



ENVIRONMENTAL PRODUCT DECLARATION:

Dry-pressed ceramic tile (Bla)

DAPcons[®].NTe.143

DECLARACIÓN AMBIENTAL DE PRODUCTO
ENVIRONMENTAL PRODUCT DECLARATION

According to the standards:
ISO 14025 y EN 15804 + A2:2020



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GENERAL INFORMATION

Product

Dry-pressed ceramic tile (Bla)

Company



Product description

The product includes different models of dry-pressed ceramic tile (Bla).

Reference RCP

UNE-EN 17160 Product category rules for ceramic tiles.

Production plant

Pol. Ind. Mas Vell, Ramón Sugrañes, 1
43144 Vallmoll, Tarragona - Spain

Validity

From: 06/02/2023 Until: 06/02/2028

The validity of DAPcons®.NTe.143 is subject to the conditions of the regulation DAPcons®. The current edition of this DAPcons® is the one that appears in the registry maintained by Cateb; for informational purposes, it is included on the Program website www.csostenible.net

EXECUTIVE SUMMARY

Dry-pressed ceramic tile (Bla)



DAPconstruction® PROGRAMME

Environmental Product Declarations in the Construction sector
www.csostenible.net



Programme Manager

Colegio de la Arquitectura Tècnica de Barcelona (Cateb)
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Declaration Holder

ROSA GRES SLU
 Crta. Sant Cugat Km 3.3 08290 - BARCELONA (España)
www.rosagres.com



Statement made by:

ReMa-INGENIERÍA, S.L.
 Calle Crevillente, 1, entlo., 12005 - CASTELLON, España

Declared product

Dry-pressed ceramic tile (Bla)

Geographic representation

This declaration has been prepared with production data from the ROSA GRES plant located in Vallmoll, Tarragona – Spain

Variability between different products

The results expressed in this declaration refer to an average product that groups various series, whose coefficient of variation of the GWP-total is 37.28%

Declaration number

DAPcons®.NTe.143

Registration date

19/01/2023

Validity

This verified declaration authorizes its holder to carry the logo of the operator of the ecolabelling program DAPconstruction®. The declaration is applicable exclusively to the mentioned product and for five years from the date of registration. The information contained in this statement was provided under the responsibility of: **ROSA GRES SLU**

Programme Administrator Signature

Celestí Ventura Cisternas. President of Cateb

Programme Verifier Signature

Roger González Corsellas. Verifier accredited by the administrator of the DAPcons® Programme

ENVIRONMENTAL PRODUCT DECLARATION

1. DESCRIPTION OF THE PRODUCT AND ITS USE

This declaration includes the product Dry-pressed ceramic tile for the construction sector, called Bla according to the divisions of water absorption groups indicated in UNE-EN 14411 (water absorption $\leq 0.5\%$), and produced during the year 2021 at the ROSA GRES plant located in Vallmoll (Tarragona).

Average weight: 20,73 kg/m²

CARACTERÍSTICAS DIMENSIONALES Y ASPECTO SUPERFICIAL / DETERMINATION OF DIMENSIONS AND SURFACE QUALITY	NORMA ENSAYO / REGULATION OF TEST		MODELO:
			COLOR:
TIPO DE PRODUCTO / TYPE OF PRODUCT S/GROUP	EN 14411		Bla
USO PREVISTO / INTENDED USE (SI-SE-PI-PE)			SISE
TRATAMIENTO MECÁNICO (Rectificado-biselado-pulido) / MECHANICAL TREATMENT (Rectified-beveling-polishing)			Se definirá para cada referencia concreta.
GL/U/L			GL
DIMENSIONES DE FABRICACIÓN / WORK SIZE	MMB-W(CALIBRE): $\pm 2,0$ mm		MMB-W(CALIBRE): $\pm 1,0$ mm
Longitud y anchura / Length and width			Se definirá para cada referencia concreta.
Espesor / Thickness	ISO-10545-2	10,1 mm \pm 0,5 mm	Se definirá para cada referencia concreta ($\pm 0,5$ mm)
Rectitud de los lados / Straightness of the sides	ISO-10545-2	$\pm 1,5$ mm	$\pm 0,5$ mm
Ortogonalidad / Rectangularity	ISO-10545-2	$\pm 2,0$ mm	$\pm 1,2$ mm
Planaridad / Surface flatness	ISO-10545-2	CENTRAL: $\pm 2,0$ mm	CENTRAL: [+ 1,4 mm, - 0,7 mm]
		LATERAL: $\pm 2,0$ mm	LATERAL LARGO: [+ 1,2 mm, - 0,5 mm] LATERAL CORTO: [+ 0,7 mm, - 0,5 mm]
		ALABEO: $\pm 2,0$ mm	ALABEO: $\pm 1,2$ mm
CARACTERÍSTICAS FÍSICAS Y QUÍMICAS / PHYSICAL AND CHEMICAL CHARACTERISTICS	NORMA ENSAYO / REGULATION OF TEST		MODELO:
Absorción de agua / Water absorption	ISO-10545-3	$E \leq 0,5\%$	$E \leq 0,5\%$
Fuerza de rotura / Breaking strength	ISO-10545-4	≥ 1300 N	> 2000 N
Módulo de rotura (Resistencia a la flexión) / Modulus of rupture	ISO-10545-4	≥ 35 N/mm ²	≥ 37 N/mm ²
Resistencia a la abrasión superficial / Resistance to surface abrasion	ISO-10545-7	Valor declarado	Se definirá para cada referencia concreta.
Resistencia al choque térmico / Resistance to thermal shock	ISO-10545-9	Cumple	Cumple
Resistencia al cuarteo / Crazeing resistance	ISO-10545-11	Cumple	Cumple
Resistencia a la helada / Frost resistance	ISO-10545-12	Cumple	Cumple
Resistencia al deslizamiento. (Péndulo). Ensayo en húmedo. / Slip resistance. (Pendulum). Wet test.	UNE 41901:2017 EX	Valor declarado	Se definirá para cada referencia concreta.
Resistencia al deslizamiento. (Péndulo). Ensayo en húmedo. / Slip resistance. (Pendulum). Wet test.	BS 7976-2:2002	Valor declarado	Se definirá para cada referencia concreta.
Resistencia a las bajas concentraciones de ácidos y bases Ác. Clorhídrico - Ác. Cítrico - Hidróxido Potásico / Resistance to low concentrations of acids and bases Hydrochloric acid - Citric acid - Potassium hydroxide	ISO-10545-13	Valor declarado	mínimo LB
Resistencia a las altas concentraciones de ácidos y bases Ác. Clorhídrico - Ác. Láctico - Hidróxido Potásico / Resistance to high concentrations of acids and bases Hydrochloric acid - Lactic acid - Potassium hydroxide	ISO-10545-13	Valor declarado	mínimo HB
Resistencia a productos domésticos y sales para piscinas Cloruro amónico - Hipoclorito Sódico / Resistance to domestic products and salts to swimming pools Ammonium chloride - Sodium hypochlorite	ISO-10545-13	mín B	A
Resistencia a las manchas: Cromo / Yodo / Aceite / Resistance to stains: Chrome / Iodine / Olive oil	ISO-10545-14	mín 3	mínimo clase 4



2. DESCRIPTION OF THE STAGES OF THE LIFE CYCLE

2.1. Manufacturing (A1, A2 y A3)

Raw Materials (A1 y A2)

The dry-pressed ceramic tile (Bla) product basically comprises clay, carbonate, sand and feldspar with an enamel layer mainly comprising feldspar, carbonate, silicate and kaolin, among others.

The raw materials used have different origins (provincial, national and United Kingdom, Turkey, Ukraine and Italy). This variation is due to the inability to obtain these materials from a single source. The raw materials from outside Spain are transported by freighter to the port of Castellón and then by truck to the spray-dried powder plants. For marine transport, a transoceanic freighter was chosen, with transport distance differing according to the source (Turkey, United Kingdom). For road transport, the use of a EUROVI 27 t truck has been estimated. All the raw materials are transported in bulk, i.e., they do not require packaging materials.

Manufacturing (A3)

When the raw materials reach the spray-dried powder factory, they are unloaded into bins at the production plants before being transferred to the storage silos. Before use, the raw material is crushed mechanically by a hammer mill.

Once the mix has been made, it is subjected to the processes of milling (or grinding) and then spraying. This stage

of the production process serves to produce a homogeneous mixture of the various components with a given particle size and prepares it for moulding the tiles. The particle size of raw materials significantly influences the plasticity and, accordingly, the shaping of the ceramic tile, the drying speed and the contact surface between particles, which further conditions their reactivity and many of the physicochemical properties of the finished product (porosity, mechanical strength, etc.). A wetmilling process is used, since this provides greater homogenization of the components in the formula, smaller particle size, greater control of the variables in the process and improved characteristics of the powder than dry grinding.

The slip obtained by wet-milling the raw material is dried in a continuous automatic process, producing a spherical hollow agglomerate of particles called atomized granules, with a controlled humidity content (approximately 5-6% in weight) of ideal shape and size to flow in the shaping stage. The product obtained is called dry-sprayed powder.

When the dry-sprayed powder is ready, it is sent in bulk by the supplier to the Rosa Gres factory. The dry-sprayed powder or clay is unloaded into storage bins and then distributed into silos according to colour. The dry-sprayed clays are then sifted into the press. Due to their simple form (rectangular, square, etc.) and the low thickness/surface ratio, the flat tiles are moulded in simple dry presses that apply flat unidirectional pressure, applied only on one surface of the tile. This operation is carried out using a hydraulic press. The moulded tiles are then placed in a drier to reduce their moisture content, thereby doubling or tripling their mechanical resistance, prior to subsequent processing. When removed from the drier, the tiles are given one or several coats of glaze using the bell/waterfall method.

Once glazed, the tiles are sent to be decorated. In this phase, patterns and designs are applied to the tiles. The most usual technique is the digital printing process, due to its ease of application in the glazing process.

Once glazed and decorated, the tiles are sent to the kiln to be fired. The firing is the most important stage of the production process of ceramic tiles, as this is when the previously moulded tiles undergo a fundamental modification of their properties.

Once fired, the tiles are transported to the classification station. Some, in order to meet client requirements, are sent to be rectified (grinding by whetstone or disc). This process uses water to polish the tiles and obtain edges with an acceptable tolerance. The water used in this process is recirculated.

The tiles that meet standards (or have been rectified) are packaged using cardboard, pallets and polyethylene. Once the pallet is made up, it is stored in the logistics area of the plant.

2.2. Building (A4 y A5)

Transport of the product to the work (A4)

The principal market of ceramic products manufactured by Rosa Gres is Spain, followed by Europe and the rest of the world.

For transcontinental transport, an average transoceanic freighter has been estimated. For road transport, the use of a EUROVI 27 t truck has been estimated.

Table 1. Scenarios applied for the transport of the product to the place of installation

Destinations	Type of transport	Percentage	Average km
Spain	EUROVI 27 t truck	59	600
Europe	EUROVI 27 t truck / freighter	27	1354
Rest of the world	EUROVI 27 t truck / freighter	14	704
		Total 100%	

Product installation process and construction (A5)

Once the product is unpacked, it can be installed. According to the data obtained and with a view to applying a real scenario, it is established that installation calls for the use of quick-setting mortar (CaSO₄). Tile adhesives are cement-based adhesives comprising a mixture of hydraulic binders, mineral fillers and organic additives, mixed with water or added liquid just before use. They consist of a mixture of white or grey cement, siliceous mineral fillers and/or limestone and organic additives, water retainers, water redispersible polymers, rheology modifiers, fibres, etc.

2.3. Product use (B1-B7)

Use (B1)

The impact of the product at this stage is null since no material is consumed nor is there any emission to the environment during the product lifetime.

Maintenance (B2)

To characterize the cleaning scenario, what is indicated in UNE-EN 17160 has been followed:

Scenario for the maintenance of ceramic floor tiles:

- Residential use: 0.134 ml of detergent is used once every two weeks and 0.1 l of water is used to clean 1 m² of ceramic floor tiles once a week.

Repair (B3)

According to Rosa Gres, the reference useful life of the product will be the same as that of the building where it is installed, since as long as it is installed correctly, it is a durable product. So it does not require any repair.

Substitution (B4)

The product does not require any substitution.

Rehabilitation (B5)

The product does not require any rehabilitation.

Operational energy use (B6)

Ceramic products do not use energy during the use of the building. The default environmental impacts are zero.

Operational water use (B7)

Ceramic products do not use water during the use of the building. The default environmental impacts are zero.

2.4. End of life (C1-C4)

Deconstruction and demolition (C1)

Once it reaches the end of its useful life, 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. For all these reasons, it has been estimated that the impact of stage C1 Deconstruction, demolition is negligible.

Transportation (C2)

The transport of waste materials is carried out with a EURO VI 27t truck and an average distance of 50 km from the demolition point to the landfill and to the recycling plant has been estimated, following what is indicated in the PCRs.

Waste management for reuse, recovery and recycling (C3)

It has been estimated that 70% of the waste material is destined for recycling, following what is indicated by the PCRs. Collection charges have been assumed to be negligible.

Ultimate elimination (C4)

It has been estimated that 30% of the waste material is destined for landfill, following what is indicated by the PCRs.

2.5. Potential environmental benefits and burdens beyond the system boundary (D)

This module accounts for the benefits derived from recycling waste (net impacts derived from secondary materials).

It has been considered that loads are avoided in manufacturing (waste such as cardboard, film, pallet), in installation (packaging waste such as cardboard, plastic and pallet) and at the end of life of the product.

3. LIFE CYCLE ANALYSIS

This study has been carried out using the LCA tool SimaPro 9.2.0.2. of PRé Sustainability, whose development is based on the UNE-EN ISO 14040-14044 standards, and the Ecoinvent v3.7.1 (2020) database.

This LCA is of the "cradle to grave" type, that is, it covers the stages of product manufacturing, construction, use and end of life.

Specific data from the Rosa Gres plant (Vallmoll, Tarragona) corresponding to the year 2021 has been used to inventory the manufacturing stage.

3.1. Functional Unit

"cladding of 1 m² of a surface (wall or floor) of a dwelling with dry-pressed ceramic tile (Bla) for 50 years of residential use in a geographical and technological surroundings of Spain in 2021".

3.2. System limits

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 = Declared module

MND = Undeclared module

3.3. Life cycle analysis data (ACV)

Table 3. Parameters of environmental impact

Parameter	Unit	Life cycle stage														Module D
		Product stage	Construction Process Stage		Use stage							End of life stage				
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	
Climate change - total (GWP-total)	kg CO2 eq	1,00E+01	1,50E+00	8,09E-01	0,00E+00	4,90E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E-01	0,00E+00	3,28E-02	-2,37E-01
Climate change - fossil (GWP-fossil)	kg CO2 eq	1,02E+01	1,50E+00	7,80E-01	0,00E+00	6,50E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E-01	0,00E+00	3,28E-02	-2,60E-01
Climate change - biogenic (GWP-biogenic)	kg CO2 eq	-1,97E-01	3,67E-04	2,69E-02	0,00E+00	-2,13E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,30E-05	0,00E+00	3,55E-05	2,82E-02
Climate change - land use and changes in land use (GWP-luluc)	kg CO2 eq	3,29E-02	2,18E-04	2,02E-03	0,00E+00	5,29E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,17E-06	0,00E+00	3,09E-05	-4,49E-03
Ozone layer depletion (ODP)	kg CFC 11 eq	1,92E-06	3,68E-07	3,53E-08	0,00E+00	2,51E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,56E-08	0,00E+00	1,33E-08	-3,04E-08
Acidification (AP)	mol H+ eq	4,59E-02	1,07E-02	2,91E-03	0,00E+00	4,15E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,52E-04	0,00E+00	3,08E-04	-2,24E-03
Eutrophication of fresh water (EP-freshwater)	kg P eq	1,11E-04	2,15E-06	1,47E-05	0,00E+00	3,96E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,46E-07	0,00E+00	3,43E-07	-4,48E-05
Eutrophication of sea water (EP-marine)	kg N eq.	1,26E-02	2,55E-03	7,57E-04	0,00E+00	2,09E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,00E-05	0,00E+00	1,07E-04	-7,24E-04
Terrestrial eutrophication (EP-terrestrial)	mol N eq.	1,36E-01	2,85E-02	8,46E-03	0,00E+00	1,15E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,06E-04	0,00E+00	1,17E-03	-6,96E-03
Photochemical ozone formation (POCP)	kg NMVOC eq	3,64E-02	7,75E-03	2,24E-03	0,00E+00	3,95E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,74E-04	0,00E+00	3,41E-04	-1,59E-03
Depletion of abiotic resources - minerals and metals (ADP-minerals&metals)	kg Sb eq	2,09E-05	5,11E-07	2,25E-06	0,00E+00	7,46E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,11E-08	0,00E+00	7,47E-08	-2,24E-06
Depletion of abiotic resources - fossil fuels (ADP-fossil)	MJ, net calorific value	2,20E+02	2,23E+01	4,95E+00	0,00E+00	1,36E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,14E+00	0,00E+00	9,15E-01	-6,38E+00
Water consumption (WDP)	m3 worldwide eq. private	4,42E+00	7,68E-03	9,74E-02	0,00E+00	1,21E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,79E-04	0,00E+00	4,12E-02	-1,13E+00
The Indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This Indicator is thus equal to the GWP Indicator originally defined in EN 15804:2012+A1:2013. Can be obtained from IPCC characterization factors.																
Global Warming Potential (GHG)	kg CO2 eq	1,02E+01	1,50E+00	7,82E-01	0,00E+00	7,03E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,40E-01	0,00E+00	3,28E-02	-2,65E-01

A1 Supply of raw materials. A2 Transportation. A3 Manufacturing. A4 Transportation. A5 Installation and construction processes. B1 Use. B2 Maintenance. B3 Repair. B4 Substitution. B5 Rehabilitation. B6 Operational energy use. B7 Operational water use. C1 Deconstruction and demolition. C2 Transportation. C3 Waste management for reuse, recovery and recycling. C4 Fine removal. D Environmental benefits and burdens beyond the system boundary. MND Undeclared module.

Table 4. Parameters for the use of resources, waste and output material flows

Parameter	Unit	Life cycle stage														Module D	
		Product stage	Construction Process Stage			Use stage							End of life stage				
		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		
Use of renewable primary energy excluding renewable primary energy resources used as feedstock	MJ, net calorific value	1,25E+01	5,95E-02	7,33E-01	0,00E+00	6,04E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,35E-03	0,00E+00	7,81E-03	-2,02E+00
Use of renewable primary energy used as raw material	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renewable primary energy (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	1,25E+01	5,95E-02	7,33E-01	0,00E+00	6,04E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,35E-03	0,00E+00	7,81E-03	-2,02E+00
Non-renewable primary energy use, excluding non-renewable primary energy resources used as feedstock	MJ, net calorific value	2,37E+02	2,37E+01	5,27E+00	0,00E+00	1,47E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,27E+00	0,00E+00	9,72E-01	-6,83E+00
Use of non-renewable primary energy used as raw material	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-renewable primary energy (primary energy and renewable primary energy resources used as feedstock)	MJ, net calorific value	2,37E+02	2,37E+01	5,27E+00	0,00E+00	1,47E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,27E+00	0,00E+00	9,72E-01	-6,83E+00
Use of secondary materials	kg	7,22E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of non-renewable secondary fuels	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Net use of freshwater resources	m3	4,42E+00	7,68E-03	9,74E-02	0,00E+00	1,21E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,79E-04	0,00E+00	4,12E-02	-1,13E+00	
Hazardous waste removed	kg	2,82E-03	5,40E-05	6,98E-06	0,00E+00	8,08E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,67E-06	0,00E+00	1,38E-06	-8,37E-06	
Non-hazardous waste eliminated	kg	1,60E+00	1,19E-02	1,48E-01	1,00E+00	8,18E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,05E-04	1,00E+00	6,22E+00	-3,99E-02	
Radioactive waste disposed of	kg	1,20E-03	1,58E-04	2,01E-05	2,00E+00	2,14E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,52E-05	2,00E+00	6,00E-06	-1,80E-05	
Components for reuse	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
Materials for recycling	kg	1,26E+01	0,00E+00	3,07E-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	1,45E+01	0,00E+00	0,00E+00	
Materials for energy recovery (energy recovery)	kg	0,00E+00	0,00E+00	8,08E-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	
Exported energy	MJ by energy vector	0,00E+00	0,00E+00	7,56E-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	

A1 Supply of raw materials. A2 Transportation. A3 Manufacturing. A4 Transportation. A5 Installation and construction processes. B1 Use. B2 Maintenance. B3 Repair. B4 Substitution. B5 Rehabilitation. B6 Operational energy use. B7 Operational water use. C1 Deconstruction and demolition. C2 Transportation. C3 Waste management for reuse, recovery and recycling. C4 Fine removal. D Environmental benefits and burdens beyond the system boundary. MND Undeclared module.

Table 5. Kg of biogenic carbon

Packaging	8,05E-01
Product	0,00E+00

3.4. 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 dry-pressed ceramic tile (Bla) manufactured by Rosa Gres.

3.5. Cutting 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.

3.6. Additional environmental information

During the life cycle of the product, no hazardous substances listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" are used.

3.7. Other data

Waste from the ceramics industry is included as "non-hazardous waste" in the European Waste Catalogue under EWL code according to European Waste List (Directive 2014/955/EC): EWL 101201: "waste preparation mixture before thermal processing", EWC 101208 "waste ceramics, bricks, tiles and construction products (after thermal processing)" and EWL 101299 "wastes not otherwise specified" (Decision 2014/955/EU).

4. ADDITIONAL TECHNICAL INFORMATION AND SCENARIOS

4.1. Transportation from the factory to the construction site (A4)

Parameter	Parameter expressed per functional unit
Type and fuel consumption, type of vehicle used for transportation	EURO VI 27t truck: 2.23E-05 kg diesel/kgkm
Distance	Road transport: 817 km Sea transport: 1174 km
Capacity utilization (including empty return)	85% for road transport and 100% for sea transport.
Apparent density of transported product	1983 kg/m ³
Useful capacity factor (1, <1 or >1 for products that are packed compressed or nested)	1

4.2. Installation processes (A5)

Parameter	Parameter expressed per functional unit
Auxiliary materials for construction (specifying each material)	Mortar: 3,3 kg
Water use	0,8 kg
Use of other resources	they are not detected
Quantitative description of the type of energy (regional mix) and consumption during the installation process	they are not detected
Waste of materials in the work before the treatment of waste, generated by the installation of the product (specify by type)	4.68E-1 kg packaging materials
Material outputs (specified by type) as a result of waste treatment on the building site. For example: collection for recycling, energy recovery, disposal (specified by route)	cardboard to be recycled 2.39E-01 kg cardboard to be incinerated 2.35E-02 kg cardboard to landfill 2.01E-02 kg Pallet to be recycled 2.60E-02 kg Pallet to be incinerated 2.16E-02 kg Pallet to landfill 3.55E-02 kg Plastic to be recycled 4.22E-02 kg Plastic to be incinerated 3.57E-02 kg Plastic to landfill 3.55E-02 kg .
Direct emissions to air, soil and water	they are not detected

4.3. Reference life (B1)

Parameter	Parameter expressed per functional unit
Reference Lifetime (RSL)	50 years
Characteristics and properties of the product	Tile for interior or exterior wall or floor covering
Requirements (conditions of use, frequency of maintenance, repair, etc.)	1 cleaning/week

4.4. Maintenance (B2), Repair (B3), Substitution (B4), or Rehabilitation (B5)

Maintenance (B2)

Parameter	Parameter expressed per functional unit
Maintenance process, for example; cleaning agent, surfactant type	0.134 ml of detergent once every two weeks and 0.1 l of water to clean 1 m ² of ceramic floor tiles once a week.
Maintenance cycle	1 cleaning/week
Auxiliary materials for the maintenance process (specifying each material)	0.134 ml of detergent once every two weeks
Energy inputs for the maintenance process (quantity and type of energy vector)	not detected
Net consumption of fresh water during maintenance or repair	0,260 m ³
Material waste during maintenance (specifying the type)	not detected

Repair (B3)

Parameter	Parameter expressed per functional unit
Repair process	does not need repair
Proceso de inspección	-
Repair cycle	-
Auxiliary materials (specifying each material), for example lubricant	-
Interchange of parts during the product life cycle	-

Parameter	Parameter expressed per functional unit
Energy inputs during maintenance, type of energy, example: electricity, and quantity	-
Energy input during the repair, renovation, replacement process if applicable and relevant (quantity and type of energy vector)	-
Material waste during repair (specifying each material)	-
Consumo neto de agua dulce	-

Substitution (B4)

Parameter	Parameter expressed per functional unit
Energy input during substitution, for example for the use of cranes (quantity and energy vector)	Does not need substitution
Change of worn parts in the product life cycle (specifying each material)	-
Net freshwater consumption	-

Rehabilitation (B5)

Parameter	Parameter expressed per functional unit
Rehabilitation process	Does not need rehabilitation
Rehabilitation cycle	-
Energy input during rehabilitation, for example for the use of cranes (quantity and energy vector)	-
Input material for rehabilitation, including auxiliary materials (specifying by material)	-
Waste of material during rehabilitation (specifying each material)	-
Other scenario development assumptions	-

4.5. Reference life

Parameter	Parameter expressed per functional unit
Reference life	50 years
Declared properties of the product, finishes, etc.	Water absorption Group Bla E ≤ 0.5 (UNE-EN 14411)
Application design parameters (manufacturer's instructions)	See installation instructions
Estimation of the quality of execution, when installed according to the manufacturer's instructions	The useful life of the product is equal to that of the building
Outdoor environment for outdoor applications. For example, weather, pollutants, UV radiation, temperature, etc.	The product is suitable for exterior applications
Indoor environment for indoor applications. For example, temperature, humidity, chemical exposure	The product is suitable for interior applications
Terms of use. For example, frequency of use, mechanical exposure, etc.	Does not apply
Maintenance. For example, the required frequency, etc.	1 cleaning/week

4.6. Use of energy (B6) and water (B7) in service

Parameter	Parameter expressed per functional unit
Auxiliary materials (specified by material)	No water or energy consumption
Type of energy vector. For example, electricity, natural gas, district heating	-
Equipment output power	-
Net freshwater consumption	-
Characteristic features (energy efficiency, emissions, etc.)	-
Other scenario development assumptions. For example, transportation	-

4.7. End of life (C1-C4)

	Process				
	Collection processes (specified by types)	Recovery systems (specified by type)			Elimination
	kg collected with mixed construction waste	kg for reuse	kg for recycling	kg for energy recovery	kg for final disposal
	20.73	0	14.51	0	6.22
Assumptions for scenario development	Following what is indicated in the PCRs, an end-of-life scenario of 70% recycling management and 30% landfill management has been estimated. The transport of waste materials is carried out with a EURO VI 27t truck and an average distance of 50 km from the demolition point to the landfill and recycling plant has been estimated.				

5. ADDITIONAL INFORMATION

- CE marking
- Euroclass of reaction to fire: A1 / A1fl.
- Mechanical resistance Group Bla > 2000 N / > 40 N/mm².
- Water absorption Group Bla E ≤ 0.5%.

- Declaration of performance (NUM. 1-PREN2017) in accordance with REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of March 9, 2011, which establishes harmonized conditions for the commercialization of construction products.

- Declaration of recycled content in accordance with the UNE ISO 14021:2002 standard – Ecological labels and environmental declarations, environmental self-declarations (Type II ecological labeling). ROSA GRES. May 9, 2022.

6. RCP AND VERIFICATION

This statement is based on Document

UNE-EN 17160 Product category rules for ceramic tiles. Ceramic tile

Independent verification of the declaration and data, in accordance with ISO 14025 and IN UNE-EN 17160

External

Third party Verifier

Roger González Corsellas

Accredited by the administrator of the DAPcons® Programme

Verification date:

06/02/2023

References

- Anàlisis de Ciclo de Vida del producto Porcelánico (Bla) de ROSAGRES. - ReMa-INGENIERÍA, S.L. 2022 (no publicado)
- Documentation for Duty Vehicle Processes in GaBi. Report version 1.0. February 2021
- Annex_C_Annex C to the PEF-OEF Methods V2.1_May2020.
- Handbook of Emission Factors for Road Transport (HBEFA). 2017.
- Informe Inventarios GEI 1990-2013. Anexo 7. España. 2021

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