

DECLARACIÓN AMBIENTAL DE PRODUCTO ENVIRONMENTAL PRODUCT DECLARATION

DAPcons®.100.016

According to ISO 14025
and UNE EN 15804 + A1



COL·LEGI D'APARELLADORS,
ARQUITECTES TÈCNICS
I ENGINYERS D'EDIFICACIÓ
DE BARCELONA

Product

TECWOOL® fireproof mortar

Owner



Product description

The product included are the different families of Tecwool® fireproof mortar line:
Tecwool® F, Tecwool® FL, Tecwool® T and Tecwool® 825

PCR Reference

RCP 100 Declaración Ambiental de Producto sobre productos de construcción (v2 29.02.2016)

Production plant

TECRESA PROTECCION PASIVA, S.L.
Parque Leganés Tecnológico (LEGATEC)
C/ Margarita Salas nº 6
28918 Leganés, Madrid (Spain)

Validity

From: 04/11/2019 To: 04/11/2024

The validity of DAPcons®.100.016 is subject to the conditions of DAPcons® regulations. The relevant version of this DAPcons® is included in the register kept by the CAATEEB; for more information, consult the system's website www.csostenible.net



DAPcons® TECWOOL
fireproof mortar

ENVIRONMENTAL PRODUCT DECLARATION

TECWOOL® fireproof mortar EXECUTIVE SUMMARY

PROGRAMME OPERATOR DAPconstrucción®

Environmental product declarations of construction sector
www.csontenible.net

Administrator of Programme Operator

Col·legi d'Aparelladors, Arquitectes Tècnics de Barcelona i Enginyers de l'Edificació (CAATEEB)
Bon Pastor, 5 · 08021 Barcelona
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Owner of the Declaration

TECRESA PROTECCION PASIVA, S.L.
Parque Leganés Tecnológico (LEGATEC) - C/ Margarita Salas nº 6 - 28918 Leganés, Madrid (Spain)

Declaration carried out by:

ReMa-INGENIERÍA, S.L.
Calle Crevillente 1, entlo - 12005 Castellón - Spain

Declaration Number

DAPcons.100.016

Declared Product

TECWOOL® fireproof mortar

Product description

Tecwool® is the line of fireproof mortars composed of rock wool, cement as the only hydraulic binder and other additives in small percentages that are incorporated into the manufacturing process.

Registration date

04/11/2019

Validity

This verified declaration authorises the owner to use the DAPcons® eco-label logo. The declaration is applicable exclusively to the product in question and for five years as of the date of registration. The responsible for the information contained in this declaration is:

TECRESA PROTECCION PASIVA, S.L.

Endorsed by CAATEEB

Celestí Ventura Cisternas, President of the CAATEEB

Endorsed by authorised verifier

Mr. Ferran Pérez, Verifier accredited by the
DAPconstruction Program

This environmental product declaration complies with standards ISO 14025 and UNE EN 15804 + A1 and contains information of an environmental nature about the life cycle of TECWOOL® fireproof mortar produced by MERCOR TECRESA at its plant in Leganes (Madrid, Spain). This declaration is based on the document RCP 100 Declaración Ambiental de Producto sobre productos de construcción (v2 29.02.2016). The environmental product declaration (DAPcons®) may not be comparable to another EPD if it is not based on the UNE EN 15804 + A1 standard



COL·LEGI D'APARELLADORS, ARQUITECTES TÈCNICS
I ENGINYERS D'EDIFICACIÓ DE BARCELONA

ENVIRONMENTAL PRODUCT DECLARATION

1. PRODUCT DESCRIPTION AND APPLICATION

Tecwool® is a line of fireproof mortars composed of mineral wool, cement as only hydraulic binder and other additives in small percentages which are incorporated in the manufacturing process.

The test conducted in official laboratories certify that the Tecwool® mortars have a high fire resistance and adherence on all kind of supports and/or surfaces: metal, concrete, carbon fibre, sheet, ceramic vault, sheet ducts, bands, partition walls, facings, etc.

Depending on the required solution and the type of support to be protected, mercor tecresa® have several types of mortars with different densities: TECWOOL® F, TECWOOL® FL, TECWOOL® T and TECWOOL® 825.

The Tecwool® mortars offer the perfect constructive solutions for fire protection, depending on the density of the mortar used. The passive fire protection can be specifically provided for all types of structures and surfaces presented in construction; it can also provide with optimum thermal insulation, or the protection in industries and tunnels.





DAPcons® TECWOOL
fireproof mortar

Main technical characteristics of TECWOOL products.

	TECWOOL® F	TECWOOL® FL	TECWOOL® T	TECWOOL® 825
Composition	Cement, rock wool and additives.			
Fire reaction	Non-combustible/ Euroclass A1.	Non-combustible/ Euroclass A1.	Non-combustible/ Euroclass A1.	Non-combustible/ Euroclass A1.
Bulk mortar density	250 Kg/m ³ ± 10%	200 kg/m ³ ± 10%	175 Kg/m ³ ± 10%	385 Kg/m ³ ± 10%
Cured mortar apparent density	328 Kg/m ³ ± 10%	295 kg/m ³ ± 10%	260 kg/m ³ ± 10%	613 Kg/m ³ ± 10%
Sprayed fresh mortar apparent density	464 Kg/m ³ ± 10%	415 kg/m ³ ± 10%	340 kg/m ³ ± 10%	1.070 Kg/m ³ ± 10%
Performance	3 kg/m ² cm	2,4 kg/m ² cm	1,8 kg/m ² cm	8 kg/m ² cm
Thermal conductivity	0,053 W/mk	0,048 W/mK	0,0456 W/mk	0,045 W/mk
Alkalinity (pH value)	12,4	12,5	12,5	12,5
Bulk product, dried at 105 °C	0,68% de H ₂ O	0,68% de H ₂ O	--	--
Stream permeability	2,1 (μ)	2,1 (μ)	--	--
Resistance to fungi	Immune.	Immune.	Immune.	Immune.
Protection against steel corrosion	Yes.	Yes.	--	--
Flexural strength	0,09 Mpa	0,09 Mpa	--	--
Compressive strength	0,24 Mpa	0,24 Mpa	--	--
Wind erosion resistance	15 m/s β=90° y β= 15°	15 m/s β=90° y β= 15°	--	--
Toxic/Pathogenic	No	No	--	--
Free crystalline silica asbestos	No	No	--	--
Weighted sound absorption ratio	α w=0,8 (H)	α w=0,85 (H)	--	--
Acoustic absorption class	Clase B.	Clase B	--	--
Adherence	0,011 N/mm ² fallo.	0,011 N/mm ² fallo.	0,014 N/mm ² fallo.	--
Marketing	25 kg sacks in 600 kg pallets.	25 kg sacks in 600 kg pallets.	15 kg sacks in 450 kg pallets.	25 kg sacks in 600 kg pallets.
Expiration	6 months.	6 months.	6 months.	6 months.



2. LIFE CYCLE PHASES DESCRIPTION

2.1. Manufacture (A1, A2 and A3)

Raw materials (A1 and A2)

Phase A1 includes the extraction of raw and secondary materials.

The properties that raw materials contribute to the product are briefly described below:

Rock wool: provides high mechanical strength and elasticity. In addition, since it is fibers from basalt rock wool, it has a melting point above 1000 ° C, which gives it a fire resistance well above conventional mortars. Cement: acts as a hydraulic binder.

Bentonite and Vermiculite: they are two light components of volcanic origin that give the material greater cohesion.

It has been estimated that these raw materials are transported by road in a truck of between 14-20 t of payload an average distance calculated taking into account the distances to the different suppliers and weighting with the quantities served in 2018.

Manufacturing (A3)

Phase A3 includes the energy consumption of the production process, the production and transport of the packaging of the finished product and the transport and treatment of waste generated during production.

The production process of Tecwool fireproof mortar consists in the grinding of the main product, followed by the dosage of minor components, mixed in their different time spaces and, finally, packed.

2.2. Construction (A4 and A5)

Product transport to the building site (A4)

Using the data provided by the company from the country sales of the products, an average transport distance has been calculated.

The truck used complies with the Euro VI standard, consumes 1,25E-05 kg of diesel / kg of transported cargo and km traveled.

For transcontinental transport an average transoceanic freighter has been estimated.

Table 1. Transport scenarios of product to the building site

Destination	Type of transport	Percentage (%)	Average Km
Spain	27 t truck	64,30	390
Europe	27 t truck	31,41	2865
Rest of the world	27 t truck freighter	4,30	1015 450
Total 100%			

Construction and instalation process (A5)

The spraying process of the Tecwool® mortars is conducted through pneumatic spraying machine, pushing the dry mortar through the hose until the nozzle, where it is mixed with plenty of water spray, to later proceed to its application.

The spraying machine provides a flow rate of 3.2 to 18 kg / min. The application will be made with the spraying gun perpendicular to the support and at a distance between 50 and 150 cm.

The water / mortar ratio will be approximately 1.5 / 1 kg.

2.3. Product use (B1-B7)

Once installed, the product does not require any energy input for its use nor does it need maintenance after its commissioning. Throughout its service life (25 years), the product does not need any repair or replacement.

2.4. End-of-life (C1-C4)

- Deconstruction and demolition (C1): Once it reaches the end of its life cycle, the product will be removed, either in the framework of rehabilitation of the building or during its demolition. In the case of the demolition of a building, the impacts attributable to the removal of the product are negligible.

- Transport (C2): The product waste is transported by truck in compliance with Euro VI norms, to its destination at a distance of 50 km.

- Waste management for reuse, recovery and recycling (C3) and Disposal (C4): The following end-of-life scenarios have been studied:

	Spain 00	Europe 00	Rest 00
Recycling (%)	100	100	100
Landfill (%)	100	100	100

2.5. Benefits and loads beyond the system boundary (D)

The net impacts of recycling of the following wastes have been considered:

A5:

- Carboard
- Plastics
- Wood (palets)

3. LIFE CYCLE ASSESSMENT

The life cycle assessment on which this declaration is based was carried out in keeping with ISO standards 14040 and 14044 and the document RCP 002 Productos de revestimiento cerámico Version 2 – 2015.09.18.

This LCA is “cradle to grave”, that is, it covers the phases of manufacture of the product, construction, use and end of life.

Specific data from the production plant in Leganés, Madrid, Spain corresponding to the year 2018 has been used to inventory the manufacturing phase. For the rest of the phases, generic data has been used, taken mostly from the official database of the DAPc system and the Ecoinvent v3.2 database.

3.1. Functional unit

1m² of surface covered with a mass of 3.93 kg of TECWOOL® F fireproof mortar guaranteeing thermal properties (thermal conductivity 0.053 W / mk), fire resistance (A1) and acoustic insulation (Class B) for a useful life of 25 years.

1m² of surface covered with a mass of 3,7 kg of TECWOOL® FL fireproof mortar guaranteeing thermal properties (thermal conductivity 0,048 W / mk), fire resistance (A1) and acoustic insulation (Class B) for a useful life of 25 years.

1m² of surface covered with a mass of 4 kg of TECWOOL® T fireproof mortar guaranteeing thermal properties (thermal conductivity 0,0456 W / mk), fire resistance (A1) and acoustic insulation (Class B) for a useful life of 25 years.

1m² of surface covered with a mass of 7,5 kg of TECWOOL® 825 fireproof mortar guaranteeing thermal properties (thermal conductivity 0,045 W / mk), fire resistance (A1) and acoustic insulation (Class B) for a useful life of 25 years.

3.2. System boundary

Table 2. Declared modules

Product stage		Construction Process Stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries	
Raw materials supply	Transport	Manufacturing	Transport	Construction – Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X = Included in LCA MND = Module Not Declared



3.3. Data analysis for the life cycle (ACV)

DAPcons® TECWOOL
fireproof mortar

Table 3. Indicators of the environmental impact

TECWOOL F												
Parameter	Unit	Manufacture		Construction		Use			End of Life			
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	
Abiotic Resources Depletion Potential (elements)	kg Sb eq	7,48E-06	1,88E-09	8,92E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-10	0,00E+00	2,65E-08	
Abiotic Resources Depletion Potential (fossil fuels)	MJ, net calorific value	6,93E+01	5,03E-01	1,37E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,04E-02	0,00E+00	6,01E-01	
Acidification potential	Kg SO ₂ eq	3,03E-02	6,55E-05	4,82E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,35E-06	0,00E+00	1,87E-04	
Ozone Depletion potential	Kg CFC-11 eq	4,57E-07	5,75E-09	1,08E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,48E-10	0,00E+00	6,20E-09	
Global warming	Kg CO ₂ eq	5,14E+00	1,08E-01	2,96E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,22E-03	0,00E+00	2,16E-02	
Eutrophication	kg (PO ₄) ³⁻ eq	6,52E-03	9,24E-06	2,09E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,87E-07	0,00E+00	3,32E-05	
Photochemical ozone formation, POCP	kg ethene eq	1,87E-03	5,54E-06	5,29E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,14E-07	0,00E+00	7,86E-06	

TECWOOL FL												
Parameter	Unit	Life Cycle Phase										
		Manufacture	Construction		Use			End of Life				
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	
Abiotic Resources Depletion Potential (elements)	kg Sb eq	7,71E-06	1,77E-09	8,40E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,00E-10	0,00E+00	2,50E-08	
Abiotic Resources Depletion Potential (fossil fuels)	MJ, net calorific value	7,05E+01	4,74E-01	1,29E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,86E-02	0,00E+00	5,66E-01	
Acidification potential	Kg SO ₂ eq	3,09E-02	6,17E-05	4,54E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,16E-06	0,00E+00	1,76E-04	
Ozone Depletion potential	Kg CFC-11 eq	4,60E-07	5,41E-09	1,02E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,27E-10	0,00E+00	5,83E-09	
Global warming	Kg CO ₂ eq	4,99E+00	1,02E-01	2,78E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,80E-03	0,00E+00	2,03E-02	
Eutrophication	kg (PO ₄) ³⁻ eq	6,61E-03	8,70E-06	1,97E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,58E-07	0,00E+00	3,13E-05	
Photochemical ozone formation, POCP	kg ethene eq	1,92E-03	5,21E-06	4,98E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,96E-07	0,00E+00	7,40E-06	

- A1. Raw materials supply
- A2. Transport
- A3 Manufacturing Product
- A4. Transport
- A5. Construction – Installation process

- B1. Use
- B2. Maintenance
- B3. Repair
- B4. Replacement
- B5. Refurbishment
- B6. Operational Energy use
- B7. Operational water use

- C1. Demolition and demolition
- C2. Transport
- C3. Waste management for reuse, recovery and recycling.
- C4. Disposal

MND. Module not declared



TECWOOL T											
Parameter	Unit	Manufacture	Construction		Use			End of Life			
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4
Abiotic Resources Depletion Potential (elements)	kg Sb eq	8,90E-06	1,92E-09	9,07E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E-10	0,00E+00	2,70E-08
Abiotic Resources Depletion Potential (fossil fuels)	MJ, net calorific value	8,09E+01	5,12E-01	1,40E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,09E-02	0,00E+00	6,12E-01
Acidification potential	Kg SO ₂ eq	3,54E-02	6,67E-05	4,91E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,41E-06	0,00E+00	1,90E-04
Ozone Depletion potential	Kg CFC-11 eq	5,33E-07	5,85E-09	1,10E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,54E-10	0,00E+00	6,31E-09
Global warming	Kg CO ₂ eq	5,53E+00	1,10E-01	3,01E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,35E-03	0,00E+00	2,19E-02
Eutrophication	kg (PO ₄) ³⁻ eq	7,57E-03	9,40E-06	2,13E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,95E-07	0,00E+00	3,38E-05
Photochemical ozone formation, POCP	kg ethene eq	2,22E-03	5,63E-06	5,39E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,20E-07	0,00E+00	8,00E-06

TECWOOL 825											
Parameter	Unit	Life Cycle Phase									
		Manufacture	Construction		Use			End of Life			
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4
Abiotic Resources Depletion Potential (elements)	kg Sb eq	1,05E-05	3,59E-09	1,70E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,04E-10	0,00E+00	5,06E-08
Abiotic Resources Depletion Potential (fossil fuels)	MJ, net calorific value	1,03E+02	9,61E-01	2,62E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,80E-02	0,00E+00	1,15E+00
Acidification potential	Kg SO ₂ eq	3,69E-02	1,25E-04	9,21E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,40E-06	0,00E+00	3,57E-04
Ozone Depletion potential	Kg CFC-11 eq	7,68E-07	1,10E-08	2,06E-09	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,64E-10	0,00E+00	1,18E-08
Global warming	Kg CO ₂ eq	8,23E+00	2,06E-01	5,64E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,38E-02	0,00E+00	4,12E-02
Eutrophication	kg (PO ₄) ³⁻ eq	8,17E-03	1,76E-05	3,99E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,29E-07	0,00E+00	6,34E-05
Photochemical ozone formation, POCP	kg ethene eq	2,11E-03	1,06E-05	1,01E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,00E-07	0,00E+00	1,50E-05

- | | | | |
|---|----------------------------|---|--------------------------|
| A1. Raw materials supply | B1. Use | C1. Decosntruction and demolition | MND. Module not declared |
| A2. Transport | B2. Maintenance | C2. Transport | |
| A3. Manufacturing Product | B3. Repair | C3. Waste management for reuse, recovery and recycling. | |
| A4. Transport | B4. Replacement | C4. Disposal | |
| A5. Construction – Installation process | B5. Refurbishment | | |
| | B6. Operational Energy use | | |
| | B7. Operational water use | | |

MND. Module not declared



Table 4. Indicators of resources use

Parameter	Unidad	Life Cycle Phase										
		Manufacture		Construction		Use			End of Life			
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	
Use of renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	6,06E+00	1,54E-03	4,08E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,44E-05	0,00E+00	1,44E-02	
Use of renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	6,06E+00	1,54E-03	4,08E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,44E-05	0,00E+00	1,44E-02	
Use of non-renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	6,32E+01	5,47E-01	1,93E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,31E-02	0,00E+00	6,45E-01	
Use of non-renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Total use of non-renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	6,32E+01	5,47E-01	1,93E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,31E-02	0,00E+00	6,45E-01	
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Net use of fresh water	m³	2,55E-02	1,26E-05	6,32E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,38E-07	0,00E+00	4,00E-05	
Hazardous waste disposed	kg	4,79E-05	1,29E-07	1,41E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,67E-09	0,00E+00	4,05E-07	
Non-hazardous waste disposed	kg	3,23E-01	1,03E-04	1,40E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,77E-06	0,00E+00	3,93E+00	
Radioactive waste disposed	kg	1,91E-04	3,72E-06	1,21E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,25E-07	0,00E+00	4,01E-06	
Components for its reutilisation	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Materials for the recycling	kg	4,27E-03	0,00E+00	1,83E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Materials for the energetic evaluation	kg	0,00E+00	0,00E+00	1,20E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Exported energy	MJ	0,00E+00	0,00E+00	9,31E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

A1. Raw materials suply
 A2. Transport
 A3 Manufacturing Product
 A4. Transport
 A5. Construction – Installation process

B1. Use
 B2. Maintenance
 B3. Repair
 B4. Replacement
 B5. Refurbishment
 B6. Operational Energy use
 B7. Operational water use

C1. Decosntruction and demolition
 C2. Transport
 C3. Waste management for reuse, recovery and recycling.
 C4. Disposal

MND. Module not declared



TECWOOL FL

Parameter	Unidad	Life Cycle Phase									
		Manufacture		Construction		Use			End of Life		
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4
Use of renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	6,16E+00	1,45E-03	3,85E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,95E-05	0,00E+00	1,36E-02
Use of renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	6,16E+00	1,45E-03	3,85E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,95E-05	0,00E+00	1,36E-02
Use of non-renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	6,43E+01	5,15E-01	1,82E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,11E-02	0,00E+00	6,07E-01
Use of non-renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	6,43E+01	5,15E-01	1,82E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,11E-02	0,00E+00	6,07E-01
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m³	2,40E-02	1,19E-05	5,95E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,94E-07	0,00E+00	3,77E-05
Hazardous waste disposed	kg	4,51E-05	1,22E-07	1,33E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,22E-09	0,00E+00	3,81E-07
Non-hazardous waste disposed	kg	3,04E-01	9,67E-05	1,31E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,43E-06	0,00E+00	3,70E+00
Radioactive waste disposed	kg	1,80E-04	3,50E-06	1,14E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,12E-07	0,00E+00	3,77E-06
Components for its reutilisation	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the recycling	kg	4,02E-03	0,00E+00	1,72E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the energetic evaluation	kg	0,00E+00	0,00E+00	1,13E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	8,76E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

- A1. Raw materials suply
- A2. Transport
- A3 Manufacturing Product
- A4. Transport
- A5. Construction – Installation process

- B1. Use
- B2. Maintenance
- B3. Repair
- B4. Replacement
- B5. Refurbishment
- B6. Operational Energy use
- B7. Operational water use

- C1. Decosntruction and demolition
- C2. Transport
- C3. Waste management for reuse, recovery and recycling.
- C4. Disposal

MND. Module not declared





DAPcons® TECWOOL
fireproof mortar

TECWOOL T

Parameter	Unidad	Life Cycle Phase									
		Manufacture		Construction		Use			End of Life		
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4
Use of renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	7,07E+00	1,57E-03	4,16E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,59E-05	0,00E+00	1,47E-02
Use of renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	7,07E+00	1,57E-03	4,16E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,59E-05	0,00E+00	1,47E-02
Use of non-renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	7,38E+01	5,57E-01	1,96E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,36E-02	0,00E+00	6,56E-01
Use of non-renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	7,38E+01	5,57E-01	1,96E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,36E-02	0,00E+00	6,56E-01
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m³	2,44E-02	1,28E-05	6,43E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,51E-07	0,00E+00	4,07E-05
Hazardous waste disposed	kg	4,59E-05	1,31E-07	1,44E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,81E-09	0,00E+00	4,12E-07
Non-hazardous waste disposed	kg	3,10E-01	1,05E-04	1,42E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,87E-06	0,00E+00	4,00E+00
Radioactive waste disposed	kg	1,83E-04	3,78E-06	1,23E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,29E-07	0,00E+00	4,08E-06
Components for its reutilisation	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the recycling	kg	4,34E-03	0,00E+00	1,86E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the energetic evaluation	kg	0,00E+00	0,00E+00	1,22E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	9,47E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

- A1. Raw materials suply
- A2. Transport
- A3 Manufacturing Product
- A4. Transport
- A5. Construction – Installation process

- B1. Use
- B2. Maintenance
- B3. Repair
- B4. Replacement
- B5. Refurbishment
- B6. Operational Energy use
- B7. Operational water use

- C1. Decosntruction and demolition
- C2. Transport
- C3. Waste management for reuse, recovery and recycling.
- C4. Disposal

MND. Module not declared





DAPcons® TECWOOL
fireproof mortar

TECWOOL 825

Parameter	Unidad	Life Cycle Phase									
		Manufacture		Construction		Use			End of Life		
		A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4
Use of renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	9,01E+00	2,94E-03	7,81E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E-04	0,00E+00	2,75E-02
Use of renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	9,01E+00	2,94E-03	7,81E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E-04	0,00E+00	2,75E-02
Use of non-renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material	MJ	9,40E+01	1,04E+00	3,68E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,31E-02	0,00E+00	1,23E+00
Use of non-renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	9,40E+01	1,04E+00	3,68E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,31E-02	0,00E+00	1,23E+00
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m³	4,66E-02	2,40E-05	1,21E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,41E-06	0,00E+00	7,63E-05
Hazardous waste disposed	kg	8,76E-05	2,47E-07	2,70E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E-08	0,00E+00	7,72E-07
Non-hazardous waste disposed	kg	5,91E-01	1,96E-04	2,66E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,10E-05	0,00E+00	7,50E+00
Radioactive waste disposed	kg	3,49E-04	7,10E-06	2,31E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,29E-07	0,00E+00	7,65E-06
Components for its reutilisation	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the recycling	kg	8,14E-03	0,00E+00	3,48E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the energetic evaluation	kg	0,00E+00	0,00E+00	2,29E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	1,78E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

- A1. Raw materials suply
- A2. Transport
- A3 Manufacturing Product
- A4. Transport
- A5. Construction – Installation process

- B1. Use
- B2. Maintenance
- B3. Repair
- B4. Replacement
- B5. Refurbishment
- B6. Operational Energy use
- B7. Operational water use

- C1. Decosntruction and demolition
- C2. Transport
- C3. Waste management for reuse, recovery and recycling.
- C4. Disposal

MND. Module not declared



3.4. Potential environmental benefits and impacts derived from activities of reuse, recovery and recycling

Table 5. Indicators of impact evolution. Reuse, recovery and recycling

Parameter	Unit expresed by functional unit or declared unit	D.			
		TECWOOL® F	TECWOOL® FL	TECWOOL® T	TECWOOL® 825
Potential depletion of abiotic resorces (ADP-elements)	Kg Sb eq	-6,18E-08	-4,62E-08	-6,18E-08	-1,08E-07
Potential depletion of abiotic resorces (ADP-fossil fuels)*	MJ, net calorific value	-7,34E-01	-5,90E-01	-7,38E-01	-1,32E+00
Potential acidification of the ground and water resources, AP	Kg SO ₂ eq	-7,16E-05	-4,55E-05	-7,08E-05	-1,19E-04
Ozone depletion potential, ODP	Kg CFC-11 eq	-3,57E-09	-2,48E-09	-3,55E-09	-6,08E-09
Global warming potential, GWP	Kg CO ₂ eq	-3,22E-02	-2,38E-02	-3,22E-02	-5,60E-02
Eutrophication potential, EP	Kg (PO ₄) ³⁻ eq	-8,25E-05	-6,12E-05	-8,24E-05	-1,44E-04
Photochemical ozone creation potential, POCP	POCP Kg ethene eq	-5,86E-06	-4,21E-06	-5,85E-06	-1,01E-05

* ADP-elements: including all the non-renewable abiotic material resources

* ADP-fossil fuels: Including all the fossil resources

Table 6. Life cycle inventory data. Reuse, recovery and recycling

Parameter	Unit expresed by functional unit or declared unit	D.			
		TECWOOL® F	TECWOOL® FL	TECWOOL® T	TECWOOL® 825
Use of renewable primary energy, exclusing the resources of non renewable primary energy used as a raw material	MJ	-3,58E-01	-2,75E-01	-3,59E-01	-6,32E-01
Use of renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use a renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	-3,58E-01	-2,75E-01	-3,59E-01	-6,32E-01
Use of non-renewable primary energy, exclusing the resources of non renewable primary energy used as a raw material	MJ	-7,69E-01	-6,18E-01	-7,73E-01	-1,38E+00
Use of non-renewable primary energy used as raw material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy (primary energy and resources of renewable primary energy used as raw materials)	MJ	-7,69E-01	-6,18E-01	-7,73E-01	-1,38E+00
Use of secondary materials	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of fresh water	m ³	-7,48E-04	-5,56E-04	-7,48E-04	-1,31E-03
Hazardous waste disposed	kg	-6,41E-07	-4,90E-07	-6,43E-07	-1,13E-06
Non-hazardous waste disposed	kg	-4,19E-04	4,16E-04	-3,51E-04	-1,30E-04
Radioactive waste disposed	kg	-4,95E-07	-2,12E-07	-4,82E-07	-7,34E-07
Components for its reutilization	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials to recycle	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for the energetic valorization	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00

MJ, net calorific value



3.5. Recommendations of this DAP

Construction products should be compared by applying the same functional unit and level of building, i.e. including the product's behaviour throughout its life cycle.

Environmental product declarations of different systems of type III eco-labelling are not directly comparable, as the rules of calculation may be different.

This declaration represents the average behaviour of the TECWOOL® fireproof mortar by MERCOR TECRESA.

3.6. Cut-off rules

Over 95% of all the inputs and outputs of mass and energy of the system have been included, excluding, among others, diffuse emissions in the factory.

3.7. Additional environmental information

The product is not toxic or pathogenic, is devoid of asbestos and crystalline silica in a free state and is not affected by fungal growth. The product does not contain substances included in the Candidate List of Substances of Very High Concern for Authorization of the European Chemicals Agency (ECHA).

3.8. Other data

Waste generated during the production is included as "non-hazardous waste" in the European List of Waste under LOW code 17 06 04 "insulation materials other than those mentioned in 17 06 01 and 17 06 03".

4. TECHNICAL INFORMATION AND SCENARIOS

4.1. Transport from the factory to the building site (A4)

Parameter	Parameter expressed by declared unit
Type and consumption of fuel or vehicle used	20-27t truck:1,19E-05 kg diesel/kgkm
Distance	Road transport: 1.194,04 km Sea transport: 19,34 km
Utilization of the vehicle (including the empty return)	85% for road transport and 100% for freighter
Density of the transported product	1.490 kg/m3
Factor of calculating the capacity of the volume used	1

4.2. Installation processes (A5)

Parameter	Parameter expresed by declared unit
Auxiliary materials for installation	-
Water consumption	TECWOOL F: 6,07 kg; TECWOOL FL: 5,72 kg; TECWOOL T: 6,18 kg TECWOOL 825: 11,59 kg
Consumption of other resources	-
Quantitive desription of the type of energy and consumption during the installation process	TECWOOL F: 1,72E-02 kwh TECWOOL FL: 1,62E-02 kwh TECWOOL T: 1,75E-02 kwh TECWOOL 825: 3,29E-02 kwh
Waste in the construction site, generated by the installation of the product (specify types)	TECWOOL F: Plastic waste: 9,88E-03 kg Wood waste: 3,45E-02 kg Cardboard waste: 5,31E-02 kg construction and demolition waste: 1,18E-01 kg TECWOOL FL: Plastic waste: 9,31E-03 kg Wood waste: 3,25E-02 kg Cardboard waste: 5,00E-02 kg construction and demolition waste: 1,11E-01 kg TECWOOL T: Plastic waste: 1,01E-02 kg Wood waste: 3,51E-02 kg Cardboard waste: 5,41E-02 kg construction and demolition waste: 1,20E-01 kg TECWOOL 825: Plastic waste: 1,89E-02 kg Wood waste: 6,58E-02 kg Cardboard waste: 1,01E-01 kg construction and demolition waste: 2,25E-01 kg
Material output as a result of the waste management processes in the place of installation. For example: collection for recycling, for energetic recovery and final disposal	See previous point, "Waste on the construction site, generated by the installation of the product"
Emissions to the air, ground or water	Not detected

4.3. Reference service life (B1)

Parameter	Parameter expresed by declared unit
Reference service life	25 years
Properties and characteristics of the product	fireproof mortars composed of rock wool, cement and other additives.
Requirements (maintenance frequency, ways of using, repair, etc.)	-

4.4. Maintenance (B2), repair (B3), replacement (B4) or refurbishment (B5)

Parameter	Parameter expresed by fdeclared unit
Maintenance, for example: cleaning agent, type of surfactant	-
Maintenance cycle	-
Auxiliar materials for the maintenance process	-
Energy imput for the maintenance process	-
Net consumption of fresh water during the maintenance or repair process	-
Inspection, maintenance or repair process	-
Inspection, maintenance or repair cycle	-
Auxiliary materials, e.g. lubricant	-
Changing of parts during the product life cycle	-
Energy input during the process of maintenance, type of energy, e.g. electricity and quantity	-
Energy input during the process of reparation, renovation, replacement, if it is applicable and significant	-
Loss of material during maintenance or repair	-
Service life of the product for inclusion as a basis to calculate the number of times a change is needed in the building	25 years

4.5. Operational use of energy (B6) and water (B7)

Parameter	Parameter expresed by declared unit
Energy type, for example: electricity, natural gas, use of heat for a district	Does not require water or energy
Output power potential of equipments	-
Net consumption of fresh water	-
Characteristic representation (energy efficiency, emissions...)	-

4.6. End of life (C1-C4)

Process	Parameter expresed by functional unit			
	TECWOOl® F	TECWOOl® FL	TECWOOl® T	TECWOOl® 825
Collection processes	3,93	3,70	4,00	7,50
Recycling systems	0,00	0,00	0,00	0,00
Disposal	3,93	3,70	4,00	7,50

5. ADDITIONAL INFORMATION

- CE Marking (ETA 11/0185) for TECWOOL F
- Euroclass reaction to fire: Non combustible / Euroclass A1 (EN- 13501-1)
- Thermal conductivity: 0.045 - 0.053 W / mk

6. PCR AND VERIFICATION

This declaration is based on the Document

RCP 100 Declaración Ambiental de Producto sobre productos de construcción (v2 29.02.2016)

Independent verification of the declaration and data according to ISO 14025 and UNE EN15804 + A1



Internal



External

Independent verifier appointed

Mr. Ferran Pérez, Verifier accredited by the DAPconstruction® Program



Verification date

23 / 10 / 2019

References

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- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
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