EPD®

ENVIRONMENTAL PRODUCT DECLARATION

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2 for:

Waterproofing Mortars

from

DRIZORO S.A.U.

DRIZORO Construction Products

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General information

Programme information

Programme:	The International EPD® System
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): *PCR 2019:14 Construction products, version 1.11 Published on 2021.02.05, valid until: 2024.12.20.*
PCR review was conducted by *the Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com*
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: TECNALIA R&I Certificación S.L. Auditor: Cristina Gazulla Santos Accredited by: ENAC. Accreditation no.125/C-PR283
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The verifier and the programme operator do not make any claim or have any responsibility of the legality of the product.

Company description:

Owner of EPD: Drizoro S.A.U., +34916766676, http://www.drizoro.com/

Contact: For more information, please contact us at the following e-mail address: info@drizoro.com

Description of the company: Drizoro S.A.U. is a Spanish company with more than thirty-five years of experience in the construction chemical industry. It belongs to the corporate group, DRIZORO HOLDING, a business structure that allows it to organize its different units of activity on a national and international level within the construction products sector.

Obtaining the optimum product, adapted to the real need, makes our business vocation a constant work ethic to overcome the challenges of a globalized and highly competitive sector.

Our commitment to continuous improvement of products and internal processes, always incorporating the latest technologies, leads us to follow a clear and open direction, serves as a stimulus for all of us who make up the company and makes us approach the present and future with enthusiasm and professionalism.

From our headquarters and production center in Torrejón de Ardoz (Madrid), all the operations of the different departments are managed: production, R&D and laboratory, technical, sales, marketing and administration, as well as the international division with its own structure that offers a permanent communication and assistance service in the more than thirty countries in the five continents in which we operate.

At the national level our customer service is supported by our regional technical delegates who in their geographical area are providing product recommendations and precise technical assistance, whether on site, in a study, etc.

Certifications related to the company's product or management system: Drizoro S.A.U. has the following certifications in its organization; ISO 9001:2015 (Quality Management System) and ISO 14001:2015 (Environmental Management System).

Name and location of the production plant: Drizoro S.A.U., Calle Primavera 50-52, Polígono Industrial Las Monjas 28850, Torrejón de Ardoz (Madrid) España

Product information

Product name: Drizoro waterproofing mortars

Code UN CPC: 37510 (Non-refractory mortars and concretes)

Products identify: This EPD covers the Waterproofing Mortars family, a specific family of mortars manufactured by Drizoro composed of cement and synthetic resin intended for the coating and waterproofing of exterior and interior surfaces.

For this family of mortars, all its references (seven products) have been analysed by weighting the composition of each of them according to their production with respect to the total production of the family to which they belong.

The final objective is to obtain a representative average product on which the study has focused and the interpretation of its environmental results will be presented.

This EPD covers the following references of the family of waterproofing mortars of Drizoro listed below:

MAXSEAL-M, MAXSEAL, MAXSEAL SUPER, MAXSEAL FLEX, MAXSEAL FLEX -M, MAXSEAL FLEX EXPRESS y MAXSEAL -S

Its intended use is the coating and waterproofing of exterior and interior surfaces.

The application parameters (thickness and performance) considered in the study for each reference are detailed in the attached table:

Application considered for the products included in the Waterproofing Mortars family							
Application parameters	**List of references**						
	MAXSEAL-M	MAXSEAL	MAXSEAL SUPER	MAXSEAL FLEX	MAXSEAL FLEX-M	MAXSEAL FLEX EXPRESS	MAXSEAL-S
Thickness (mm)	1,5 - 2	1,5 - 2	1,5 - 2	1,5 - 2	1,5 - 2	1,5 - 2	10
Performance (kg/m2)	2,5	2,5	2,5	2,5	2,5	2,5	18

Product description:

The analyzed products are cement-based waterproofing mortars for hydraulic works and buried structures subjected to direct and indirect water pressure, as well as protection of concrete against environmental agents.

The following table describes the classification of the products included in the family, as well as their applicable regulations:

Product family	**Number of products**	**Implementing legislation**	**References**
Waterproofing mortars	7	EN 1504-2	MAXSEAL-M
			MAXSEAL
			MAXSEAL SUPER
			MAXSEAL FLEX
			MAXSEAL FLEX-M
			MAXSEAL FLEX EXPRESS
			MAXSEAL-S

The useful life considered for the products under study is 25 years, which has been estimated based on market knowledge.

In relation to their technical characteristics, these are shown in the following table:

Technical specifications of the average representative product of the family Waterproofing mortars	
Parameters	Parameters
CO2 permeability	CO2
Water vapour permeability	Water
Capillary absorption and water permeability	Capillary absorption and water
Adherence	Adherence

For more information, you can consult the technical data sheets of the products included in the family on the website http://www.drizoro.com/

Geographical scope: Global

The products under study are manufactured in Spain but can be used on a global scale.

Life Cycle Analysis

Declared unit: 1 m2 of surface covered with waterproofing mortar (2.64 kg).

Time representativeness: All site-specific data on which the study is based are for the year 2020 (less than two years old).

ACV database and software used: The generic data used come from the Ecoinvent database version 3.7, updated in 2020. The software used for the ACV model is SimaPro version 9.2.

All the specific data relating to the input and output flows for the manufacturing process of the waterproofing mortar family have been provided by Drizoro S.A.U.

Specific data relating to the composition of the mortars (per kg), the packaging materials and the distances considered for the transport of the raw materials were used. All these data have been weighted according to the production of each of the references and sub-references that make up the Drizoro waterproofing mortar family in relation to its total production.

For the consumption of electricity and water in the production plant, as well as to represent the generation of waste produced, an allocation of loads has been made according to the mass per kg of mortar produced.

Description of system limits: From cradle to gate (cradle to gate) with modules C1- C4 and module D.

The scope of this EPD covers the entire Product Stage (modules A1, A2 and A3): Extraction and processing of raw materials, their transport to the production plant and the manufacturing process of the

mortars, as well as the End-of-Life Stage (modules C1, C2, C3 and C4): Deconstruction, transport of waste to a waste manager, waste treatment and final disposal of the product.

Finally, Module D Benefits and burdens beyond system boundaries, associated with the potential for recovery and/or recycling of product waste, is also included in this study.

Excluded product life cycle stages: Construction Stage (modules A4 and A5) and Use Stage (modules B1-B7).

As required by PCR 2019:14 Construction products, version 1.11, the End-of-Life Stage (modules C1-C4) as well as module D have been included in this cradle-to-gate study as some of the products analyzed do not meet the following requirements listed below:

- The product or material is physically integrated with other products once installed and cannot be separated at its end of life.
- The product or material cannot be identified at its end of life due to physic-chemical transformation processes.
- The product or material does not contain biogenic carbon.

The following is a description of the modules included in the system boundaries and the main processes that comprise them:

Product Stage A1-A3: This stage includes the following modules listed below; Module A1 Extraction and processing of raw materials, Module A2 Transport of raw materials to the production plant and Module A3 Manufacturing.

Module A1 Extraction and Processing of Raw Materials: The extraction and processing of raw materials used for the manufacture of mortars and resins is considered. The production of the energy necessary for the manufacturing process of the product (electricity production) is also considered.

Module A2 Transport of raw materials to the production plant: Transport of all raw materials covered by module A1, from the extraction, production, and processing site to the factory gate, taking into account the specific distances of each material supplier.

Module A3 Manufacture: This module includes the manufacturing process of the final product at the factory premises. Specifically, it considers the transport to the factory and the production of the different primary and secondary packaging of the products analyzed (paper sack, polyethylene cylinder, wooden pallets, cardboard sheets and plastic film), the water consumption required for the manufacturing process, as well as the treatment and transport of the waste generated in the production plant.

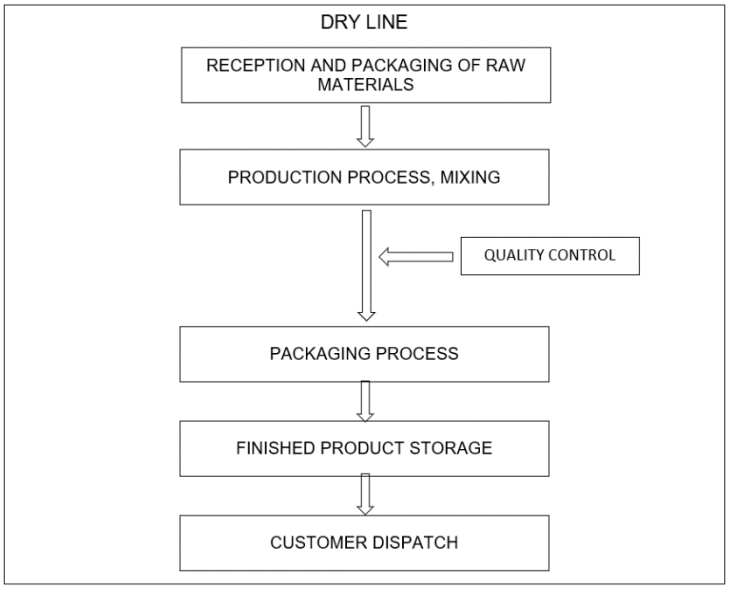
In the following paragraphs, the main phases that structure the manufacturing process of Drizoro products are described in summary form:

The production process consists of two production lines, dry and wet.
The dry line produces cement mortars, while the wet line produces paints and concrete additives.

DRY LINE

The entire dry line process is automatic and computer-controlled where the formulas are entered, as well as the mixing and packaging times. The mixing process is physical in nature and no chemical reaction takes place.

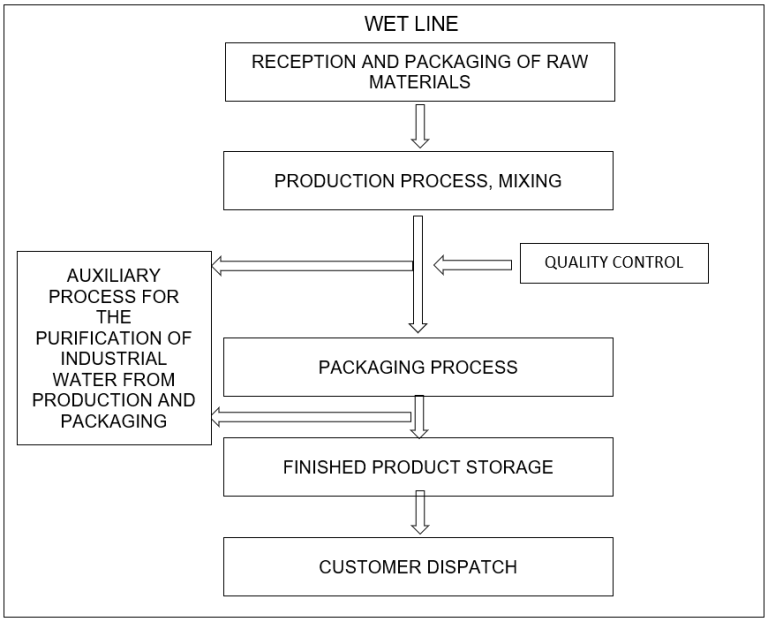
Illustration 1. Dry line manufacturing process flow diagram



WET LINE

The manufacturing process on the wet line is not automatic, as the raw materials are manually introduced into the tanks, then mixed with an agitator and finally packaged. As in the dry production line, the mixing process is of a physical nature with no chemical reaction.

Illustration 2. Flow chart of the wet line manufacturing process



The scenarios included are currently in place and are representative as one of the most likely alternatives.

End-of-life stage C1-C4: This stage includes the following modules related to the end of life of the product; Module C1 Deconstruction, Module C2 Transport of product waste to waste manager, Module C3 Waste treatment and Module C4 Disposal.

Module C1 Deconstruction, demolition: This module analyses the environmental impacts associated with the deconstruction or dismantling of the product. For this study, it has been considered that there are no quantifiable environmental impacts, as these construction materials end up forming part of the building where they are installed and, in most cases, are not dismantled, and are therefore present in the building until it is demolished. Therefore, the environmental impact related to the deconstruction of the products analyzed is negligible compared to the demolition of the building they were part of.

Module C2 Transport to the place of treatment of waste: This module covers the environmental impacts related to the transport of the product waste to the manager.
A default distance of 50 km has been considered between the building where the product was installed and the waste manager.

Module C3 Waste treatment: This module considers the environmental impacts associated with the treatment of product waste that will undergo physicochemical transformation (incineration, recycling processes, etc.). For the present study, no value has been assigned to this module as it has been considered that 100% of the waste is destined for landfill, so no transformation of this waste takes place.

C4, Final elimination: This last module comprises the final disposal of waste that has not been destined for recovery or treatment processes. For the purpose of this study, it is considered that the 100% of the waste products analyzed are deposited in landfill as inert waste, which is mixed with other construction waste that was part of it.

End-of-life considerations for the average representative product

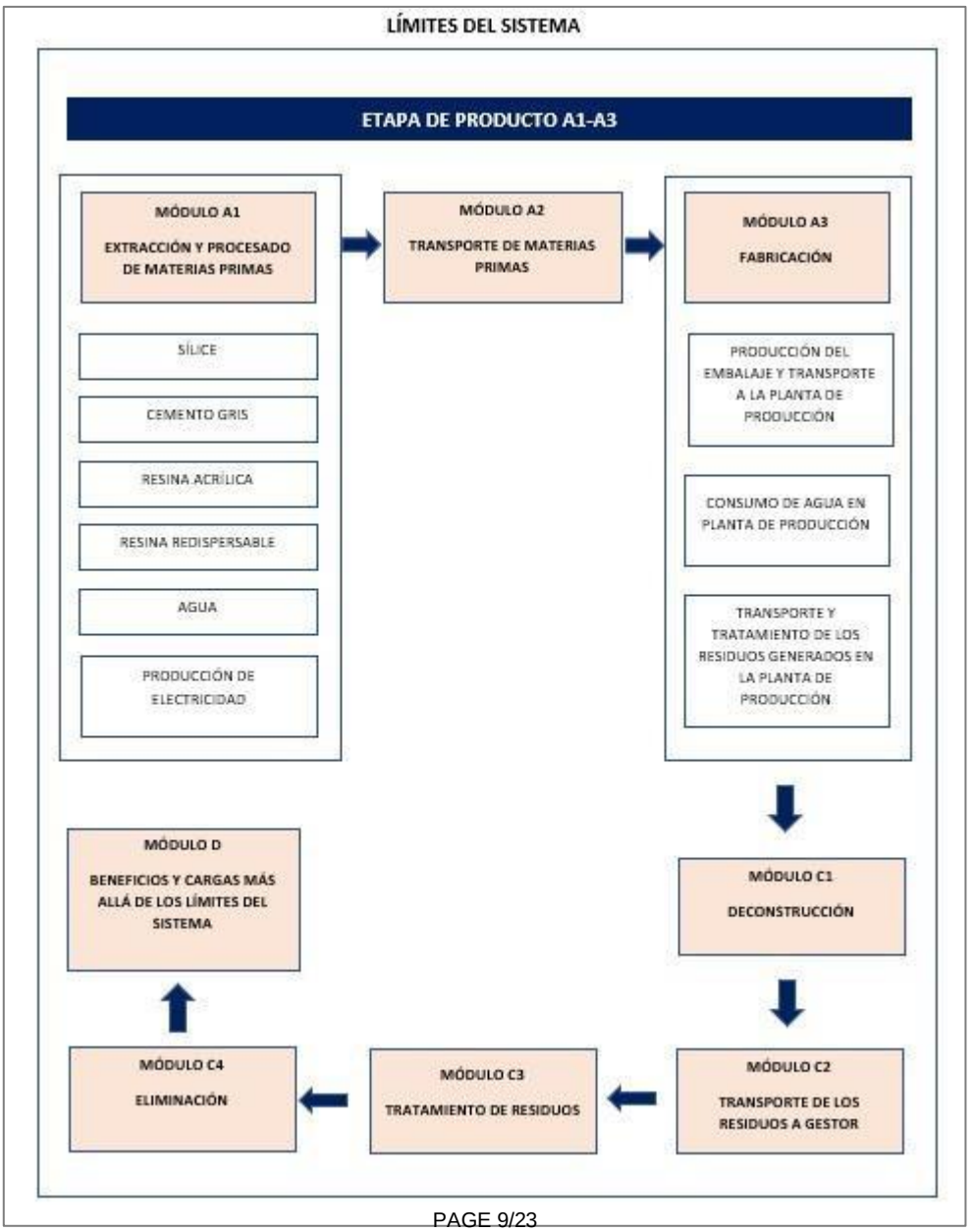
Parameter	Units per Declared Unit (1m2)	Value
Waste collection process, specified by type	kg collected separately	0
	kg collected mixed with demolition waste	2,64
Waste recovery process, specified by type	kg for reuse	0
	kg for recycling	0
	kg for energy recovery	0
Waste disposal	kg to landfill	2,64 (100% of product weight)
Considerations on the waste transport	km distance to the waste manager	50

Module D (Benefits and burdens beyond the limits of the product system): Module D analyses the benefits and burdens related to the processes of recovery, reuse or recycling of mortar waste that may be part of the life cycle of a new product. For the present study, no value has been assigned to this module as there is no recovery of waste from the products analyzed, as the destination is landfill.

It should be added that the recycling potential of the product packaging has not been considered, as the management of its waste comprises module A5 Installation, outside the boundaries of the system, so the final destination of the waste is unknown.

A generic flowchart is presented below as a summary of the main processes included within the system boundaries.

Illustration 3. Product system boundary diagram



For more information about the ACV consultancy that has carried out the present DAP:

Lavola – Anthesis Group
Rambla de Catalunya, 6, planta 2, 08007 Barcelona
+34 938 515 055
www.anthesisgroup.com

Applied cutting rulers:

As required by the CPR for construction products and construction services, at least 95% of each input and output of the system has been included. For this study, 100% of the declared product weight and inputs, including packaging materials, are considered.

The "polluter pays" principle has been applied.

In addition, the following processes have not been included:

- Manufacture of production equipment, buildings and other capital goods.

- Staff business trips.

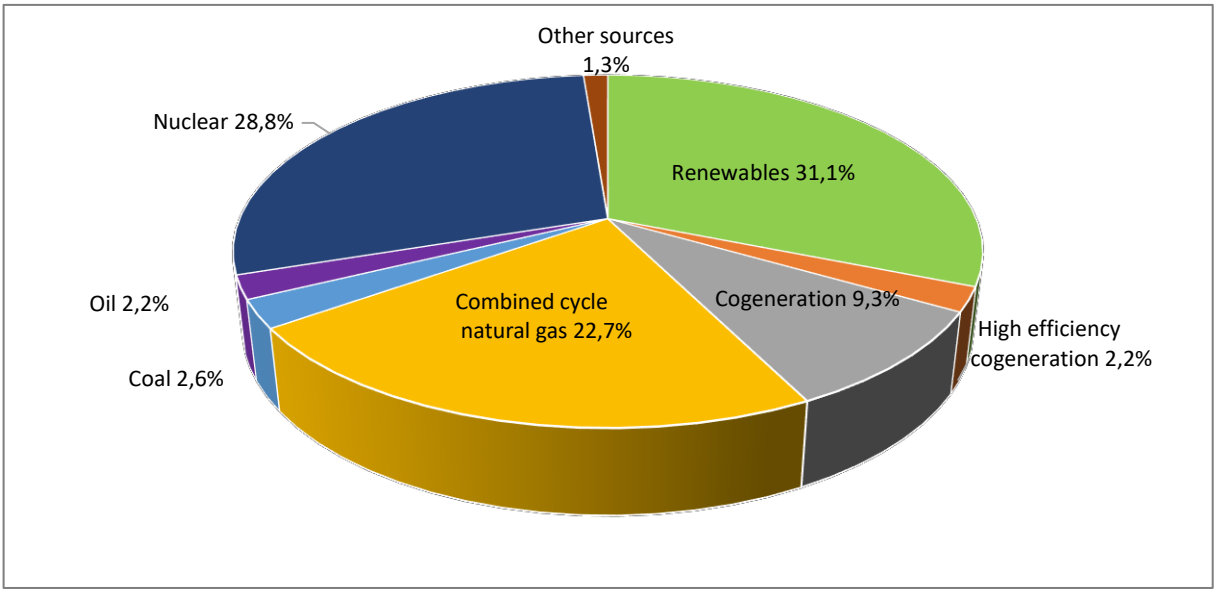
- Staff travel to and from work.

- Long-term emissions.

Additional information:

As the electricity consumption of the production plant exceeds the threshold of 30% of the total energy consumption of Product Stage A1-A3, the electricity mix of the electricity suppliers of the production plant, broken down by their energy sources, as indicated in UNE EN 15804:2012+A2 (2020) and PCR 2019:14 Construction products, version 1.11, is shown below.

In relation to its contribution to the environmental impacts of the product, the production of 1 kWh of electricity consumed by the Drizoro S.A.U. manufacturing plant in Torrejón de Ardoz (Madrid) in in 2020 generates emissions of 0.21 kg CO2 eq.



Electricity mix of Drizoro S.A.U.'s electricity suppliers broken down by energy source for 2020 plant consumption

Reported modules, geographical scope, proportion of specific data used (in indicator GWP-GHG indicator) and data variation:

	Product stage			Installation stage		Stage of use							End-of-life stage					Resource recovery stage
	Supply of raw materials	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Reconditioning	Operational energy consumption	Operational water consumption	Dismantling	Transport	Waste treatment	Elimination		Re-use-recovery-recycling potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**		**D**
Declared modules	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	RER	RER	EN	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO		GLO
Specific data used	>95% For modules A1-A3 comes from specific LCI data.					-	-	-	-	-	-	-	-	-	-	-		-
Variation - Variation products	From -16.6% to +845.1%. with respect to the average product on the GWP- GHG impact category					-	-	-	-	-	-	-	-	-	-	-		-
Variation - Variation	The product is manufactured in a single plant					-	-	-	-	-	-	-	-	-	-	-		-

X = Declared module **ND** = Not-Declared **G** = Global

Information related to the composition of the product

Composition of the average representative product of the family Waterproofing mortars			
Product materials	**Weight (%)**	**Post-consumer materials, weight-%**	**Renewable materials, weight-%**
Silica	30-40%	0%	0%
Grey cement	20-30%	0%	0%
Acrylic resin	20-30%	0%	0%
Water	1-5%	0%	1-5%
Redispersible resin	1-5%	0%	0%
Other compounds	1-5%	0%	0%
TOTAL (kg/unit declared)	**2,64**	0%	1-5%
Primary packaging materials	**Weight, (kg)**	**Weight-% (vs. product)**	
Kraft paper sack	0,0104	0.39%	
High density polyethylene carafe	0,0151	0.57%	
TOTAL (kg)	**0,0255**	0.97%	

None of the components present in the final product are included in the "Candidate List of Substances of Very High Concern under the authorization procedure" of the REACH regulation.

The following table shows the classification of the compounds present in the average representative product of the waterproofing mortars family:

Product materials	Weight %	EC No	CAS No	Ranking
Silica	30-40%	262-373-8	60676-86-0	Unclassified
Grey cement	20-30%	266-043-4	65997-15-1	H315, H317, H318, H335,
Acrylic resin	20-30%			Unclassified
Water	1-5%	231-791-2	7732-18-5	Unclassified
Redispersible resin	1-5%			Unclassified
Other compounds	1-5%			

Packaging

Product packaging

The packaging of the average representative product consists of the following materials:

Primary packaging:

Kraft paper sacks containing mortar and high-density polyethylene plastic jugs for storing the resins required for mixing and subsequent installation of the product.

Secondary packaging:

The sacks and drums are stored on wooden pallets and protected by cardboard sheets and by a cover made of low-density polyethylene plastic film.

Regarding the modelling of the packaging, it should be noted that, as with the raw materials, an average quantity of material has been calculated as a function of production. Therefore, the final quantities of packaging materials assigned to the average representative product have been obtained by weighting the specific packaging of each of the references contained in the waterproofing mortars family with respect to the total production of this family.

Finally, as mentioned above, although the production of packaging materials is included in this study, their subsequent end of life has not been considered, as the impacts derived from waste management are analyzed in module A5 and their final destination is unknown.

Recycled materials

Sourcing of recycled materials in the product (pre-consumer or post-consumer):

The products tested are not composed of recycled materials.

Environmental information

The environmental information concerning the analyzed products has been calculated with the software SimaPro version 9.2. As required by PCR 2019:14, Construction products version 1.11, the characterization factors indicated in Annex C of EN 15804:2012+A2 (EF 3.0 method adapted, in SimaPro) have been used to estimate the potential environmental impacts. Regarding the results corresponding to the rest of the parameters under study, the following methodologies have been used: EDIP for the calculation of waste production, CED (Cumulative energy Demand) for the calculation of energy use and ReCiPe to estimate the product's water footprint.

The environmental results corresponding to the life cycle of the average representative product of the Waterproofing Mortars family are shown below. These are broken down by modules, covering the stages defined above in the system boundaries section (A1-A3+C1-C4+D), and considering all the impact categories required by the PCR.
2019:14 Construction products, version 1.11.

The results presented have been obtained by weighting the composition of the seven references included in the study according to the production of each one of them in relation to the total production of the family.

Estimated impact results are only relative statements that do not indicate impact category endpoints, exceedance of assessed thresholds, safety margins or risks.

Potential environmental impacts - Mandatory indicators in accordance with EN 15804

Environmental impact results per declared unit (1 m2) for the family of Waterproofing Mortars										
A1	**A1**	**A1**	**A1**	**A1**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Module D**
GWP-fossil	kg CO_2 eq.	1,22E+00	6,15E-02	2,95E-01	1,57E+00	0	1,82E-02	0	1,39E-02	0
GWP-biogenic	kg CO_2 eq.	1,45E-03	3,30E-06	1,32E-03	2,77E-03	0	9,78E-07	0	8,49E-05	0
GWP-luluc	kg CO_2 eq.	4,48E-04	4,65E-07	1,66E-03	2,11E-03	0	1,38E-07	0	4,99E-06	0
GWP-Total	kg CO_2 eq.	1,22E+00	6,15E-02	2,98E-01	1,58E+00	0	1,82E-02	0	1,40E-02	0
ODP	kg CFC 11 eq.	7,41E-08	1,42E-08	4,20E-08	1,30E-07	0	4,23E-09	0	2,48E-09	0
AP	mol H+ eq.	5,85E-03	2,11E-04	1,64E-03	7,70E-03	0	6,30E-05	0	1,30E-04	0
EP-freshwater	kg P eq.	2,23E-05	3,35E-08	1,80E-05	4,03E-05	0	9,93E-09	0	1,75E-07	0
EP-marine	kg N eq.	9,51E-04	6,78E-05	4,65E-04	1,48E-03	0	2,02E-05	0	5,37E-05	0
EP-terrestrial	mol N eq.	1,06E-02	7,46E-04	5,21E-03	1,65E-02	0	2,23E-04	0	5,88E-04	0
POCP	kg NMVOC eq.	3,37E-03	2,04E-04	1,93E-03	5,50E-03	0	6,08E-05	0	1,63E-04	0
ADP-minerals and metals[1]	kg Sb eq.	3,63E-07	2,60E-09	1,14E-07	4,80E-07	0	7,73E-10	0	5,82E-10	0
ADP-fossil[1]	MJ	1,51E+01	8,70E-01	5,92E+00	2,19E+01	0	2,58E-01	0	1,85E-01	0
WDP[1]	m^3	3,01E+00	-1,84E-04	2,25E-01	3,24E+00	0	-5,47E-05	0	4,51E-04	0
Acronyms	**GWP-fossil =** Global Warming Potential fossil fuel; **GWP-biogenic =** Global Warming Potential biogenic; **GWP-luluc =** Global Warming Potential land use; **ODP =** Oil Depletion Potential; **GWP-luluc =** Global Warming Potential land use**; ODP =** Oil Depletion Potential; **ODP =** Oil Depletion Potential stratospheric ozone layer; **PA =** Acidification potential; **EP-freshwater =** Eutrophication potential, **freshwater EP-marine =** Potential Eutrophication, marine water; **EP-terrestrial =** Potential Eutrophication, terrestrial; **POCP =** Potential Eutrophication, marine water; **POCP =** Potential Eutrophication, terrestrial									
[1]1The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.										

Potential Environmental Impacts - Additional Mandatory and Voluntary Indicators

As required by PCR 2019:14, an additional indicator for the Global Warming impact category (GWP-GHG) is presented in the attached table, with characterization factors based on
in IPCC (2013).

Resource use per declared unit (1 m2) for the Waterproofing Mortars family										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Module D**
GWP-GHG*	kg CO_2 eq.	1,20E+00	6,11E-02	2,90E-01	1,55E+00	0	1,81E-02	0	1,38E-02	0
PM	disease inc.	3,78E-08	3,91E-09	2,22E-08	6,39E-08	0	1,19E-09	0	3,21E-09	0
IRP[2]	kBq U-235 eq	4,12E-02	3,83E-03	1,73E-02	6,23E-02	0	1,14E-03	0	8,06E-04	0
ETP-fw[1]	CTUe	1,06E+01	3,44E-01	4,55E+00	1,54E+01	0	1,03E-01	0	1,10E-01	0
HTP-c[1]	CTUh	5,84E-10	4,91E-12	1,77E-09	2,36E-09	0	1,47E-12	0	1,37E-12	0
HTP-nc[1]	CTUh	1,06E-08	5,65E-10	5,05E-09	1,62E-08	0	1,71E-10	0	1,16E-10	0
SQP[1]	Pt	4,35E+00	2,77E-03	1,23E+02	1,27E+02	0	8,21E-04	0	4,62E-01	0
Acronyms	**GWP-GHG =** Global Warming Potential - Greenhouse Gases; **PM =** Particulate Matter; **IRP =** Ionising Radiation, Human Health; **ETP-fw =** Ecotoxicity fresh water - organic; **HTP-c =** Human Health, carcinogenic effects; **HTP-nc =** Human Health, non-carcinogenic effects; **SQP =** Land Use									
*The indicator includes all greenhouse gases captured in GWP-total, but excludes the capture of biogenic carbon dioxide, its emissions, as well as the biogenic carbon stored in the product. Therefore, this indicator is equivalent to the original GWP as defined in EN 15804:2012+A1:2013.										
1The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.										
2This impact category deals mainly with the potential impacts of low doses of ionising radiation on human health effects of the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or the occupational exposure due to the disposal of radioactive waste in underground facilities. The ionising radiation potential of soil, due to radon or some building materials is also not measured with this parameter.										

Use of resources

Resource use per declared unit (1 m2) for the Waterproofing Mortars family										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Modulo D**
PERE	MJ	7,28E-01	1,28E-03	2,17E+01	2,24E+01	0	3,80E-04	0	4,28E-03	0
PERM	MJ	0	0	1,19E+00	1,19E+00	0	0	0	0	0
PERT	MJ	7,28E-01	1,28E-03	2,29E+01	2,36E+01	0	3,80E-04	0	4,28E-03	0
PENRE	MJ	-1,67E+01	9,24E-01	5,64E+00	-1,02E+01	0	2,74E-01	0	1,97E-01	0
PENRM	MJ	3,28E+01	0	7,30E-01	3,35E+01	0	0	0	0	0
PENRT	MJ	1,61E+01	9,24E-01	6,37E+00	2,34E+01	0	2,74E-01	0	1,97E-01	0
SM	kg	0	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0
FW	m^3	4,50E-02	1,46E-06	6,40E-03	5,14E-02	0	4,35E-07	0	2,22E-05	0
Acronyms	**PERE =** Use of renewable energy resources excluding raw materials; **PERM =** Use of renewable energy resources as raw material; **PERT =** Total use of renewable energy resources; **PENRE =** Use of non-renewable energy resources excluding raw materials; **PENRM =** Use of non-renewable energy resources as raw material; **PENRT =** Total use of non-renewable energy resources; **SM =** Use of secondary materials; **RSF =** Use of renewable secondary fuels; **NRSF =** Use of non-renewable secondary fuels; **FW =** Water Footprint; **FW = Water** Footprint.									

Waste production and other outflows

Waste production

Waste production per declared unit (1 m2) for the Waterproofing Mortar family										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Module D**
Hazardous waste	kg	7,60E-06	2,31E-06	5,88E-05	6,87E-05	0	6,84E-07	0	3,95E-07	0
Non-hazardous waste	kg	9,82E-02	4,59E-05	1,26E-02	1,11E-01	0	1,36E-05	0	2,64E+00	0
Radioactive waste	kg	4,34E-05	6,31E-06	1,99E-05	6,95E-05	0	1,87E-06	0	1,17E-06	0

Other outflows

Other flow rates per declared unit (1 m2) for the Waterproofing Mortars family										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Module D**
Components for re-use	kg	0	0	0	0	0	0	0	0	0
Material for recycling	kg	0	0	2,73E-04	2,73E-04	0	0	0	0	0
Materials for energy recovery	kg	0	0	2,62E-05	2,62E-05	0	0	0	0	0
Exported electricity	MJ	0	0	0	0	0	0	0	0	0
Exported thermal energy	MJ	0	0	0	0	0	0	0	0	0

Interpretation of results

The following shows how the environmental impacts related to the average representative product of the Waterproofing Mortars family are distributed throughout its life cycle (Product Stage and End-of-Life Stage). To facilitate the interpretation of results, only the most representative impact categories at the level of environmental communication are represented.

As can be seen in the attached figure (see tables above to interpret the acronyms), module A1 Extraction and processing of raw materials is the module with the highest contribution to the total impacts of the product life cycle, being the majority in eight of the ten indicators assessed, with a maximum value of 76% (Global Warming and Depletion of mineral resources).

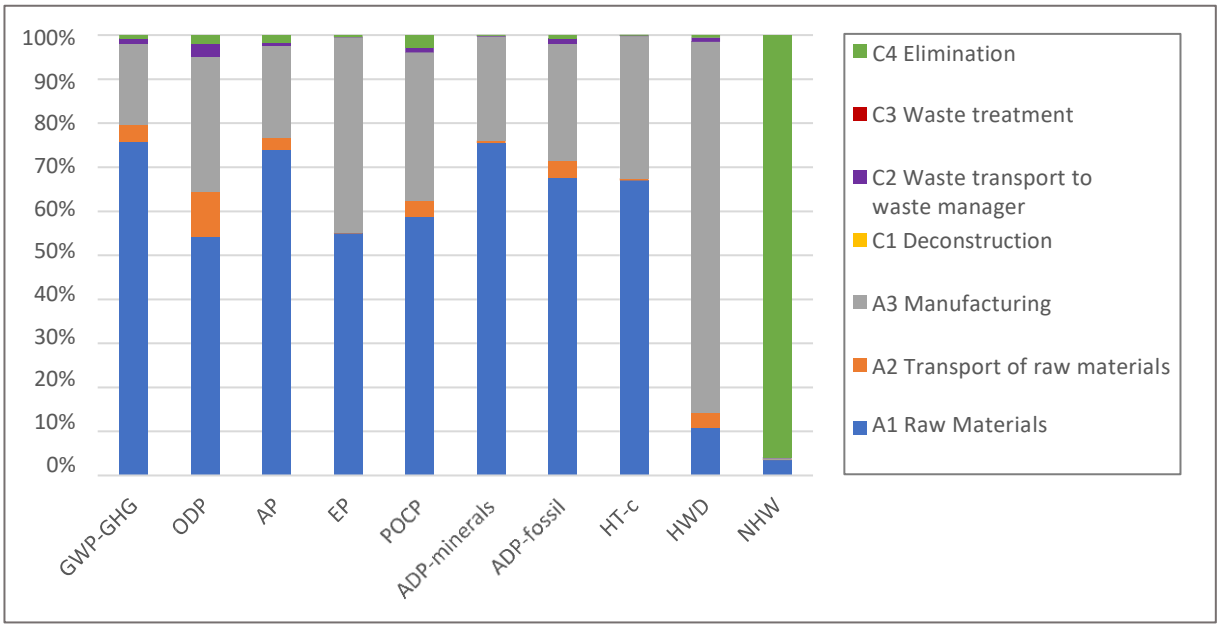
Module A2, Transport of raw materials to the production plant, has a low or negligible contribution according to the impact category assessed, with a maximum value of 10% for the indicator Depletion of the stratospheric ozone layer.

The A3 Manufacturing module presents a moderate environmental contribution on most of the indicators evaluated, except for the impact category of Eutrophication with a significant figure of 44% of the total impact on the life cycle of the product and, especially, the indicator of Hazardous waste production (84%), which concentrates almost all of the environmental impacts.

Finally, the End-of-Life Stage as a whole shows very low or negligible impact values, except for module C4 Disposal for the impact category of Production of non-hazardous waste (96%), whose high contribution is directly related to the environmental impacts resulting from the final deposition of the product waste in landfill.

The application of 1 m2 of the average representative product of the Waterproofing Mortars family has an impact of 1.58 kg CO2 eq/UD for the Global Warming impact category (IPCC 2013) and 22.3 MJ/UD for the Fossil Resource Depletion impact category.

Environmental contribution of the modules of the average representative product over its life cycle



Information on biogenic carbon content

The products analyzed do not contain biogenic carbon, except for some materials present in primary (kraft paper sacks) and secondary packaging (wooden pallets and cardboard sheets). As their weight does not exceed the threshold of 5% of the total mass of the product, biogenic carbon is not required to be declared, as stated in EN 15804:2012+A2.

Additional information

As additional information, the deviation between the references that make up the Waterproofing Mortars family with respect to their average representative product on the GWP-GHG (Global Warming Potential Greenhouse Gases) indicator is included below.

The results are expressed per declared unit (1 m2) and cover all modules included in Output Stage A1-A3.

Deviation of the analyzed benchmarks from their average on the GWP-GHG indicator

Percentage deviation of the references included in the family Waterproofing mortars with respect to the average for the indicator GWP-GHG (A1-A3)									
Parameters	**Unit**	**Family average**	**MAXSEAL-M**	**MAXSEAL**	**MAXSEAL SUPER**	**MAXSEAL FLEX**	**MAXSEAL FLEX -M**	**MAXSEAL FLEX EXPRESS**	**MAXSEAL -S**
Results A1-A3 in absolute value	kg CO_2 eq.	1,55E+00	1,29E+00	1,29E+00	1,38E+00	1,50E+00	2,18E+00	1,33E+00	1,47E+01
Deviation percentage	(%)	0,00%	-16,56%	-16,56%	-10,75%	-3,43%	40,62%	-14,24%	845,12%

English Summary

DRIZORO S.A.U.

DRIZORO, S.A.U. was established in 1977. Beginning its activity as a manufacturer of chemical products for the construction industry, it focused on supplying specialty mortars designed for waterproofing, concrete repair, flooring and decorative finishes.

Our Headquarters and Production Plant is based in Torrejon de Ardoz (Madrid), Spain. This is also the base for our Research and Development, Laboratory, Technical, Sales, Marketing and Administration.

DRIZORO S.A.U. has an International Division, providing a permanent contact and Technical assistance to our customers in more than thirty countries.

Our commitment to continually improving our products and processes, incorporating the latest technologies, led us to establish an Integral Quality and Environmental System, based on ISO 9001:2000 and ISO 14001:2004. These standards give DRIZORO S.A.U. the professional approach required to meet the challenges of today and those in the future.

Our projected achievements, but in permanent evolution and modernisation, have allowed us the better development of national and international markets by implanting the DRIZORO Products

The products: Waterproofing mortars

The assessed products are cement-based waterproofing mortars for hydraulic works and buried structures potentially harmed by water corrosion, as well as for concrete protection against environmental factors.

Declared Unit

1m2 of surface covered with waterproofing mortar (2,64 kg).

System Boundaries

From cradle to gate with modules C1-C4 and module D.

The scope of this EPD covers the entire Product Stage (modules A1, A2 and A3):
Extraction and processing of raw materials, its transport to the production plant and the mortars manufacturing process.

It also covers the End of Life Stage of the product (modules C1, C2, C3 and C4):
Deconstruction, transport of waste to manager, waste treatment and the final disposal of the product.

Module D, Benefits and loads beyond the system boundary, related to the reuse or recycling potential of the product waste has been included.

Construction Stage (modules A4 and A5) and Use Stage (modules B1-B7) have been excluded from the LCA.

Additional Information

For further information, please contact to the next email address: info@drizoro.com

Environmental impact results

Environmental impact results per declared unit (1 m2) for Waterproofing mortars family										
Impact category	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**Module D**
GWP-fossil	kg CO_2 eq.	1,22E+00	6,15E-02	2,95E-01	1,57E+00	0	1,82E-02	0	1,39E-02	0
GWP-biogenic	kg CO_2 eq.	1,45E-03	3,30E-06	1,32E-03	2,77E-03	0	9,78E-07	0	8,49E-05	0
GWP-luluc	kg CO_2 eq.	4,48E-04	4,65E-07	1,66E-03	2,11E-03	0	1,38E-07	0	4,99E-06	0
GWP-Total	kg CO_2 eq.	1,22E+00	6,15E-02	2,98E-01	1,58E+00	0	1,82E-02	0	1,40E-02	0
ODP	kg CFC 11 eq.	7,41E-08	1,42E-08	4,20E-08	1,30E-07	0	4,23E-09	0	2,48E-09	0
AP	mol H+ eq.	5,85E-03	2,11E-04	1,64E-03	7,70E-03	0	6,30E-05	0	1,30E-04	0
EP-freshwater	kg P eq.	2,23E-05	3,35E-08	1,80E-05	4,03E-05	0	9,93E-09	0	1,75E-07	0
EP-marine	kg N eq.	9,51E-04	6,78E-05	4,65E-04	1,48E-03	0	2,02E-05	0	5,37E-05	0
EP-terrestrial	mol N eq.	1,06E-02	7,46E-04	5,21E-03	1,65E-02	0	2,23E-04	0	5,88E-04	0
POCP	kg NMVOC eq.	3,37E-03	2,04E-04	1,93E-03	5,50E-03	0	6,08E-05	0	1,63E-04	0
ADP-minerals and metals[1]	kg Sb eq.	3,63E-07	2,60E-09	1,14E-07	4,80E-07	0	7,73E-10	0	5,82E-10	0
ADP-fossil[1]	MJ	1,51E+01	8,70E-01	5,92E+00	2,19E+01	0	2,58E-01	0	1,85E-01	0
WDP[1]	m^3	3,01E+00	-1,84E-04	2,25E-01	3,24E+00	0	-5,47E-05	0	4,51E-04	0
Acronyms	**GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-luluc** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals&metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption									
[1]Environmental impact results shall be managed with caution since the uncertainty of the results are high and the experience with this parameter is limited.										

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