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EPD®
ENVIRONMENTAL PRODUCT DECLARATION

ECO PLATFORM
EPD
VERIFIED

ENVIRONMENTAL PRODUCT DECLARATION
IN ACCORDANCE WITH ISO 14025:2010 AND EN 15804:2012+A2:2019



MARBLE SLAB FROM “BETTOGLI” QUARRY, 2 AND 3 CM THICKNESS

Revision: 2024-04-29 (Version 5)
Registration number: S-P-02321
Date of publication: 2020-12-11
Valid until: 2025-09-28

english

He foretold their monumental future to the shapeless heaps of stones and beams that lay around us; and those materials, at his voice, seemed dedicated to the one and only place to which the fates propitious to the goddess would have assigned them.

"Eupalinos: Or, The Architect"

Paul Valèry

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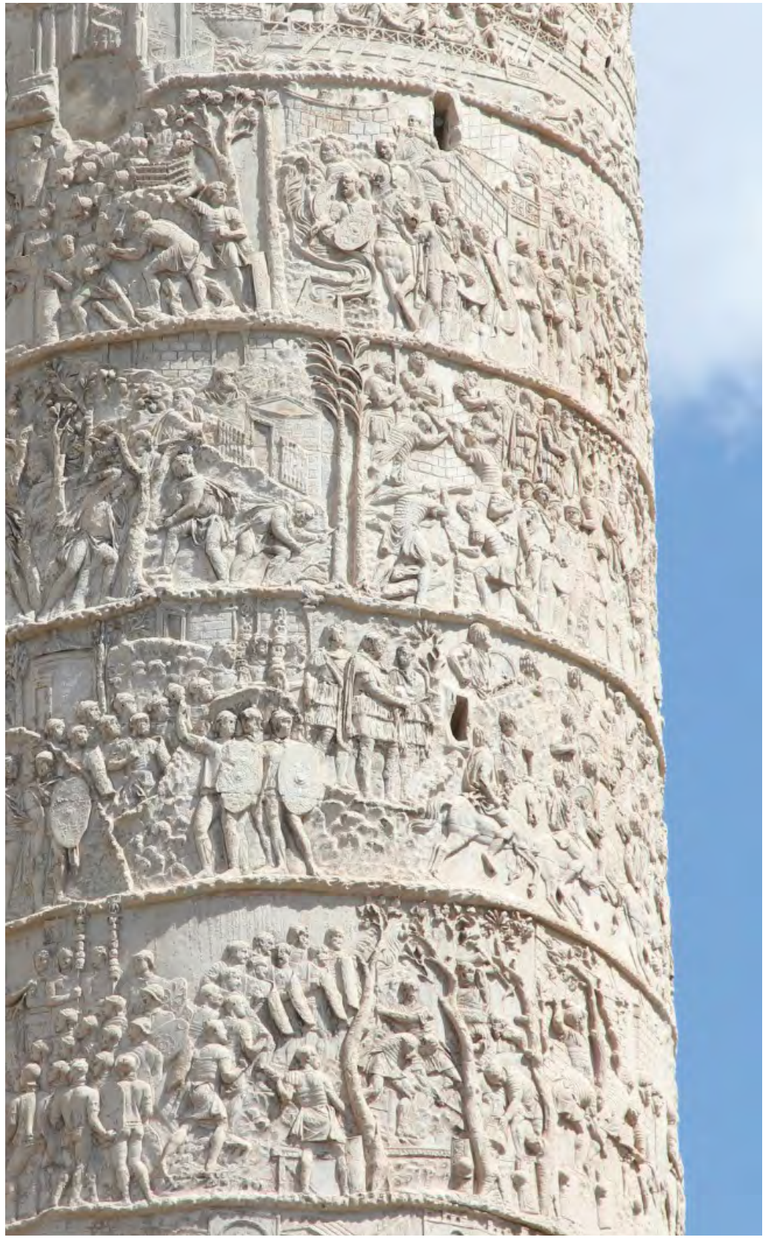
Summary



HEART
MIND
IDEAS

Stone does not age on a human scale, instead time only makes it more fascinating, and in our Bel Paese one must only have a look around to realize this.

Stone at its essence is a project, stone is about evolution; moving forward… heart, mind, and ideas.

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General information

EPD PROGRAMME	The International EPD® System • www.environdec.com
EPD PROGRAMME OPERATOR	EPD International AB Box 210 60, SE-100 31 Stockholm, Sweden
PRODUCT CATEGORY RULES (PCR)	International EPD System - PCR 2019:14 - “Construction products” Version 1.0 EN 15804:2012+A2:2019 - “Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products”
EPD PREPARED BY	Ing. Carlo Grassi, Dr. Jonatha Trabucco
OWNER OF THE DECLARATION	FRANCHI UMBERTO MARMI S.p.A. Carrara (MS) - via del Bravo 14 - ITALY
WEBSITE	www.fum.it
VERIFIED BY	DNV Business Assurance Italia S.r.l.
UN CPC CODE	151 Monumental and building stone 15120 “Marble and other calcareous monumental or building stone”
GEOGRAPHICAL SCOPE	International
EPD REGISTRATION NUMBER	S-P-02321
APPROVAL DATE	2020-09-29
VALID UNTIL	2025-09-28
PRODUCT DESCRIPTION	Marble slabs, 2 and 3 cm thick from Apuan district (Bettogli quarry)
APPLICATIONS	Use in architecture and construction for flooring or cladding
SCOPE OF APPLICATION OF THE LCA	The LCA analysis was carried out according to the ISO 14025, ISO 14040, ISO 14044 and EN 15804 standards. Both specific data from the production process and data from the Ecoinvent 3.6 database were used. The methods of calculation and evaluation of the impacts defined in the EN 15804 2012 + A2: 2019 standard were used. The LCA study covers the production phases of raw materials and energy; transport of materials; production at company sites; the end of life of the material. The declared unit is 1 m^2 of processed marble slab from the quarry called “Bettogli B” of different thicknesses: • Bettogli 2 cm • Bettogli 3 cm

1971 · 2021
ANNIVERSARY

Company profile

The story of Franchi Umberto Marmi began 50 years ago, in 1971, when a man's creative thinking brought life to an entity that still today relies on the immeasurable value of sharing.

Sculpted day after day with profound determination, almost as if it were itself a block of marble, the company has come to represent the world of beauty and exclusivity of this incredible natural stone.
Franchi Umberto Marmi is part of a single district of Carrara and a continuously growing and highly competitive excellence.
Every day over 40 employees contribute to the dissemination of the culture of this precious natural stone, authentic expression of "Made in Italy" in the world.

Franchi Umberto Marmi covers all stages of the production and distribution process, thus ensuring the absolute quality of the product, whether it is slabs or entire blocks.

The activity is mainly centered within the 59,000 square meters of the Carrara headquarters, which make the company the largest exhibition space dedicated to Carrara marble.
Here, the classic majesty of the spaces meets the functionality of innovative management.

A perfect balance that has always inspired Franchi Umberto Marmi's business strategy.

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Mission

Franchi Umberto Marmi operates according to the modern and ancient company vision that puts the man, employee or customer, in the foreground, combining all this with the philosophy of continuous improvement and courageous change, putting new materials and new ideas on the market.

The company offers customer assistance and care, ready to solve any problem. Different projects in different locations in the world, different needs, need for different symbols, all dealt with our means, people and absolute professionalism.

Following this conception, the company intends to operate on the market following these corporate values:

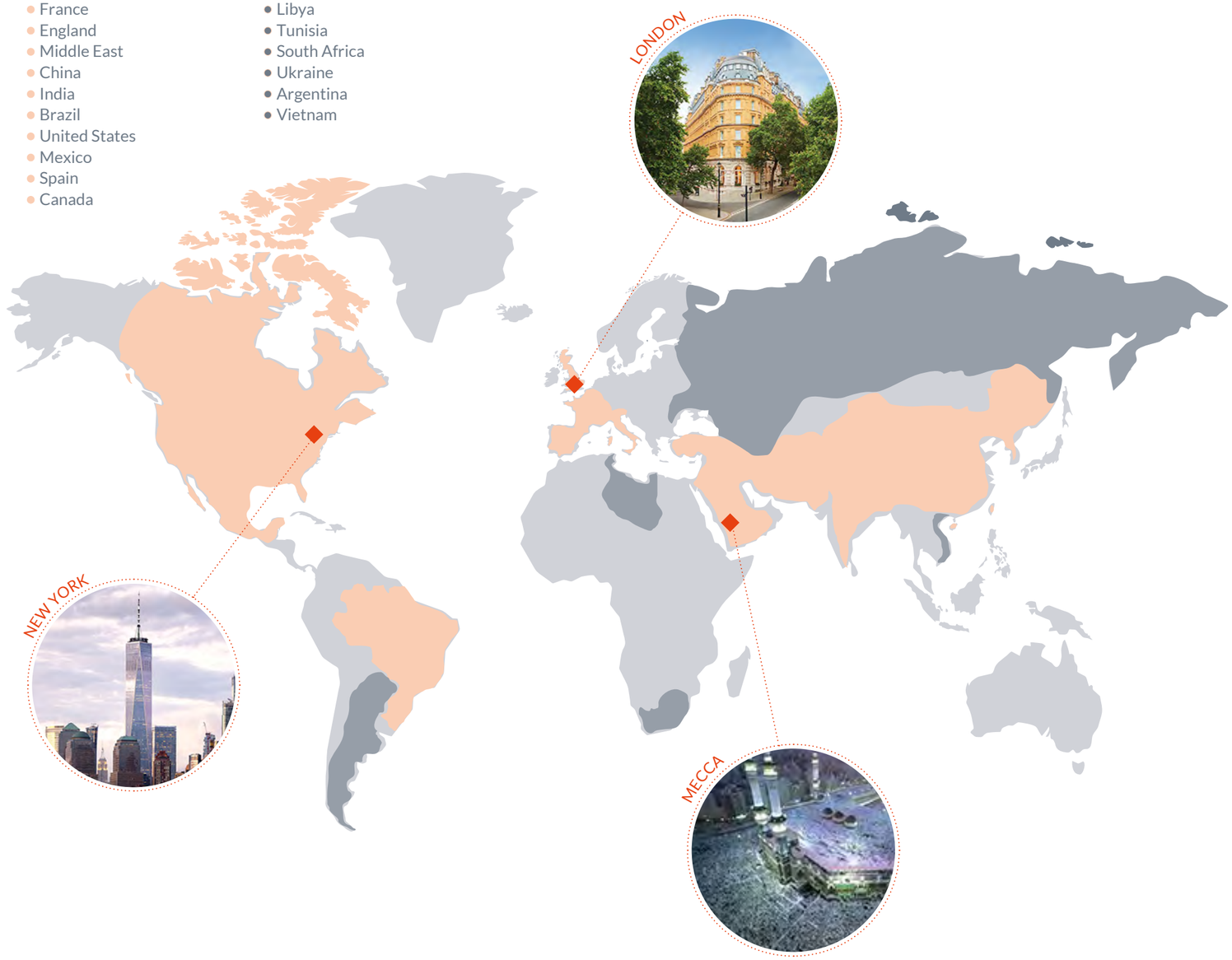
- customer satisfaction
- honesty and transparency
- excellence
- creation of value
- passion
- flexibility and dynamism
- teamwork
- respect
- trust
- growth and development
- sense of family and sense of belonging to the team
- tradition and innovation

Export markets

- Italy
- France
- England
- Middle East
- China
- India
- Brazil
- United States
- Mexico
- Spain
- Canada

Expanding markets

- Russia
- Libya
- Tunisia
- South Africa
- Ukraine
- Argentina
- Vietnam



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The culture of marble

Franchi Umberto Marmi is committed to bringing the culture of marble, as a culture of the city of Carrara, all over the world and in the most prestigious places.The company wants to spread the message of the beauty of the material that nature offers us to carry out the most important projects, promoting the concrete sense of value, elegance and excellence that marble brings with its use.

It has supplied the marbles that characterize prestigious projects such as:

- Tower One project of the World Trade Center
- New wing of Mecca in Jeddah
- Ebury Square Corinthia Hotel in London
- 220 Central Park and Park Avenue 1010 in New York
- Numerous Yves Saint Laurent stores

Added to this is the company's desire to achieve ever better organizational levels.
In this direction Franchi Umberto Marmi has equipped itself with a STANDARD MANAGEMENT SYSTEM COMPLIANT:

EPD

ISO-45001 2018

ISO-14001 2015

ISO-9001 2015

2019 AWARD FOR EXHIBITORS AT THE FAIR
BEST COMMUNICATOR AWARD BY MARMOMACC

Environmental product declaration in accordance with ISO 14025:2010 and EN 15804:2012+A2:2019

NERA BETTOGLI 68B

The “NERA BETTOGLI 68 B” quarry is located in Bettogli, near Carrara. It belongs to the marble basin of Miseglia and access to the area is from the district road on the Torano side, reaching the top of the quarrying area located in an area between 599-653 masl.

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The quarry-NERA BETTOGLI 68B

BETTOGLI MARMI was founded in 1987; already at that date the quarry was in the company availability, due to a historic acquisition of 1948 completed in several steps, with the acquisition of the last areas in 2008.
Currently, BETTOGLI MARMI has a mining area extending approximately 124,000 square meters in total.
The areas covered by the excavation project extend over an area of about 23’000 square meters.
The authorized project involves a single phase, developed on different levels, with the “descending step” exploitation technique.

QUARRY’S PRODUCTION SYSTEM
- extraction of large-sized material from the mountain
- cutting of the material extracted into smaller pieces
- final handling and marketing of the finished product (squared and shapeless blocks)

QUARRYING OPERATIONS
- traditional methodology used in the stone area
- horizontal and vertical cuts made with cutting machines
- removal of banks with mechanical handling equipement

MATERIALS EXTRACTED
- marbles of various precious qualities, the so-called “colored marbles”

CAVA BETTOGLI 68B
ISO 14001 and ISO 45001 CERTIFIED

LONG-TERM PRODUCTION OF:
Statuary marble, Calacatta marble, Cremo marble, Cipollino marble, White Zebrino marble, Black Zebrino marble

Environmental product declaration in accordance with ISO 14025:2010 and EN 15804:2012+A2:2019

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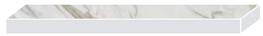
Product description

The analyzed product is 1 m^2 of manufactured marble of varying thickness, for buildings and construction works:

Bettogli marble slab (thickness 2 cm);
Bettogli marble slab (thickness 3 cm).

PHYSICAL CHARACTERISTICS	UNIT OF MEASURE	BETTOGLI MARBLE
Compression breaking load	Kg/cm^2	1173
Breaking load after freezing	Kg/cm^2	1097
Unitary bending tensile strength	Kg/cm^2	194
Thermal expansion coefficient	mm/m°C	0,0027
Water imbibition coefficient	%	0,11
Impact resistance	cm	61
Weight per unit of volume	Kg/m^3	2700



3 cm

2 cm

The product contains no hazardous substances and no substances of very high concern (SVHC) on the REACH Candidate List/ published by the European Chemicals Agency in a concentration more than 0,1% (by unit weight).

Classification according to the UN CPC code: 151 Monumental and building stone, in particolare (15120 “Marble and other calcareous monumental or building stone”).

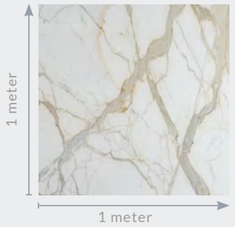
Biogenic Carbon Content

MARBLE THICKNESS	cm	2	3
Biogenic Carbon content in product	$Kg\ C/m^2$	0	0
Biogenic Carbon content in accompanying packaging	$Kg\ C/m^2$	0,257	0,386

Environmental product declaration in accordance with ISO 14025:2010 and EN 15804:2012+A2:2019

The EPD is a declaration of the environmental performance of a product or service: this declaration follows the voluntary certification scheme of ISO14025 standard. The EPD is an evaluation and communication tool for environmental performance of a product (or service), based on the use of LCA methodologies (Life Cycle Assessment).

The methodology that forms the technical basis for a wide range of feasibleactions aimed at increasing the sustainability of products, since helps to understand the impact generated on the environment by the products.



For this EPD, in accordance with the reference standards, the concept of “declared unit” is used, instead of “functional unit”.

DECLARED UNIT

1 m^2 of worked marble slab from the quarry called “Bettogli B” with thicknesses of 2 and 3 cm.

REFERENCE YEAR

The data used refer to the calendar year 2023.
Study carried out in the year 2024.

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System boundary

This EPD is of the “cradle to gate with options” type and includes the mandatory modules:

- A1 Raw materials
- A2 Transport
- A3 Manufacturing
- C1 Deconstruction/Demolition
- C2 Transport to waste processing
- C3 Waste processing
- C4 Disposal
- D Reuse/Recovery/Recycling potential

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END-OF-LIFE STAGE				RESOURCE RECOVERY STAGE
	Raw material supply	Transport of raw materials	Manufacturing	Transport to customer	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Decostruction/Demolition	Transport to waste processing	Waste processing	Disposal	Reuse/Recovery Recycling potential
MODULE	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
MODULES DECLARED	X	X	X	INA	INA	INA	INA	INA	INA	INA	INA	INA	X	X	X	X	X
GEOGRAPHY	|	|	|	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
SPECIFIC DATA	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
VARIATION PRODUCTS	Products listed separately			-	-	-	-	-	-	-	-	-	-	-	-	-	-
VARIATION SITES	Manufactured in 1 site			-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Production A1 - A3

A1

EXTRACTION
CUTTING
FINAL HANDLING
MARKETING

The production cycle of the quarry consists in the extraction of large-sized material from the mountain, in the subsequent cutting of the material extracted into smaller pieces and then in the final handling and marketing of the finished product (squared and shapeless blocks).

A2

TRANSPORT BLOCKS
WITH HEAVY VEHICLES

Heavy vehicles of recent manufacture, category Euro 6, transport the marble blocks leaving the quarry with a maximum capacity of 32 tons.
Part of the blocks are transported directly from quarry to the Canalie sawmill, while the remainder is initially transported to the warehouse in via Del Bravo and only subsequently to the sawmill.

A3

SQUARING/SAWING
SURFACE PROCESSING
PACKING

The processes carried out within the production sites of Franchi Umberto Marmi S.p.A. were divided into 3 phases:

- Squaring and Sawing
- Surface processing
- Packing

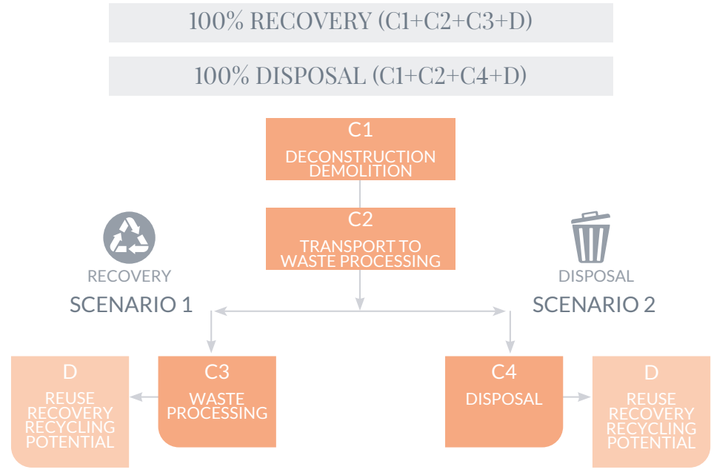
Other activities carried out on the site are related to product handling, office and showroom activities and wastewater treatment processes.

End of life C1 - C2 - C3 - C4

C1-C2-C3-C4

REUSE
RECYCLING
DISPOSAL

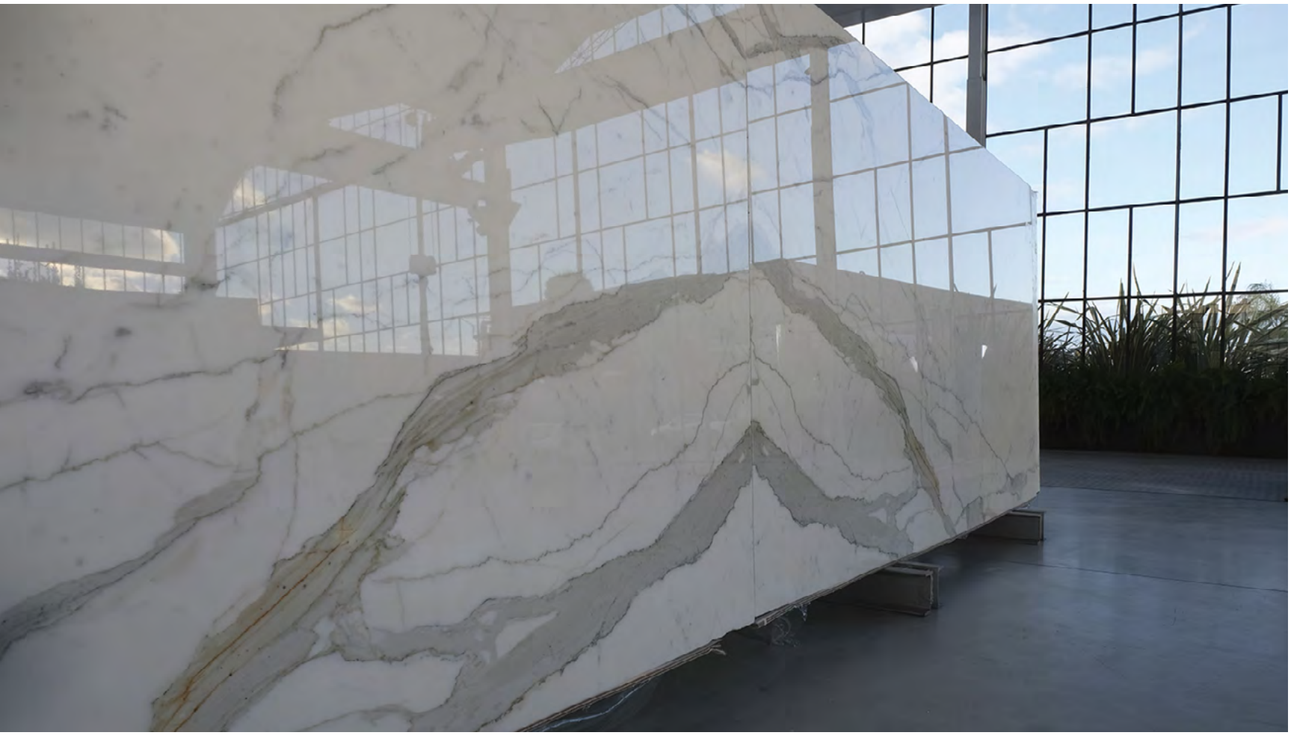
When a marble slab reaches its end of life it can undergo reuse, recycling or disposal. Two scenarios are assumed:



The RSL (Reference Service Life), given the nature of the product and its intended use, is estimated to be equal to the lifetime of the installation building, equal to 50 years. Module D is referred only to recycling of marble slabs (exluding packaging).

Cut off

The environmental impacts relating to personnel, infrastructures, production of materials not directly consumed in the production process have not been quantified. All process inputs and outputs for which data is available have been included in the calculation. Less than 1% of the total inputs / outputs of the System were subject to cut off.



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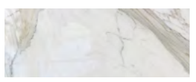
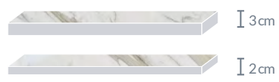
Environmental performance

Production stages A1 -A3

Environmental impact of 1 m^2 of Bettogli marble slabs - 2 and 3 cm thick.

EN15804+A2 INDICATORS		Bettogli marble 2 CM	Bettogli marble 3 CM
IMPACT CATEGORY	REFERENCE UNIT	A1-A3	A1-A3
ADP (FOSSIL)	MJ	6.80E+01	8.92E+01
ADP (MINERALS AND METALS)	KG SBEQ	1.28E-05	1.44E-05
AP	MOLE H+EQ	3.31E-02	4.62E-02
EP FRESHWATER	KG PEQ	4.59E-04	5.40E-04
GWP BIOGENIC	KG CO2 EQ	4.60E-02	4.59E-02
GWP FOSSIL	KG CO2 EQ	4.96E+00	6.47E+00
GWP LULUC	KG CO2 EQ	7.78E-06	1.05E-05
GWP TOTAL	KG CO2 EQ	5.01E+00	6.52E+00
EP MARINE	KG N EQ	1.24E-02	1.79E-02
ODP	KG CFC-11 EQ	9.28E-07	1.24E-06
POCP	KG NMVOC	3.78E-02	5.47E-02
EP TERRESTRIAL	MOLE NEQ	1.35E-01	1.96E-01
WDP	M3	6.17E+00	6.04E+00

Nera Bettogli 68B

Environmental product declaration in accordance with ISO 14025:2010 and EN 15804:2012+A2:2019

Environmental performance

Production stages A1 -A3

Environmental impact of 1 m^2 of Bettogli marble slabs - 2 and 3 cm thick.

RESOURCE CONSUMPTION		Bettogli marble 2 CM	Bettogli marble 3 CM
IMPACT CATEGORY	REFERENCE UNIT	3.38E+01	4.09E+01
PERT	MJ	0.00E+00	0.00E+00
PERM	MJ	3.38E+01	4.09E+01
PERE	MJ	6.99E+01	9.14E+01
PENRT	MJ	0.00E+00	0.00E+00
PENRM	MJ	6.99E+01	9.14E+01
PENRE	MJ	0.00E+00	0.00E+00
SM	KG	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00
NRSF	MJ	3.73E-03	3.88E-03
FWT	M3	8.23E-03	8.03E-03

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Environmental performance

Production stages A1 -A3

Environmental impact of 1 m^2 of Bettogli marble slabs - 2 and 3 cm thick.

WASTE		Bettogli marble 2 CM	Bettogli marble 3 CM
IMPACT CATEGORY	REFERENCE UNIT	A1-A3	A1-A3
HWD	KG	1.48E-04	2.01E-04
NHWD	KG	3.72E+00	4.79E+00
RWD	KG	2.96E-04	4.26E-04
CRU	KG	0.00E+00	0.00E+00
MFR	KG	0.00E+00	0.00E+00
MER	KG	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00

ADDITIONAL INDICATORS ENI15804+A1		Bettogli marble 2 CM	Bettogli marble 3 CM
IMPACT CATEGORY	REFERENCE UNIT	A1-A3	A1-A3
GWP - GHG	KG CO2 EQ	4.95E+00	6.45E+00

End of life

Environmental impact of 1 m^2 of Bettogli marble slabs for the two end of life scenarios.

Scenario 1

100% Recycling

EN15804+A2 INDICATORS		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
ADP (FOSSIL)	MJ	1.00E+00	3.80E+00	1.87E-01	0.00E+00	-5.09E+00	1.51E+00	5.70E+00	2.81E-01	0.00E+00	-7.63E+00
ADP (MINERALS AND METALS)	KG SBEQ	2.98E-08	5.74E-07	4.39E-08	0.00E+00	-4.19E-06	4.46E-08	8.61E-07	6.58E-08	0.00E+00	-6.29E-06
AP	MOLE H+EQ	3.26E-04	1.71E-03	8.81E-05	0.00E+00	-2.84E-03	4.89E-04	2.56E-03	1.32E-04	0.00E+00	-4.25E-03
EP FRESHWATER	KG PEQ	2.23E-06	1.60E-05	1.59E-05	0.00E+00	-2.61E-04	3.35E-06	2.39E-05	2.39E-05	0.00E+00	-3.91E-04
GWP BIOGENIC	KG CO2 EQ	1.37E-05	1.53E-03	9.44E-05	0.00E+00	-1.40E-03	2.05E-05	2.30E-03	1.42E-04	0.00E+00	-2.09E-03
GWP FOSSIL	KG CO2 EQ	7.43E-02	2.46E-01	1.67E-02	0.00E+00	-4.51E-01	1.11E-01	3.69E-01	2.51E-02	0.00E+00	-6.76E-01
GWP LULUC	KG CO2 EQ	1.28E-08	7.07E-05	7.34E-09	0.00E+00	-3.74E-07	1.91E-08	1.06E-04	1.10E-08	0.00E+00	-5.61E-07
GWP TOTAL	KG CO2 EQ	7.43E-02	2.48E-01	1.67E-02	0.00E+00	-4.53E-01	1.11E-01	3.72E-01	2.51E-02	0.00E+00	-6.79E-01
EP MARINE	KG N EQ	1.21E-04	6.75E-04	1.56E-05	0.00E+00	-6.72E-04	1.81E-04	1.01E-03	2.33E-05	0.00E+00	-1.01E-03
ODP	KG CFC-11 EQ	1.59E-08	5.84E-08	8.52E-10	0.00E+00	-3.59E-08	2.38E-08	8.76E-08	1.28E-09	0.00E+00	-5.38E-08
POCP	KG NMVOC	3.79E-04	2.07E-03	3.92E-05	0.00E+00	-2.04E-03	5.68E-04	3.11E-03	5.88E-05	0.00E+00	-3.05E-03
EP TERRESTRIAL	MOLE NEQ	1.32E-03	7.56E-03	1.37E-04	0.00E+00	-8.10E-03	1.99E-03	1.13E-02	2.06E-04	0.00E+00	-1.22E-02
WDP	M3	2.43E-03	1.78E-02	1.19E-02	0.00E+00	-8.80E-01	3.65E-03	2.67E-02	1.78E-02	0.00E+00	-1.32E+00

End of life

Environmental impact of 1 m^2 of Bettogli marble slabs for the two end of life scenarios.

Scenario 1

100% Recycling

RESOURCE CONSUMPTION		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
PERT	MJ	5.15E-03	4.59E-02	5.18E-02	0.00E+00	-5.84E-01	7.72E-03	6.89E-02	7.78E-02	0.00E+00	-8.76E-01
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERE	MJ	5.15E-03	4.59E-02	5.18E-02	0.00E+00	-5.84E-01	7.72E-03	6.89E-02	7.78E-02	0.00E+00	-8.76E-01
PENRT	MJ	1.01E+00	3.87E+00	3.40E-01	0.00E+00	-6.62E+00	1.52E+00	5.81E+00	5.10E-01	0.00E+00	-9.93E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRE	MJ	1.01E+00	3.87E+00	3.40E-01	0.00E+00	-6.62E+00	1.52E+00	5.81E+00	5.10E-01	0.00E+00	-9.93E+00
SM	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
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FWT	M3	5.11E-06	1.03E-04	8.10E-05	0.00E+00	-9.49E-04	7.67E-06	1.54E-04	1.22E-04	0.00E+00	-1.42E-03

End of life

Environmental impact of 1 m^2 of Bettogli marble slabs for the two end of life scenarios.

Scenario 1

100% Recycling

WASTE		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
HWD	KG	2.74E-06	9.35E-06	1.71E-07	0.00E+00	-1.26E-05	4.10E-06	1.40E-05	2.56E-07	0.00E+00	-1.89E-05
NHWD	KG	4.74E-02	5.12E-01	1.51E-02	0.00E+00	-3.75E-01	7.11E-02	7.68E-01	2.27E-02	0.00E+00	-5.62E-01
RWD	KG	7.03E-06	2.65E-05	2.39E-06	0.00E+00	-3.39E-05	1.05E-05	3.98E-05	3.59E-06	0.00E+00	-5.09E-05
CRU	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
MFR	KG	0.00E+00	0.00E+00	5.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E+01	0.00E+00	0.00E+00
MER	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
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ADDITIONAL INDICATORS EN15804+A1		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
GWP - GHG	KG CO2 EQ	7.36E-02	2.44E-01	1.62E-02	0.00E+00	-4.41E-01	1.10E-01	3.66E-01	2.43E-02	0.00E+00	-6.61E-01

End of life

Environmental impact of 1 m^2 of Bettogli marble slabs for the two end of life scenarios.

Scenario 2

100% Disposal

EN15804+A2 INDICATORS		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
ADP (FOSSIL)	MJ	1.00E+00	3.80E+00	0.00E+00	7.85E+00	0.00E+00	1.51E+00	5.70E+00	0.00E+00	1.18E+01	0.00E+00
ADP (MINERALS AND METALS)	KG SBEQ	2.98E-08	5.74E-07	0.00E+00	6.34E-07	0.00E+00	4.46E-08	8.61E-07	0.00E+00	9.50E-07	0.00E+00
AP	MOLE H+EQ	3.26E-04	1.71E-03	0.00E+00	2.68E-03	0.00E+00	4.89E-04	2.56E-03	0.00E+00	4.01E-03	0.00E+00
EP FRESHWATER	KG PEQ	2.23E-06	1.60E-05	0.00E+00	2.65E-05	0.00E+00	3.35E-06	2.39E-05	0.00E+00	3.97E-05	0.00E+00
GWP BIOGENIC	KG CO2 EQ	1.37E-05	1.53E-03	0.00E+00	1.85E-04	0.00E+00	2.05E-05	2.30E-03	0.00E+00	2.77E-04	0.00E+00
GWP FOSSIL	KG CO2 EQ	7.43E-02	2.46E-01	0.00E+00	2.84E-01	0.00E+00	1.11E-01	3.69E-01	0.00E+00	4.25E-01	0.00E+00
GWP LULUC	KG CO2 EQ	1.28E-08	7.07E-05	0.00E+00	2.04E-07	0.00E+00	1.91E-08	1.06E-04	0.00E+00	3.06E-07	0.00E+00
GWP TOTAL	KG CO2 EQ	7.43E-02	2.48E-01	0.00E+00	2.84E-01	0.00E+00	1.11E-01	3.72E-01	0.00E+00	4.25E-01	0.00E+00
EP MARINE	KG N EQ	1.21E-04	6.75E-04	0.00E+00	9.34E-04	0.00E+00	1.81E-04	1.01E-03	0.00E+00	1.40E-03	0.00E+00
ODP	KG CFC-11 EQ	1.59E-08	5.84E-08	0.00E+00	1.17E-07	0.00E+00	2.38E-08	8.76E-08	0.00E+00	1.75E-07	0.00E+00
POCP	KG NMVOC	3.79E-04	2.07E-03	0.00E+00	2.97E-03	0.00E+00	5.68E-04	3.11E-03	0.00E+00	4.45E-03	0.00E+00
EP TERRESTRIAL	MOLE NEQ	1.32E-03	7.56E-03	0.00E+00	1.03E-02	0.00E+00	1.99E-03	1.13E-02	0.00E+00	1.54E-02	0.00E+00
WDP	M3	2.43E-03	1.78E-02	0.00E+00	3.68E-01	0.00E+00	3.65E-03	2.67E-02	0.00E+00	5.52E-01	0.00E+00

End of life

Environmental impact of 1 m^2 of Bettogli marble slabs for the two end of life scenarios.

Scenario 2

100% Disposal

RESOURCE CONSUMPTION		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
PERT	MJ	5.15E-03	4.59E-02	0.00E+00	6.26E-02	0.00E+00	7.72E-03	6.89E-02	0.00E+00	9.40E-02	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERE	MJ	5.15E-03	4.59E-02	0.00E+00	6.26E-02	0.00E+00	7.72E-03	6.89E-02	0.00E+00	9.40E-02	0.00E+00
PENRT	MJ	1.01E+00	3.87E+00	0.00E+00	7.94E+00	0.00E+00	1.52E+00	5.81E+00	0.00E+00	1.19E+01	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRE	MJ	1.01E+00	3.87E+00	0.00E+00	7.94E+00	0.00E+00	1.52E+00	5.81E+00	0.00E+00	1.19E+01	0.00E+00
SM	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
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FWT	M3	5.11E-06	1.03E-04	0.00E+00	8.10E-03	0.00E+00	7.67E-06	1.54E-04	0.00E+00	1.22E-02	0.00E+00

End of life

Environmental impact of 1 m^2 of Bettogli marble slabs for the two end of life scenarios.

Scenario 2

100% Disposal

WASTE		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
HWD	KG	2.74E-06	9.35E-06	0.00E+00	1.17E-05	0.00E+00	4.10E-06	1.40E-05	0.00E+00	1.76E-05	0.00E+00
NHWD	KG	4.74E-02	5.12E-01	0.00E+00	5.43E+01	0.00E+00	7.11E-02	7.68E-01	0.00E+00	8.15E+01	0.00E+00
RWD	KG	7.03E-06	2.65E-05	0.00E+00	5.22E-05	0.00E+00	1.05E-05	3.98E-05	0.00E+00	7.83E-05	0.00E+00
CRU	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
MFR	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
MER	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
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ADDITIONAL INDICATORS EN15804+A1		Bettogli marble 2 CM					Bettogli marble 3 CM				
IMPACT CATEGORY	REFERENCE UNIT	C1	C2	C3	C4	D	C1	C2	C3	C4	D
GWP - GHG	KG CO2 EQ	7.36E-02	2.44E-01	0.00E+00	2.78E-01	0.00E+00	1.10E-01	3.66E-01	0.00E+00	4.17E-01	0.00E+00

The function of design is to draw things that last forever, not ephemeral.
When something is ephemeral, it is valid for what it is worth: nothing.

Massimo Vignelli

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Acronyms

Environmental impacts:

ADP[1] - Abiotic Depletion Potential (minerals & metals)
ADP[1] - Abiotic Depletion Potential (fossil)
AP - Acidification Potential
EP - Eutrophication Potential
GWP - Global Warming Potential
ODP - Ozone Depletion Potential
POCP - Photochemical Ozone Creation Potential
WDP[1] - Water Deprivation Potential

Resource consumption:

PERT - Total use of renewable primary energy resources
PERM - Use of renewable primary energy resources used as raw materials
PERE - Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PENRT - Total use of non-renewable primary energy resources
PENRM - Use of non-renewable primary energy resources used as raw materials
PENRE - Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
SM - Use of secondary material
RSF - Use of renewable secondary fuels
NRSF - Use of non-renewable secondary fuels
FWT - Total use of net fresh water

Waste production:

HWD - Hazardous waste disposed
NHWD - Non-hazardous waste disposed
RWD - Radioactive waste disposed
CRU - Components for reuse
MFR - Materials for recycling
MER - Materials for energy recovery
EE - Exported energy

[1] **Disclaimer**: The results of this environmental impact indicator shall be used with care as the uncertainties on the results are high or as there is limited experienced with the indicator.

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Verification and registration

EPD of construction products may not be comparable if they do not comply with EN 15804:2012+A2:2019. Environmental Product Declaration within the same product category from different programs may not be comparable.

CEN standard EN15804 served as the core PCR

Product Category Rules (PCR)

International EPD System - PCR 2019:14 - "Construction products" Version 1.0

PCR review was conducted by

The Technical Committee of the International EPD® System.
Chair: Claudia A. Peña
Contact via: info@environdec.com

Indipendent verification of the declaration and data, according to ISO 14025

• EPD Process Certification (Internal) ✓EPD Verification (External)

Third party verifier

DNV Business Assurance Italia S.r.l.

Accredited or approved by ACCREDIA

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Differences versus previous version

2020-12-11 Version 1
2022-05-12 Version 2
2022-12-14 Version 3
2023-10-11 Version 4
2024-04-29 Version 5

Variation of results
The variation in results is due to:
- Update of the mix of electricity consumed (34% residual mix, 66% renewable with guarantee of origin);
- Updating of primary activity data;
- Increase in the amount of wood used for packaging.

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