. This calculation serves to remind users of this declaration form that generally, the direct impacts of the mineral wool life cycle (production, transport, installation and end of service life) are very low compared to the impact of savings through use of the product.

It is important to recall that mineral wool permits energy savings where the project is heated in order to achieve a comfortable temperature. In this case, energy consumption of heating the insulated project is lower than energy consumption in an identical project which is not insulated. This avoidance depends on several factors, in particular the climate situation, the type of building, its orientation, internal contributions, the type of insulation (for example, roof, wall),. The initial situation of the works (partially insulated, non- insulated) ...

It is not possible to cover all the scenarios within the scope of this environmental and health declaration. Thus, the energy avoidance calculation addresses a scenario described in the chapter "scenario definition".

As a result, if the product is used in a different context from that described in the chapter “scenario definition" the avoidance mentioned should be recalculated.

The reference chosen for the energy avoidance calculation is the non-insulated construction project. We have chosen this reference for the reasons described below;

- Use of a non-insulated project as a reference permits calculation of the total energy saved, placing it in relation to total energy used during the product's life cycle.
- Use of a non-insulated construction project as a reference is common practice. All professionals use this reference to explain avoidance of energy when it exists.
- This reference is simple to use.

Calculation tool used:

For calculation of energy avoidance and its associated environmental impacts, the FILMM has used Tribu Energie a calculation tool which uses DPE calculation engine version 1.3.15

The tool permits two types of detached dwelling to be simulated (with lofts or converted lofts) placing them in the region of choice or selecting the average French climate, selecting several types of heat generator or taking an average value for France and finally, selecting the thermal resistance of the insulating material used in the walls or roof (for walls the model enables a distinction to be made between ITI or ITE).

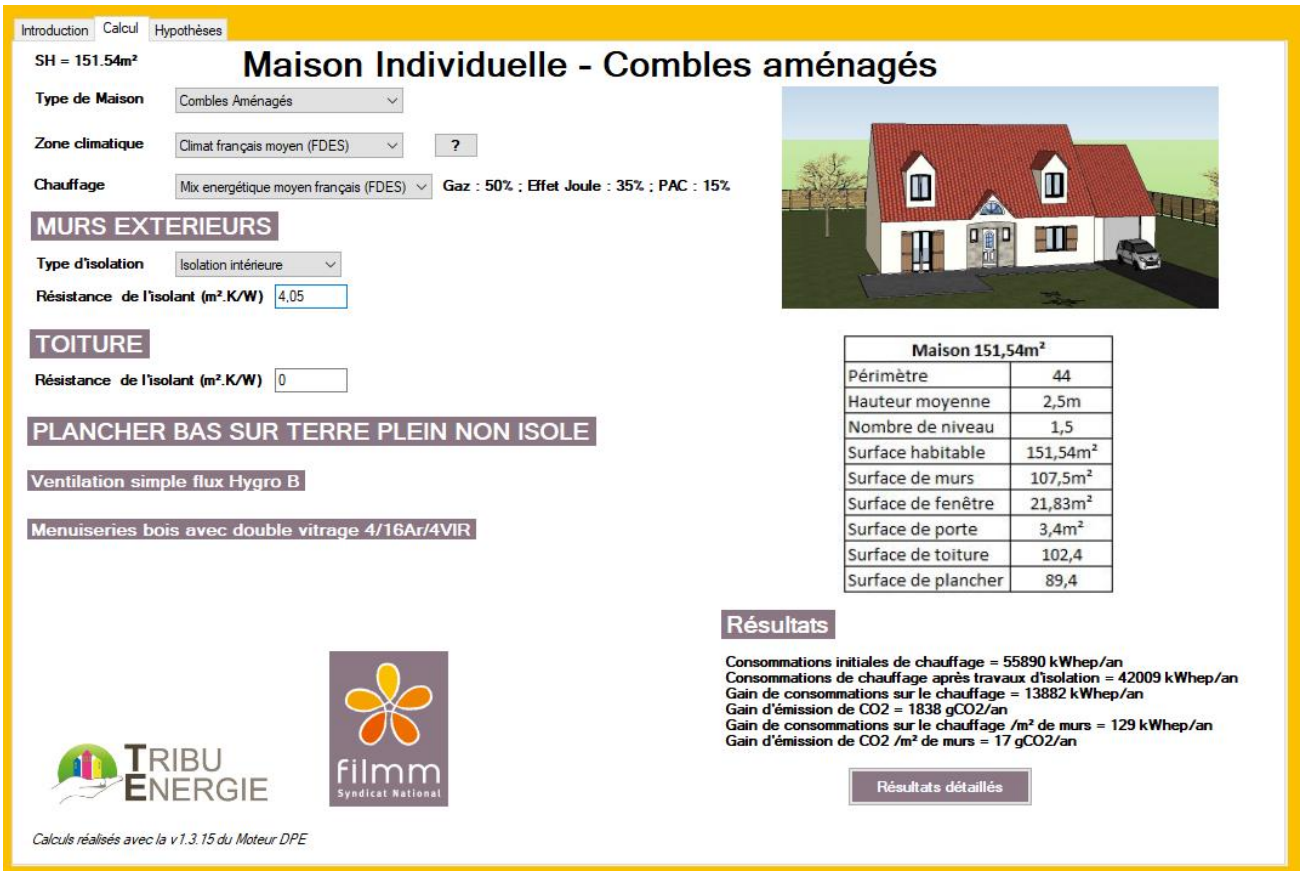
The results were calculated immediately in the form of energy consumption and CO2 emissions for the initial situation (without insulation) and for the situation with insulation. The detailed results obtain the environmental impacts avoided through insulation of the building.

Definition of the scenario:

For calculation of the FDE&S of the product URSA TERRA WALLTEC REFLEX / UGW32AL with 131 mm and R=4,05 m2·KW the parameters retained were

- **Type of building MI converted lofts**
- **Climate zone: Average French climate (FDE&S)**
- **Heating French energy mix (FDE&S)**
- **Type of insulation: Insulation of facades and cavity walls**
- **Thermal resistance of the insulator: 4,05 m2·K/W**

Data:



ENVIRONMENTAL IMPACTS AND ASSOCIATED AVOIDANCE
Addition of different models for a "Total life cycle"

Impacts/Flows *Unit*	Total life cycle	Avoided impacts Results in respect of 50 years per m² of insulation of facades and cavity walls
ENVIRONMENTAL IMPACTS		
Global warming - *kg CO_2 equiv/UF*	6.3	-6.93E+02
Deterioration of the ozone layer *kg CFC 11 equiv/UF*	5.3E-07	-2.67E-05
Acidification of soils and water *kg SO_2 equiv/UF*	3.8E-02	Unavailable
Eutrophication *kg $(PO_4)^{3-}$ equiv/UF*	7.4E-03	Unavailable
Formation of photochemical ozone *Ethene equiv/UF*	2.4E-03	-2.99E-02
Exhaustion of abiotic resources (elements) *kg Sb equiv/UF*	7.1E-07	-5.14E+00
Exhaustion of abiotic resources (fossils) *MJ/UF*	104	Unavailable
Air pollution - *m^3/UF*	1,653	-7.37E+03
Water pollution - *m^3/UF*	1.1	-1.91E+04
CONSUMPTION OF RESOURCES		
Use of renewable primary energy, to the exclusion of renewable primary energy resources used as raw materials - MJ/UF	2.9	Unavailable
Use of renewable primary energy resources as raw materials - *MJ/UF*	7.9	Unavailable
Total use of renewable primary energy resources (primary energy and primary energy sources used as raw materials)) - *MJ/UF*	11	-7.89E+02
Use of non-renewable primary energy, with the exclusion of non-renewable primary energy resources used as raw materials - MJ/UF	111	Unavailable
Use of non-renewable primary energy resources as raw materials - *MJ/UF*	16	Unavailable
Total use of renewable primary energy resources (primary energy and primary energy sources used as raw materials)) - *MJ/UF*	126	-2.73E+04
Use of secondary material - *kg/UF*	3.4	Unavailable
Use of renewable secondary fuels - *MJ/UF*	0	Unavailable
Use of non-renewable secondary fuels - *MJ/UF*	0	Unavailable
Net use of fresh water - *m^3/UF*	2.6E-02	-1.15E+04
WASTE CATEGORIES		
Hazardous wastes eliminated - *kg/UF*	6.6E-02	-8.99E-02
Non-hazardous wastes eliminated - *kg/UF*	5.3	-6.34E+01
Radioactive wastes eliminated - *kg/UF*	2.6E-04	-2.61E-01
OUTFLOWS		
Components destined for reuse - *kg/UF*	0	Unavailable
Materials destined for recycling - *kg/UF*	0	Unavailable
Materials destined for energy recovery - *kg/UF*	0	Unavailable
Electricity power supplied to the exterior - *MJ/UF*	0	Unavailable
Steam power supplied to the exterior - *MJ/UF*	0	Unavailable
Gas power and process supplied to the exterior - MJ/UF	0	Unavailable

Scope of verification for the FDE&S

The product URSA TERRA WALLTEC REFLEX / UGW32AL with 131 mm R= 4,05 m²·K/W is framed in the context of the checks defined below:

2.-Characterisation of products: (Glass wool lambda >= 0,035 W/mK)

Binding agent: Phenolic with low emissions with a rate of 4 to 6%
Volume mass: Between 20 and 35 kg/m3
Thicknesses: between 25 and 200 mm
Surfacing no / Kraft-PE / Au-Kraft / Glass fibre reinforcement /Glass fibre
Packaging: LDPE film for each package
Palleting: standard wood pallet 1,2x,12 with plastic film LDPE, HDPE
Factories: Desselguem / St.Avold / El Pla

Limits for each factory

	Desselguem (min)	Desselguem (max)	St Avold (min)	St Avold (max)	El Pla (min)	El Pla (max)
	Total cycle de vie (par m2)	Total cycle de vie (parm2)	Total cycle de vie (par m2)	Total cycle de vie (par m2)	Total cycle de vie (par m2)	Total cycle de vie (par m2)
Réchauffement climatique	1.09E+00	7.45E+00	9.67E-01	5.89E+00	1.50E+00	1.08E+01
Appauvrissement de la couche d'ozone	1.13E-07	6.18E-07	1.17E-07	6.48E-07	1.42E-07	8.63E-07
Acidification des sols et de l'eau	6.22E-03	4.37E-02	7.19E-03	4.90E-02	9.10E-03	6.77E-02
Eutrophisation	1.41E-03	1.01E-02	1.67E-03	1.20E-02	1.83E-03	1.36E-02
Formation d'ozone photochimique	4.78E-04	3.27E-03	4.54E-04	2.75E-03	5.94E-04	4.22E-03
Epuisement des ressources abiotiques - éléments	2.87E-07	1.58E-06	3.05E-07	1.64E-06	3.93E-07	2.46E-06
Epuisement des ressources abiotiques - combustibles fossiles	2.05E+01	1.28E+02	1.93E+01	1.00E+02	2.57E+01	1.72E+02
Pollution de l'air	1.23E+02	8.87E+02	1.34E+02	9.33E+02	3.24E+02	2.56E+03
Pollution de l'eau	8.56E-01	3.49E+00	8.90E-01	3.15E+00	8.46E-01	3.40E+00
Utilisation de l'énergie primaire renouvelable à l'exclusion des ressourc	2.84E-01	3.34E+00	4.17E-01	4.00E+00	1.10E+00	6.56E+00
Utilisation des ressources d'énergie primaire renouvelables utilisées en	2.12E+00	1.16E+01	2.12E+00	1.16E+01	2.12E+00	1.16E+01
Utilisation totale des ressources d'énergie primaire renouvelables	4.72E+00	1.43E+01	5.20E+00	1.56E+01	5.89E+00	1.82E+01
Utilisation de l'énergie primaire non renouvelable, à l'exclusion des ress	2.39E+01	1.82E+02	2.78E+01	2.06E+02	2.14E+01	1.59E+02
Utilisation des ressources d'énergie primaire non renouvelables utilisée	4.53E+00	1.45E+01	5.83E+00	1.46E+01	4.67E+00	1.68E+01
Utilisation totale des ressources d'énergie primaire non renouvelables	2.85E+01	1.96E+02	3.37E+01	2.21E+02	2.60E+01	1.76E+02
Utilisation de matière secondaire	3.40E-01	2.83E+00	3.60E-01	2.99E+00	3.04E-01	2.53E+00
Utilisation de combustibles secondaires renouvelables	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Utilisation de combustibles secondaires non renouvelables	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Utilisation nette d'eau douce	1.23E-02	6.03E-02	1.61E-02	9.08E-02	6.96E-03	2.52E-02
Déchets dangereux éliminés	4.26E-03	3.31E-02	1.68E-02	1.29E-01	1.54E-02	1.23E-01
Déchets non dangereux éliminés	1.18E+00	8.58E+00	1.28E+00	9.18E+00	1.14E+00	8.26E+00
Déchets radioactifs éliminés	6.37E-05	4.98E-04	9.26E-05	7.38E-04	4.16E-05	3.14E-04
Composants destinés à la réutilisation	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Matériaux destinés au recyclage	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Energie électrique fournie à l'extérieur	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Energie vapeur fournie à l'extérieur	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00