BEMEZCLA CONCRETO PLUS

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

Programme:	The International EPD® System EPD registered through the fully aligned regional programme/ hub: Latin American Hub, www.epd-latinamerica.com info@environdec.com
Programme operator:	EPD® Latin America EPD International AB Regional Hub: Latin American Hub of the International EPD® System
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Geographical scope:	Chile
An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com	

Content

1.General Information

Programme information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804:2012+A2:2019/AC:2021 serve as the core Product Category Rules (PCR)

Product category rules (PCR): 2019:14 Construction products. Version 1.3.4 published April 30th, 2024.

PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Life Cycle Assessment (LCA)

LCA accountability: Zaragoza Dulce, Sanchez Fredd, González Mireya, Center for Life Cycle Assessment and Sustainable Design – CADIS.

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by individual verifier

Third-party verifier:

Verifier: Itxaso Trabudua, IK INGENIERIA
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Observer: Ana de la Puente, IK INGENIERIA
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Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier

☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

This EPD was prepared in conformity with the international standard ISO 14025 and EN 15804:2012+A2:2012 Sustainability of Construction Works; for Bemezcla Concreto Plus.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Products information

Product	Bemezcla Concreto Plus
Declaration owner:	Aislantes Nacionales SPA planta Senador Jaime Guzmán 220 Comuna de Quilicura Santiago Chile en Chile https://www.henkel.cl/ Contact person: Massimo Collotta: massimo.collotta@henkel.com
Description of the construction product	Product manufactured based on water, dispersion and special additives.
Declared	1000 kilograms of Bemezcla concreto plus product manufactured during the year 2022 by AISLANTES NACIONALES SPA. at the Senator Jaime Guzmán plant 220 Commune of Quilicura Santiago Chile in Chile.
Construction product identification:	Central Product Classification:3751 non-refractory mortars and concretes
Main product components:	Product manufactured based on water, dispersion and special additives.
Life cycle stages not considered:	The modules: A4, A5, B1, B2, B3, B4, B5, B6, B7.
Statement content:	This environmental product declaration is based on information modules that do not cover aspects of construction stage and use. It contains detailed information on the stage of input materials used for the generation of raw material and central process, modules A1, A2, A3, approximations of scenarios C1, C2, C3, C4 and D based on national statistics. •Definition of the product. • System boundary. •Content declaration. • Environmental performance. •Declared unit. • Evidence and verifications.
Comparability of EPD of construction products:	a. EPD of construction products may not be comparable if they do not comply with EN 15804:2012+A2:2019/AC:2021. b. Environmental product declarations within the same product category from different programs may not be comparable.
For more information consult:	https://www.henkel.cl/
Site for which this EPD is representative	**Manufacturing Plant:** Senador Jaime Guzmán 220 Comuna de Quilicura Santiago Chile en Chile
Intended Public:	B2B (Business to Business)

2.Aislantes Nacionales SPA

Aislantes Nacionales SPA settled in Chile in 1985. It is a company that was bought by Henkel in 2018 and maintains the original name locally, Through the business sector known globally as "Adhesive Technologies", Aislantes Nacionales SPA has recognized brands such as Agorex, Pritt and Loctite. The company has around 345 employees of 12 different nationalities, distributed in the facilities of Pudahuel, Quilicura and Antofagasta.

Aislantes Nacionales SPA is a company that operates globally with leading innovations, brands and technologies in three business areas: Adhesive Technologies, Beauty Care and Laundry & Home Care. Currently, the Adhesive Technologies unit operates directly in Chile; Therefore, it seeks to ensure that its main products aimed at the construction sector comply with the environmental requirements established in Credit MRc2: Materials and Resources of the LEED (Leadership Energy and Environmental Design) Building Certification Program.

3. The product

Bemezcla Concreto Plus
Concentrated liquid primer, in dispersion, water-based and with special additives. Recommended for priming floors in which there is an absorbent, smooth or glazed surface with no or low absorption, before the application of self-leveling masses, to seal the porosity and amalgamate dust residues, as well as to improve adhesion. with the substrate as part of the surface preparation.

The characteristics of Bemezcla concreto plus produced by Aislantes Nacionales SPA are provided in the next table:

Table 1. Technical sheet of Bemezcla concreto plus

State	white liquid
Specific weight	1,03 kg/l
Solids content	51%
VOC content	0,0 ppm
Consumption	0,1 a 0,5 l/m2*
Drying time for self-leveling placement	15 a 60 min
Maximum stowage	6 overlapping pieces
Packaging size	10kg drum approx.
Duration and storage	The product should be stored in its original closed container, in a dry place, protected from rain and with good ventilation. The manufacturing date must be verified, the product has a useful life of 12 months. 1.2 m must be maintained between dangerous substances and other non-dangerous substances or goods.

Below are the test standards to which Bemezcla Concreto Plusproducts are subjected: UN EN 12004

4. Content declaration

Most of the composition of the Bemezcla concreto plus product is made up of water and dispersant, while the remainder is made up of additives. The material content can be found in Table 2.

Table 2. Typical content in Bemezcla Concreto Plus

Homogeneous Material or Chemical Substances	Weight (kg)	Weight (%)	Chemical Substances	CAS Number	Health class	Post-consumer recycled material (%)	Biogenic content (kg)
Disperser	453	45.30%	Ethylene-vinyl acetate copolymer	24937-78-8	EC/List no.:607-457-0	0%	0
Water	541	54.10%	Oxygen atom linked to two hydrogen atoms	7732-18-5	EC/List no.:686-299-4	0%	0
Additive	2	0.20%	5-Chloro-2-methyl-4-isothiazolin-3-one	26172-55-4	EC/List no.:247-500-7	0%	0
Additive	3	0.30%	Mineral oils, wax semi-synthetics	-	-	0%	0
Additive	1	0.10%	Alcohol, secondary, ethoxylated	-	-	0%	0
Packaaging materials	**Weight (kg)**	**Weight-% (versus the product)**		**Biogenic content (kg C/product)**			
Plastic bucket	45.3	4.53		0			
Packaging film	0.19	0.019		0			
TOTAL	45.49	4.55%		0			

5. Distribution packaging

The packaging material for the Bemezcla concreto plus product consists of a plastic drum and flexible PET + PP laminated film.

6. Biogenic Carbon Content Information

Biogenic carbon from packaging and products was excluded from the system, since by mass it represents less than 5% ("2019:14 Construction products, Version 1.3.4").

7. LCA Rules

Environmental potential impacts were calculated in accordance with EN 15804:2012+A2:2019/AC:2021 sustainability of construction works and PCR 2019:14 Construction products Version 1.3.4. This EPD is in accordance with ISO 14025:2006.

Environmental potential impacts were calculated through Life Cycle Assessment (LCA) methodology conformity to ISO 14040:2006 and ISO 14044:2006. An external third-party verification process of the EPD was conducted according to General Programme Instructions from the International EPD® System Version 4.0. Verification includes a documental review and a validation of both the underlying LCA study and documents describing additional environmental information that justify data provided in the EPD.

7.1. Declared unit

1000 kilograms of Bemezcla concreto plus manufactured and packaged during the year 2022 by AISLANTES NACIONALES SPA. at the Senator Jaime Guzmán plant 220 Commune of Quilicura Santiago Chile in Chile.

7.2. System boundary

The potential environmental impacts were calculated using the Life Cycle Analysis (LCA) methodology for the Bemezcla concreto plus according to ISO 14040:2006 and ISO 14044:2006.

According to EN 15804 section 5.2 the next type of EPD is "cradle to gate" with modules C1-C4 and module D (A1-A3 +C+D). This EPD is based on information from previous processes and central processes, modules A1 to A3, and approximations of scenarios C1, C2, C3, C4 and D based on statistics from the construction sector in Chile (see table 4).

It does not include Construction stage A4-A5 and Use stage B.

Table 3. System boundary of Bemezcla concreto plus

Life cycle stage	Information about the modules contained in the stages	EPD			
		Cradle-to-gate with modules C1-C4 and module D	Cradle-to-gate with modules C1-C4, module D and optional modules	From cradle to grave and module D	EPD construction services: Cradle to door with modules A1-A5 and optional modules
A1-A3 products stage	A1) Raw material procurement	Mandatory	Mandatory	Mandatory	Mandatory
	A2) Transport				
	A3) Manufacture				
A4-A5 Construction stage	A4) Transport	-	Optional for goods Required for services	Mandatory	Mandatory
	A5) Construction / installation				
B Usage stage	B1) Use	-	Optional	Mandatory	Mandatory
	B2) Maintenance				
	B3) Reparation				
	B4) Replacement				
	B5) Remodeling				
	B6) Operational energy use				
	B7) Operational water use				
C End of life stage	C1) Deconstruction, demolition	Mandatory	Mandatory	Mandatory	Optional
	C2) Transport				
	C3) Waste processing				
	C4) Final disposition				
D Benefits and charges beyond the system limit	D) Reuse, recycling or energy recovery potential	Mandatory	Mandatory	Mandatory	-

7.3. Description of information modules

Table 5. Description of the modules included in this EPD.

	Product stage			Construction Process phase		Usage stage						End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction facility	Use	Maintenance	Repair	Restoration	Operational energy use	Operational use of water	Demolition/ Deconstruction	Transport	Waste processing	Disposal	Reuse Recovery Recycling potential
Module	A1	A2	A3	A4	A5	B1	B2	B4	B5	B6	B7	C1	C2	C3	C4	D
Declared modules	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CL GER CN BEL	GER CL BEL CN USA	CL	NA	NA	NA	NA	NA	NA	NA	NA	CL	CL	CL	CL	CL
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-
Product variation	0%			-	-	-	-	-	-	-	-	-	-	-	-	-
Sit variation	0%			-	-	-	-	-	-	-	-	-	-	-	-	-

X = Declared module; ND = No declared module; GER= Germany, BEL= Belgium, USA=United States of America CL= Chile CN= China

Table 6. Description of the modules included in this EPD

A1) RAW MATERIALS SUPPLY	A2) TRANSPORTATION	A3) MANUFACTURING	C) END OF LIFE	D) BENEFITS AND CHARGES BEYOND THE SYSTEM LIMIT
• Consumption and production of raw materials. • Consumption and production of electrical energy. • Consumption and production of natural gas.	• Distance of transportation of raw materials and supplies to the manufacturing site. • Fuel consumption related to internal transportation.	• Consumption of auxiliary inputs. • Air emissions. • Waste generation. • Distance of transportation for waste disposal and treatment.	• Deconstruction. • Transport final destination. • What can be recycled. • What goes to fill what is wasted and not recycled.	• Avoided loads and benefits.

7.4. Description of the manufacturing process

The manufacturing process is described in Figure 1:

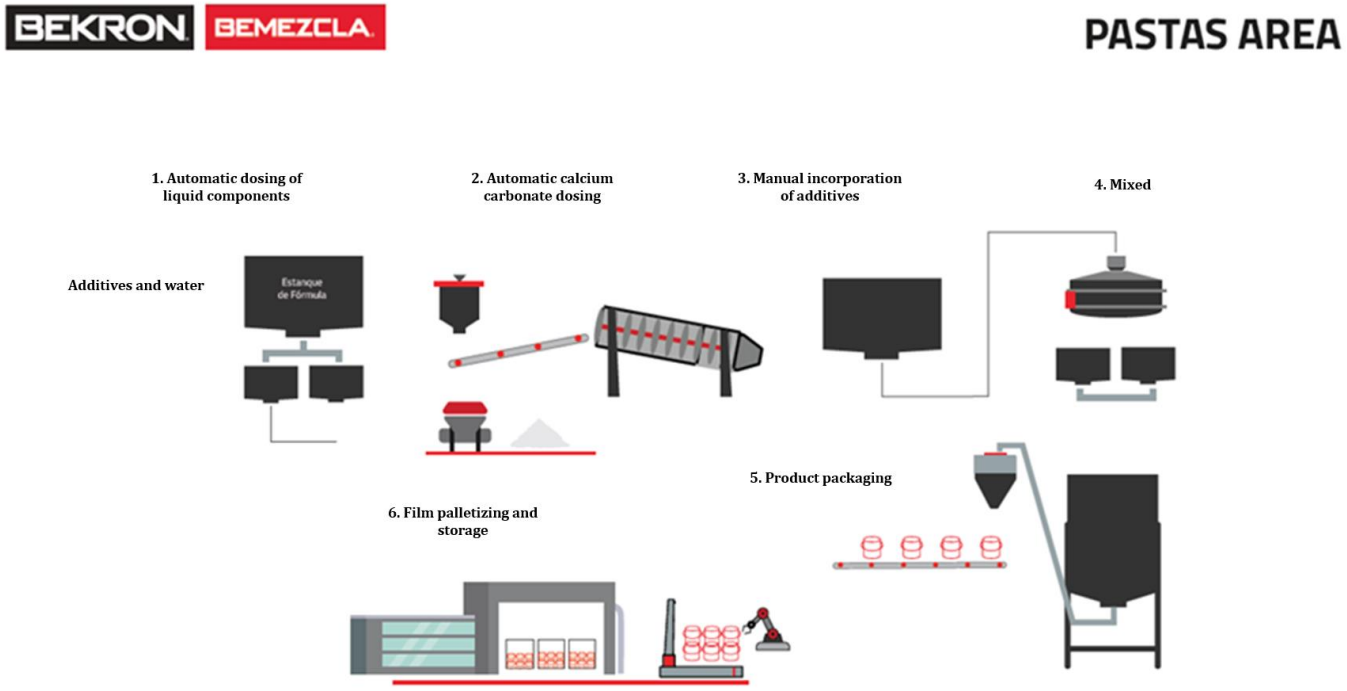

Figure 1. Flow diagram of the manufacturing process of Bemezcla Concreto plus (Aislantes Nacionales SPA, 2023).

7.5. Assumptions

Considerations were made for each life cycle module, which are shown in the LCA report. This document presents the considerations for the end-of-life module. The assumptions related to the Bemezcla Concreto Plus manufacturing process are presented below.

Life Cycle Module	Assumptions
End of Life	• It is assumed that 4% of RCD is recycled in Chile (2025). • It is assumed that 96% of waste is disposed of in landfills. • It is assumed that the distance of waste concrete transportation to the recycling site is 250.71 km. • Fuel consumption and emission data for dismantling and handling of RCD are assumed.

7.6. Cut off criteria

The RCP document establishes that a minimum of 95% of the total flow (material and energy) per module must be included in the LCA. In order to include relevant data, we complied with the established minimum, leaving out of the scope of this study the company's infrastructure, employee transportation activities, administrative activities carried out by employees, personal protective equipment used by workers, as well as inputs used for corrective and preventive maintenance during the study year.

7.7. Allocation

In this study, mass allocation was used, based on the annual production of Bemezcla Concreto Plus of Aislantes Nacionales SPA in the reference period.

7.8. Time representativeness

Direct data obtained from Aislantes Nacionales SPA is representative for 2022.

8. Environmental performance

Below are the results for the basic environmental impact parameters obtained using the EN15804:2012+A2:2019/AC:2021 method "Method V1.02 / EF 3.1 normalization and weighting set (PRé-Sustainability, 2021)" implemented in the SimaPro v.9.5.0.2 software and Ecoinvent 3.9.1 was used for Life Cycle Impact Assessment.

8.1. Potential environmental impact

All information modules are reported and valued separately. However, this EPD presents the total impact at all stages for Bemezcla Concreto plus.

Module A1, raw material acquisition makes a greater contribution to the impact in each basic impact categories, while module A3, was the second stage with the greatest potential to contribute to the impact categories. For module A2) transportation, four impact categories obtained percentages greater than 1%.

Electricity impact

The electricity generation data in CL come from the adaptation in Ecoinvent 3.9 of the Chilean national residual electricity matrix called "Electricity, high voltage {CL-mix residual} | electricity market, high voltage | Cut-off, U", this dataset represents the most recent CL electricity grid by technology type.

As part of the requirements of the PCR, the climate impact as kg CO2 eq/kWh of the electricity used in the manufacturing process of Bemezcla Concreto plus, is reported in the next tables. This impact was calculated using the IPCC indicator.

Table 7. Electricity Global Warming Potential (kg CO_2 eq/kWh).

Electricity	Quantity
Weighted total of electrical power sources	0.913

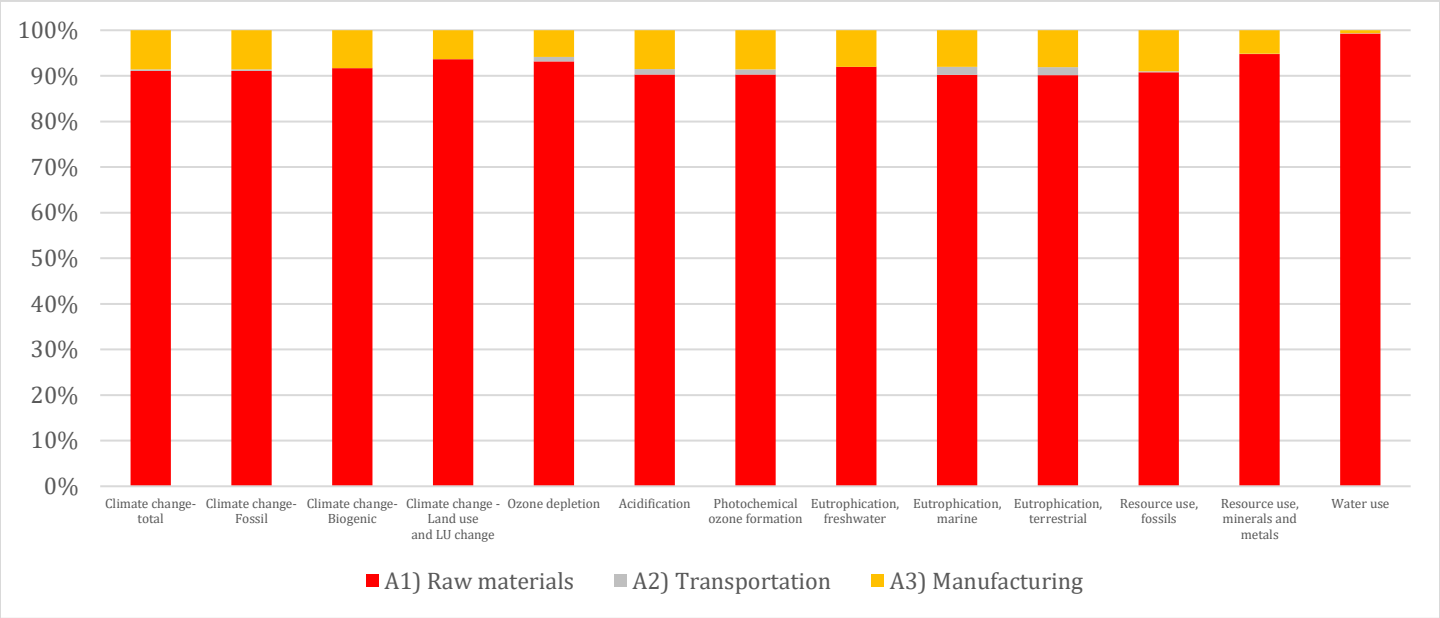

Figure 2. A1-A3 Basic impact categories results of Bemezcla Concreto plus

Table 8. A1-A3, C1-C4 and D basic impact categories result of of Bemezcla Concreto plus

Basic impact categories	Unit	A1-A3	C1	C2	C3	C4	D
Climate change- total	kg CO_2 eq	1.19E+03	3.36E+00	1.90E+01	1.63E-01	9.01E+00	-1.34E-01
Climate change- Fossil	kg CO_2 eq	1.19E+03	3.36E+00	1.90E+01	1.63E-01	9.00E+00	-1.33E-01
Climate change- Biogenic	kg CO_2 eq	1.95E+00	2.21E-04	1.28E-03	1.07E-05	8.77E-04	-2.49E-04
Climate change - Land use and LU change	kg CO_2 eq	6.08E-01	1.37E-04	3.85E-04	6.67E-06	9.71E-03	-1.55E-04
Ozone depletion	kg CFC11 eq	7.46E-06	5.30E-08	4.24E-07	2.57E-09	1.40E-07	-1.21E-09
Acidification	mol H+ eq	4.59E+00	3.22E-02	2.45E-02	1.56E-03	7.50E-02	-8.73E-04
Photochemical ozone formation	kg NMVOC eq	4.15E+00	2.88E-06	1.54E-05	1.40E-07	2.29E-05	-4.25E-06
Eutrophication, freshwater	kg P eq	2.49E-02	1.51E-02	6.02E-03	7.34E-04	3.43E-02	-2.82E-04
Eutrophication, marine	kg N eq	8.87E-01	1.64E-01	5.82E-02	7.98E-03	3.72E-01	-3.07E-03
Eutrophication, terrestrial	mol N eq	9.67E+00	4.84E-02	4.59E-02	2.35E-03	1.10E-01	-9.54E-04
Abiotic depletion potential - Fossils resources *	MJ, net calorific value	3.65E+04	4.42E+01	2.61E+02	2.15E+00	1.18E+02	-1.68E+00
Resource use, minerals and metals*	kg Sb eq	3.37E-04	1.41E-07	6.75E-07	6.86E-09	4.30E-07	-1.22E-08
Water (user) deprivation potential*	m3 world eq. deprived	7.45E+02	5.67E-02	2.39E-01	2.75E-03	1.96E-01	-2.30E+00

*Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.
The use of the results of modules A1-A3 without considering the results of module C is not recommended

8.1.1. Global Warming Potential (GWP-GHG)

The life cycle result of Bemezcla Concreto plus (modules A1-A3, C1-C4 and D) evaluated with the IPCC GWP100 method is shown.

Table 9. Climate Impact (GWP-GHG) of of Bemezcla Concreto plus

Impact categories	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO_2 eq	1.19E+03	3.36E+00	1.90E+01	1.63E-01	9.01E+00	-1.34E-01

The indicator includes all greenhouse gases included in GWP-total but excludes absorption and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, this indicator is equal to the GWP indicator originally defined in the EN 15804+A2 method.

8.2. Use of resources

The parameters describing resource use were assessed using the Cumulative Energy Demand method version 1.09 (Frischknecht et al. 2007), except for the net freshwater use indicator, which was assessed using ReCiPe 2016 Midpoint (H) version 1.08 (Huijbregts et al. 2017). A detailed description of resource use is provided in Table 10.

Table 10. A1-A3, C1-C4 and D use of resources parameters.

Use of resources parameters	Unit	A1-A3	C1	C2	C3	C4	D
Use of renewable primary energy excluding renewable primary energy resources used as feedstock (PERE)	MJ	5.38E+02	8.62E-02	6.86E-01	1.26E-01	0.00E+00	-1.18E-01
Use of renewable primary energy as raw material (PERM)	MJ	3.45E+00	0.00E+00	0.00E+00	-1.21E-01	0.00E+00	0.00E+00
Total use of renewable primary energy (primary energy and primary energy resources used as feedstock) (PERT)	MJ	5.42E+02	8.62E-02	6.86E-01	4.18E-03	0.00E+00	-1.18E-01
Non-renewable primary energy use excluding renewable primary energy resources used as feedstock (PENRE)	MJ	2.11E+04	4.70E+01	2.78E+02	6.37E+02	0.00E+00	-1.79E+00
Use of non-renewable primary energy as raw material (PENRM)	MJ	1.81E+04	0.00E+00	0.00E+00	-6.34E+02	0.00E+00	0.00E+00
Total use of non-renewable primary energy (primary energy and primary energy resources used as raw materials) (PENRT)	MJ	3.92E+04	4.70E+01	2.78E+02	2.28E+00	0.00E+00	-1.79E+00
Use of secondary materials (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary renewable fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary non-renewable fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of fresh water (FW)	m3	1.81E+01	2.20E-03	1.09E-02	1.07E-04	1.03E-02	-5.39E-02

These energy parameters are assessed using the Cumulated Energy Demand method version 1.09 (Frischknecht Rolf, 2007) and adjusted with option B of Annex 3 of PCR 2019:14 Construction products, Version 1.3.4 published on April 30, 2024 (PCR, 2024). Water use was assessed using ReCiPe 2016 Midpoint (H) version 1.08 (Huijbregts et al., 2017).

8.3. Waste categories and output flows

Environmental indicators describing waste generation were obtained from the LCI, except for the background information which was calculated using the EDIP 2003 method (Hauschild and Potting, 2005). Environmental parameters describing waste generation and parameters describing output flows because of the LCA are provided below in Tables 11 and 12 respectively.

Table 11. A1-A3, C1-C4 and D waste indicators

Output parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste	kg	2.08E-02	2.96E-04	1.72E-03	1.44E-05	7.76E-04	-5.72E-06
Non-hazardous waste	kg	3.18E+01	3.28E-03	1.29E-02	1.59E-04	9.59E+02	-3.75E-03
Radioactive waste*	kg	8.63E-03	2.15E-06	2.24E-05	1.05E-07	7.85E-06	2.61E-06

Environmental information describing waste categories and output flows is calculated using the EDIP 2003 method (Hauschild and Potting, 2005).
*No radioactive waste is produced during Aislantes Nacionales SPA operations.

Table 12. A1-A3, C1-C4 and D output flow indicators

Output parameter	Unit	A1-A3	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+000	0.00E+00	0.00E+00
Materials for recycling*	kg	0.00E+00	0.00E+00	0.00E+00	4.00E+01	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins, and/or risks.

9. Certifications

During its over 35 years of presence in the country, Henkel Chile has been evolving and renewing its technologies to adapt to the needs of the local and regional markets. It has done so with a deep focus on its customers and consumers, taking actions to achieve better service, satisfaction, quality, and safety. Among them, the elimination of toluene from all its adhesives and its replacement with cyclohexane stands out.

Environment

ISO 14001:2015 – Environmental Management Systems

International standard establishes a framework for managing the environmental impact of organizations, promoting sustainability and compliance with environmental regulations.

Quality

ISO 9001:2015 - Quality management systems

Global standard for quality management systems, focused on meeting customer expectations and optimizing processes to ensure consistent, high-level products and services.

Safety

ISO 45001:2018 - Occupational health and safety management systems

Standard that provides guidelines for creating safe and healthy work environments, reducing occupational risks and promoting the prevention of accidents and occupational diseases.

10. Contact information

EPD Owner	LCA Author	Programme operator
Aislantes Nacionales SPA	Center for Life Cycle Assessment and Sustainable Design – CADIS	EPD International AB
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Contact person: Massimo Collotta massimo.collotta@henkel.com	LCA Study: Life Cycle Assessment (LCA) Bemezcla Concreto Plus LCA Authors: Zaragoza D, Sanchez F and González, M.	EPD registered through the fully aligned regional programme/hub: www.epd-latinamerica.com
	Contact person: Juan Pablo Chargoy jpchargoy@centroacv.mx	Chile: Alonso de Ercilla 2996, Ñuñoa, Santiago Chile. México: Bosques De Bohemia 2 No.9, Bosques del Lago. Cuautitlán Izcalli, Estado de México, México. C.P. 54766

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