

GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

Environmental
Product
Declaration

EN ISO 14025:2010

EN 15804:2012+A1:2013

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Multi-component grout

Publication date: 2020-10-02

Valid until: 2025-10-01

GlobalEPD code: 006-023



FOSROC EUCO, S.A.U.



The holder of this Declaration is responsible for its contents and for keeping the records and the documentation that supports the data and statements included during the validity period.



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GlobalEPD-RCP-006 European standard EN 15804:2012+A1:2013 serves as the core RCP	
Independent verification of the Declaration and data, according to EN ISO 14025:2010	
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Verification body AENOR	

1 General information

1.1. The organisation

The owner of this Environmental Product Declaration (EPD) is Fosroc Euco, S.A.U.

Fosroc Group, always at the forefront of chemical technology, focuses on designing effective solutions for repairing and installing concrete structures. Its solutions include concrete repair mortars, resin anchors, grouts for foundations, waterproofing systems, flooring and coatings, adhesives and sealants, surface treatments and admixtures for concrete and mortar.

Fosroc Group has factories in more than 20 countries and has been providing construction solutions adapted to virtually any type of construction project for over 80 years, combining high-quality products with specialised technical support, customer service and innovation.

Fosroc products were first marketed in Spain in 1970. Its headquarters (offices, factory and laboratory) are in Izurza (Vizcaya).

Fosroc is committed to improving environmental performance throughout its organisation. Fosroc Euco, S.A.U.'s factory implemented an Environmental Management System in accordance with ISO 14001.

1.2. Scope of the Declaration

This Global EPD Declaration for multi-component grouts was prepared with the yearly production weighted average data for the three multi-component grout references manufactured at Fosroc Euco, S.A.U.'s production centre in Izurza (Vizcaya).

The EPD is based on 2019 production data.

More specifically, it is the average of the three multi-component grout references manufactured by Fosroc Euco, S.A.U.

1.3. Life-cycle and compliance

This EPD was developed and verified according to UNE-EN ISO 14025:2010 and UNE-EN 15804:2012+A1:2014 and Category Rules GlobalEPD-CPR-006_rev.1 Mortars.

It is a cradle-to-gate environmental declaration with the life-cycle stages shown in Table 1.

This Declaration may not be comparable to declarations developed in other programmes or using different reference documents, especially when such declarations have not been developed and verified in accordance with UNE-EN 15804.

Similarly, Environmental Declarations may not be comparable if the origin of the data is different (e.g. databases), not all relevant information modules are included, or they are not based on the same scenarios.

Product stage	A1	Raw material supply	X
	A2	Transport	X
	A3	Manufacturing	X
Construction process stage	A4	Transport	MNE
	A5	Construction installation	MNE
Use stage	B1	Use	MNE
	B2	Maintenance	MNE
	B3	Repair	MNE
	B4	Replacement	MNE
	B5	Refurbishment	MNE
	B6	Operational energy use	MNE
	B7	Operational water use	MNE
End of life stage	C1	Deconstruction, demolition	MNE
	C2	Transport	MNE
	C3	Waste processing	MNE
	C4	Disposal	MNE
Benefits and loads beyond the system boundary	D	Reuse, recovery, recycling, potential	MNE

X = Module included in the LCA; NR: Not relevant module MNE= Module not evaluated

Table 1.
System boundaries. Information modules declared

2 The product

2.1. Product identification

The product covered by this Declaration is a grout, according to UNE-EN 1504-6 "Products and systems for the protection and repair of concrete structures. Anchoring of reinforcing steel bar", which sets out the technical characteristics.

According to the Central Product Classification (CPC), these multi component grouts are classified under code 3751: "Non-refractory mortars and concretes".

These mortars are used for the anchoring of steel reinforcement or other concrete elements.

The products covered by the EPD are shown in Table 2:

Product identification	Product designation
1	Conbextra EPG
2	Lokfix S40 (20kg)
3	Lokfix S40 (2kg)

Table 2. Product included ACV study

Characteristics of the product referred to in the declaration:

- Product service life: 50 years
- Reference mass of material for end use: 1.8 – 2.0 kg/m²
- Product density: 2050 kg/m³
- Typical layer thickness: 10 - 120 mm

2.2. Product performance

Multi-component backfill mortars are chemical anchors used in the installation of fasteners, with high static or dynamic loads, in holes drilled in concrete, brick or natural rock.

They have a rapid strength development which facilitates early commissioning. They make structures in soil or rock more resistant to weight, earthquakes and wind force.

2.3. Product composition

The mortar is composed of binders, mineral fillers and additives.

The virtual multi-component grout analysed is for a yearly production weighted average of the references manufactured at Izurza production centre in Vizcaya.

Substance	Contents	Deviation
Aggregates	65,40%	9%
Resins	32,08%	49%
Others	2,30%	25%

Table 3. Main components of the product

The manufacturer declares that none of the components of the final product are included in the Candidate List of Substances of Very High Concern for authorisation of the REACH regulation.

3 LCA Information

3.1. Life-cycle analysis

This environmental product declaration aims to assess and report the potential environmental impacts of multi-component grouts.

The EPD is based on a cradle-to-gate life-cycle analysis conducted in accordance to UNE-EN ISO 14044. Environmental Management. Life cycle assessment. Requirements and guidelines.

The EPDs prepared according to the Mortar Product Category Rules are based on information modules defined in UNE-EN 15804. Specifically, the product stage (modules A1-A3) is included, while the construction process stage (modules A4-A5), the use stage (modules B1-B7) and the end-of-life stage (modules C1-C4) are left out.

The data used in modelling the production processes were obtained in 2019. These data are a representative reflection of the company's activity in manufacturing the analysed product under study.

The Ecoinvent v3.4 database was used to select non-specific data such as raw material production. This EPD sets out the average performance of three multi-component grouts produced by Fosroc Group at its Izurza plant. An individual calculation was completed for each product and a weighted average was then calculated according to production for each reference, in order to reference the data to 1 kg of mortar.

When calculating the LCA, the following methods were used to find the results with the Simapro programme by Pré Consultants (v.8.5.0).

Environmental parameter	Method
Descriptive parameters of environmental impacts	CML-IA baseline (Version 4.2)
Resource usage descriptor parameters	Cumulative Energy Demand
Parameters that describe the output streams	EDIP

Table 4. Calculation methods used

3.2. Functional or declared unit

The declared unit has been defined as: "**1 kg of packaged mortar**".

3.3. Reference service life (RSL)

The defined reference service life is 50 years, as set out in the applicable PCR.

3.4. Allocation and cut-off criteria

A physical criterion (mass) was applied to assign the inputs and outputs of the production system to each product, based on production for the flows associated with the production process, such as energy consumption and waste generation.

As specified in EN 15804:2012+A1:2013, all materials or consumables that account for 1% of the unit process to be studied may be excluded.

3.5. Data representativeness, quality and selection

The inventory data were provided directly by the company. In the case of unavailable primary data, theoretical calculations or estimates were completed or data from internationally renowned life-cycle inventory databases were assimilated. These data are for 2019 and are representative of the products analysed.

Variation between the different product references is over 10%, meaning the minimum and maximum impact values within the family, as well as the relevant deviations, will be declared, as specified in the PCR. This information is presented in Annexes I and II of this Declaration.

3.6. Other calculation rules and assumptions

A life-cycle analysis was performed on each product individually, and the results were then weighted according to production. Calculations were made for 1 kg of packaged mortar.

With regards to energy allocation, this section only has electricity consumption, which was calculated by mass allocation of yearly production to the expenditure indicated in the invoices for this year (2019).

Auxiliary materials solely for the production process under study (mainly greasing of machinery and filtering materials) were calculated based on this section's production. Those used in more sectors at the factory (e.g. forklift maintenance) were calculated for total factory production.

There are no assumptions about transport to site, stage of use or end of life, as these exceed the limits of the proposed system. It was assumed that the trucks transporting raw materials to the plant are EURO IV category, as no information is available in this regard.

3.7. Deviations in impact results

The LCA results show the average environmental impacts associated with the products studied.

The products analysed indicate deviations of more than 10% above or below the weighted average, as shown in Table 5. Annexes I and II set out the maximum and minimum values according to the environmental impact category.

Impact category	Variation
ADPE	14%
ADPF	20%
GWP	28%
ODP	38%
POCP	23%
AP	9%
EP	3%
FW	45%
HWD	25%
NHWD	1%
RWD	0,5%
PERT	15%
PERNT	19%

Table 5. Variation with respect to the weighted average



4 System boundaries, scenarios and additional technical information

The scope of the study is from cradle to gate, covering only the manufacturing module.

4.1. Upstream processes and product manufacturing (A1-A3)

The cement and aggregates arrive in tanker trucks. The main raw materials are pumped pneumatically into silos from the tanker trucks.

From here, the raw materials are transferred to a dosing silo thanks to a screw conveyor that weighs the required quantities, which are conveyed to the mixer by gravity. Minority raw materials are added manually at this point. From the mixer, the mortar is transferred to the packer by a screw conveyor. Finally, the bags are palletized and covered with plastic film.

The dust generated during the production process is sucked through a duct to a sleeve filter that retains the dust, discharging clean air to the outside; this is the reason why particle emissions have not been considered.

The majority liquid components are automatically transported from the storage silos to the liquid mixer where the minority raw materials are added manually. They are mixed at room temperature for 5 minutes and then stored or packaged as required.

The waste generated in production comes mainly from the packaging for the additives used in manufacturing the mortar, waste from the product itself, or remains of packaging that has reached its end of life.

4.2. Transport and construction process (A4-A5)

Modules A4-A5 not evaluated.

4.3. Use related to the building structure

Modules B1-B5 not evaluated.

4.4. Use related to operation of the building

Modules B6-B7 not evaluated.

4.5. End of life

Modules C1-C4 not evaluated.

4.6. Benefits and loads beyond the building system boundaries

Module D not evaluated.

5 LCA and LCI environmental parameter declaration

The estimated impact results are relative and do not indicate the final value of the impact categories, nor

do they refer to threshold values, safety margins or risks.

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 GWP	1,34E+00	MNE													
 ODP	1,27E-07	MNE													
 AP	5,82E-03	MNE													
 EP	3,93E-03	MNE													
 POCP	6,97E-04	MNE													
 ADPE	6,29E-06	MNE													
 ADPF	2,25E+01	MNE													
GWP [kg CO ₂ eq]	Global warming potential														
ODP [kg CFC-11 eq]	Stratospheric ozone layer depletion potential														
AP [kg SO ₂ eq]	Acidification potential of soil and water resources														
EP [kg (PO ₄) ³⁻ eq]	Eutrophication potential														
POCP [kg etileno eq]	Tropospheric ozone formation potential														
ADPE [kg Sb eq]	Abiotic resource depletion potential for non-fossil resources (ADP-elements)														
ADPF [MJ]	Abiotic resource depletion potential for fossil resources (ADP-fossil fuels)														

Table 6. Parameters describing the environmental impacts according to UNE-EN 15804

		A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	PERE	1,06E+00	MNE													
	PERM	0,00E+00	MNE													
	PERT	1,06E+00	MNE													
	PENRE	1,79E+01	MNE													
	PENRM	8,10E+00	MNE													
	PENRT	2,60E+01	MNE													
	SM	0,00E+00	MNE													
	RSF	0,00E+00	MNE													
	NRSF	0,00E+00	MNE													
	FW	6,76E-01	MNE													

PERE [M]	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM [M]	Use of renewable primary energy used as raw material
PERT [M]	Total use of renewable primary energy
PENRE [M]	Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials
PENRM [M]	Use of non-renewable primary energy used as raw material
PENRT [M]	Total use of non-renewable primary energy
SM [Kg]	Use of secondary materials
RSF [M]	Use of renewable secondary fuels
NRSF [M]	Use of non-renewable secondary fuels
FW [m³]	Use of net fresh water.

Table 10. Parameters describing the use of resources

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 HWD	2,34E-05	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 NHWD	2,64E-01	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 RWD	4,27E-05	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
CRU	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 MFR	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
MER	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 EE	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 EET	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
HWD [kg]		Hazardous waste disposed													
NHWD [kg]		Non-hazardous waste disposed													
RWD [kg]		Radioactive waste disposed													
CRU [kg]		Components for reuse													
MFR [kg]		Materials for recycling													
MER [kg]		Materials for energy recovery													
EE [M]		Exported energy													
EET [M]		Exported energy thermal													

Table 8. Parameters describing output flows and waste categories

Annex I LCA and LCI environmental parameter statements for MINIMUM environmental impact format

This annex contains the parameters for the references with minimum impact value for the global warming category,

with a variation of more than 10% with respect to the family average.

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 GWP	1,31E+00	MNE													
 ODP	1,23E-07	MNE													
 AP	5,78E-03	MNE													
 EP	2,36E-03	MNE													
 POCP	6,84E-04	MNE													
 ADPE	6,02E-06	MNE													
 ADPF	2,21E+01	MNE													

GWP [kg CO ₂ eq]	Global warming potential
ODP [kg CFC-11 eq]	Stratospheric ozone layer depletion potential
AP [kg SO ₂ eq]	Acidification potential of soil and water resources
EP [kg (PO ₄) ³⁻ eq]	Eutrophication potential
POCP [kg etileno eq]	Tropospheric ozone formation potential
ADPE [kg Sb eq]	Abiotic resource depletion potential for non-fossil resources (ADP-elements)
ADPF [MJ]	Abiotic resource depletion potential for fossil resources (ADP-fossil fuels)

Table 9. Parameters describing the environmental impacts according to UNE-EN 15804

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 PERE	1,05E+00	MNE													
PERM	0,00E+00	MNE													
PERT	1,05E+00	MNE													
PENRE	1,27E+01	MNE													
 PENRM	7,34E+00	MNE													
PENRT	2,56E+01	MNE													
 SM	0,00E+00	MNE													
RSF	0,00E+00	MNE													
 NRSF	0,00E+00	MNE													
 FW	6,50E-01	MNE													

PERE [M]] Use of renewable primary energy excluding renewable primary energy resources used as raw materials

PERM [M]] Use of renewable primary energy used as raw material

PERT [M]] Total use of renewable primary energy

PENRE [M]] Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials

PENRM [M]] Use of non-renewable primary energy used as raw material

PENRT [M]] Total use of non-renewable primary energy

SM [Kg]] Use of secondary materials

RSF [M]] Use of renewable secondary fuels

NRSF [M]] Use of non-renewable secondary fuels

FW [m³]] Use of net fresh water.

Table 10. Parameters describing the use of resources

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 HWD	2,29E-05	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 NHWD	2,09E-01	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 RWD	3,81E-05	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
CRU	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 MFR	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
MER	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 EE	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
 EET	0,00E+00	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE	MNE
HWD [kg]		Hazardous waste disposed													
NHWD [kg]		Non-hazardous waste disposed													
RWD [kg]		Radioactive waste disposed													
CRU [kg]		Components for reuse													
MFR [kg]		Materials for recycling													
MER [kg]		Materials for energy recovery													
EE [MJ]		Exported energy													
EET [MJ]		Exported energy thermal													

Table 11. Parameters describing output flows and waste categories

Annex II LCA and LCI environmental parameter for MAXIMUM environmental impact format

This annex contains the parameters for the references with maximum impact value for the global warming

category, with a variation of more than 10% with respect to the family average.

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 GWP	1,71E+00	MNE													
 ODP	1,74E-07	MNE													
 AP	6,34E-03	MNE													
 EP	4,04E-03	MNE													
 POCP	8,55E-04	MNE													
 ADPE	7,16E-06	MNE													
 ADPF	2,71E+01	MNE													

GWP [kg CO₂ eq]

Global warming potential

ODP [kg CFC-11 eq]

Stratospheric ozone layer depletion potential

AP [kg SO₂ eq]

Acidification potential of soil and water resources

EP [kg (PO₄)³⁻ eq]

Eutrophication potential

POCP [kg etileno eq]

Tropospheric ozone formation potential

ADPE [kg Sb eq]

Abiotic resource depletion potential for non-fossil resources (ADP-elements)

ADPF [M]

Abiotic resource depletion potential for fossil resources (ADP-fossil fuels)

Table 12. Parameters describing the environmental impacts according to UNE-EN 15804

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 PERE	1,22E+00	MNE													
PERM	0,00E+00	MNE													
PERT	1,22E+00	MNE													
 PENRE	1,82E+01	MNE													
PENRM	1,70E+01	MNE													
PENRT	3,10E+01	MNE													
 SM	0,00E+00	MNE													
 RSF	0,00E+00	MNE													
NRSF	0,00E+00	MNE													
 FW	9,78E-01	MNE													

PERE	[M]	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM	[M]	Use of renewable primary energy used as raw material
PERT	[M]	Total use of renewable primary energy
PENRE	[M]	Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials
PENRM	[M]	Use of non-renewable primary energy used as raw material
PENRT	[M]	Total use of non-renewable primary energy
SM	[Kg]	Use of secondary materials
RSF	[M]	Use of renewable secondary fuels
NRSF	[M]	Use of non-renewable secondary fuels
FW	[m³]	Use of net fresh water.

Table 13. Parameters describing the use of resources

	A1-A3 (Total)	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
 HWD	2,93E-05	MNE													
 NHWD	2,66E-01	MNE													
 RWD	4,29E-05	MNE													
CRU	0,00E+00	MNE													
 MFR	0,00E+00	MNE													
MER	0,00E+00	MNE													
 EE	0,00E+00	MNE													
 EET	0,00E+00	MNE													
HWD [kg]	Hazardous waste disposed														
NHWD [kg]	Non-hazardous waste disposed														
RWD [kg]	Radioactive waste disposed														
CRU [kg]	Components for reuse														
MFR [kg]	Materials for recycling														
MER [kg]	Materials for energy recovery														
EE [MJ]	Exported energy														
EET [MJ]	Exported energy thermal														

Table 14. Parameters describing output flows and waste categories

References

[1] General Rules of the GlobalEPD Programme, 2nd revision. AENOR. February 2016.

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A verified Environmental Declaration

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