

# Environmental Product Declaration



MORTARS AND  
PLASTERS FOR ECO-  
BUILDING AND  
RESTORATION



BM 30  
BM 55  
BM 55 - BULK  
BI 19  
BI 19 - BULK  
BI 21  
BI 21 - BULK  
RB 22  
AB 09 RASOCAL  
MULTICALCE



FORNACI CALCE GRIGOLIN S.P.A.

PRODUCTION SITE  
Z.I, Loc. Piombinara  
00034 Colferro RM  
Via Solferino, 88  
43014 Ramiola, Medesano PR

According ISO 14025:2010 and EN 15804:2012+ A2:2019/AC:2021

Program Operator	<b>EPDItaly</b>
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Expiry date	27/05/2031

## GENERAL INFORMATION

### EPD OWNER

Company name	Fornaci Calce Grigolin S.p.A.
Legal office	Via Bombardieri 14, Ponte della Priula (TV)
Contacts for information about the EPD	c.fregolent@fornacigrigolin.it
Company website	www.fornacigrigolin.it

### PROGRAM OPERATOR

EPDItaly	EPDItaly - Via Gaetano De Castilia n° 10 - 20124 Milano, Italy
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### INFORMATION ABOUT THE EPD

Product name	<ul style="list-style-type: none"> <li>BM 30</li> <li>BM 55</li> <li>BM 55 - BULK</li> <li>BI 19</li> <li>BI 19 - BULK</li> <li>BI 21</li> <li>BI 21 – BULK</li> <li>RB 22</li> <li>AB 09 RASOCAL</li> <li>MULTICALCE</li> </ul>
Production site	<ul style="list-style-type: none"> <li>BM 55</li> <li>BM 55 - BULK</li> <li>BI 19</li> <li>BI 19 - BULK</li> <li>BI 21</li> <li>BI 21 – BULK</li> <li>RB 22</li> <li>AB 09 RASOCAL</li> <li>MULTICALCE</li> </ul> <p>Z.I, Loc. Piombinara, 00034 Colleferro (RM)</p> <ul style="list-style-type: none"> <li>BM 30</li> </ul> <p>Via Solferino, 88, 43014 Ramiola, Medesano (PR)</p>
Scope of the product	Premixed materials
EPD type	Specific product EPD based on a qualified tool
Product range	PALLADIO ECO-BUILDING

**SUMMARY DESCRIPTION AND TECHNICAL INFORMATION OF THE PRODUCTS**

<b>BM 30</b>	Bedding and grouting mortar for exposed face masonry based on natural hydraulic lime NHL 5 of class M2.5
<b>BM 55</b>	Bedding and grouting mortar for exposed face masonry based on natural hydraulic lime NHL 5 class M5
<b>BM 55 - BULK</b>	
<b>BI 19</b>	Ready-to-use natural plaster for green building and restoration based on Microlime CL 90-S air lime
<b>BI 19 - BULK</b>	
<b>BI 21</b>	Natural ready-to-use plaster for green building and restoration based on natural hydraulic lime NHL 5
<b>BI 21 - BULK</b>	
<b>RB 22</b>	Multipurpose modified polymer mortar with adhesion bridge function, absorption regulator, regularization clinging snag
<b>AB 09 RASOCAL</b>	Finishing skim plaster based on natural hydraulic lime NHL 5 and aggregates with selected curve with maximum diameter equal to 0.8 mm
<b>MULTICALCE</b>	Universal white skim plaster, fibrate, based on slaked lime CL 90-S and hydraulic binders, for the restoration and levelling also in thickness of internal and external surfaces, on new constructions and buildings of historical/architectural interest

**PRODUCTS REFERENCE TECHNICAL STANDARDS**

<b>BM 30</b>	
<b>BM 55</b>	EN 998-2:2016
<b>BM 55 - BULK</b>	Specification for mortar for masonry - Part 2: Masonry mortars
<b>BI 19</b>	
<b>BI 19 - BULK</b>	
<b>BI 21</b>	EN 998-1:2016
<b>BI 21 - BULK</b>	Specification for mortar for masonry - Part 1: Rendering and plastering mortar
<b>RB 22</b>	
<b>AB 09 RASOCAL</b>	
<b>MULTICALCE</b>	
CPC Code (number)	37560
Reference PCR	PCR ICMQ-001/15 rev. 3.2 Prodotti e servizi per l'edilizia, EPDItaly. Published on: 03/11/2025.
Declared Unit	1000 kg
Reference year	2023
EPD type	Specific product EPD based on a qualified tool
LCA Tool identification	Fornaci Calce Grigolin S.p.A. - LCA TOOL n.1_Rev.4, developed using SimaPro 10.2.0.2 and Ecoinvent 3.11
Company contact	Tel. 0422.5261 PEC: <a href="mailto:fornacigrigolin@legalmail.gruppogrigolin.it">fornacigrigolin@legalmail.gruppogrigolin.it</a> E-mail: <a href="mailto:info@fornacigrigolin.it">info@fornacigrigolin.it</a>
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## INFORMATION ABOUT THE ASSESSMENT

PCR	PCR ICMQ-001/15 rev. 3.2 Prodotti e servizi per l'edilizia, EPDItaly. Published on: 03/11/2025.
EPDItaly Regulations	Regulation EPDITALY v. 6.0 published on 30/10/2023
Project Report LCA	LCA Report_Analisi del ciclo di vita di premiscelati, cementi e leganti plastici, pitture e tonachini Novembre 2025_rev.05
Verification Statement / Independent Validation	<p>PCR revision was performed by the EPDItaly Technical Committee – info@epditaly.it Independent verification of the declaration and the data was performed according to ISO 14025:2010.</p> <p><input type="checkbox"/> Internal <input checked="" type="checkbox"/> External</p> <p>Third party verification/validation done by: ICMQ S.p.A., via Gaetano De Castilia n° 10 - 20124 Milano, Italy. Accredited by Accredia.</p>
Comparability Statement	<p>Environmental declarations published within the same product category, but from different programmes may not be comparable. In particular, EPDItaly declarations on construction products may not be comparable if not compliant to EN 15804:2012+A2:2019.</p>
Responsibility Statement	<p>The EPD Owner releases EPDItaly from any non-compliance with environmental legislation. The declaration holder will be responsible for the supporting information and evidence. EPDItaly declines all responsibility for the information, data and results provided by the EPD Owner for the life cycle assessment.</p>
Reference documents	This declaration was developed in compliance to the EPDItaly Regulations rev. 6.0 published on 30/10/2023 and available at <a href="http://www.epditaly.it">www.epditaly.it</a> .

## GENERAL INFORMATION

### IDENTITY – FORNACI CALCE GRIGOLIN SPA

The Grigolin Group comprises a range of specialized companies operating across all sectors of the building and construction industry, offering integrated, next-generation solutions for production technologies. The Group places particular emphasis on environmental sustainability, the development of human resources, and product quality, thanks in part to the seamless synergy achieved through the integrated management of raw materials, resources, technologies, and professionals, enabling it to meet the needs of a constantly evolving market.

Since 1963, Fornaci Calce Grigolin has been one of the most important Italian and international companies in the construction materials and technologies sector. It boasts over sixty years of experience, gained on construction sites and in research and development laboratories, and looks to the future with a view to continuous evolution, improving product quality, and implementing support services provided by qualified personnel.

Geographical expansion, technological innovation and the presence of highly qualified personnel have allowed Fornaci Calce Grigolin to become an industry leader and express its value through:






- large systems of synergies;
- diversification and verticalization of production sectors;
- technological development and applied research;
- continuous attention to environmental values.

Today, Fornaci Calce Grigolin is one of the most important Italian and international companies in the construction materials and technologies sector. It boasts a full range of special solutions: lime and derivatives, thermal insulation, underlays and installation of floors and coverings, renovations, green building, decorations, paintings and finishes, deep foundations and consolidations, binders, mortars and plasters.

The company has always paid attention to the environment by minimizing emissions from resource extraction, transportation, and their processing. Furthermore, the lime production process is automated and emissions controls are carried out with continuous monitoring by the relevant authorities, with EPDItaly certification recognized in 2024.



## SCOPE AND TYPE OF EPD

 PRODUCT STAGE			 CONSTRUCTION PROCESS STAGE		 USE STAGE							 END OF LIFE STAGE				 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
✓	✓	✓	ND	ND	ND	ND	ND	ND	ND	ND	ND	✓	✓	✓	✓	✓

GEOGRAPHIC VALIDITY FOR PRODUCT STAGE A1-A3	Europe & ITALY
GEOGRAPHIC VALIDITY FOR END OF LIFE C1-C4, D	ITALY
GEOGRAPHIC VALIDITY FOR PRODUCTION SITE	ITALY
EPD TYPE	Product specific EPD based on a qualified tool. From cradle to gate with modules C1-C4 and module D (A1-A3+C1-C4+D)
REFERENCE YEAR	2023
DATABASE	Ecoinvent 3.11
SOFTWARE	The EPD was generated with the LCA-Tool: Fornaci Calce Grigolin S.p.A. - LCA TOOL n.1_Rev.4 Such LCA-Tool was developed using SimaPro 10.2.0.2 and Ecoinvent 3.11

## DETAILED PRODUCT DESCRIPTION

### MORTARS AND PLASTERS FOR ECO-BUILDING AND RESTORATION



<p><b>BM 30</b></p>	<p>PALLADIO BM 30 is a bedding mortar based on natural hydraulic lime NHL 5, air lime MICROCALCE CL 90-S, hydraulic binders, siliceous and calcareous sands with a maximum grain size of 1.2 mm, ideal for interventions in green building and in the restoration of historic buildings. PALLADIO BM 30 is classified as a category M2.5 mortar in accordance with EN 998-2.</p> <p>Mortar for the furnishing of masonry and for exposed stucco, ideal for interventions in green building and restoration of historic buildings. The particular quality of natural hydraulic lime NHL 5 gives PALLADIO BM 30 physical chemical characteristics that make the mortar compatible with the materials present in historic buildings. The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the evaporation of moisture present in the walls. The alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria.</p> <p>The porous and open structure gives PALLADIO BM 30 marked hygro-regulatory characteristics capable of improving health and increasing the perception of well-being. Compatibility and durability of PALLADIO BM 30 mortar are ensured by the presence of dicalcium silicate which reacts with the slurry water to give rise to insoluble, chemically stable and mechanically resistant hydrated calcium silicates.</p>
<p><b>BM 55</b></p>	<p>PALLADIO BM 55 is a bedding mortar based on natural hydraulic lime NHL 5, air lime MICROCALCE CL 90-S, hydraulic binders, siliceous and calcareous sands with a maximum grain size of 3.0 mm, ideal for interventions in green building and in the restoration of historic buildings. PALLADIO BM 55 is classified as a category M5 mortar in accordance with EN 998-2. Mortar for the furnishing of masonry and for exposed stucco, ideal for interventions in green building and restoration of historic buildings. The particular quality of NHL 5 natural hydraulic lime gives PALLADIO BM 55 physical chemical characteristics that make the mortar compatible with the materials found in historic buildings. The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the elevation of the humidity present in the walls. The alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria. The porous and open structure gives PALLADIO BM 55 marked hygro-regulatory characteristics capable of improving health and raising the perception of well-being. Compatibility and durability of PALLADIO BM 55 mortar are guaranteed by the presence of dicalcium silicate which reacts with the mixing water to give rise to hydrated, chemically stable and mechanically resistant calcium silicates.</p>
<p><b>BM 55 - BULK</b></p>	<p>The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the elevation of the humidity present in the walls. The alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria. The porous and open structure gives PALLADIO BM 55 marked hygro-regulatory characteristics capable of improving health and raising the perception of well-being. Compatibility and durability of PALLADIO BM 55 mortar are guaranteed by the presence of dicalcium silicate which reacts with the mixing water to give rise to hydrated, chemically stable and mechanically resistant calcium silicates.</p>
<p><b>BI 19</b></p>	<p>PALLADIO BI 19 is a high workability plaster based on MICROCALCE CL 90-S air lime, hydraulic binders, selected calcium carbonate aggregates with a maximum diameter of 2.0 mm. PALLADIO BI 19 is classified as a GP-CSII-W0 category plaster in accordance with EN 998-1.</p> <p>Plaster ideal for interventions in green building and restoration of historic buildings. The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the evaporation of moisture present in the walls. The high alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria. The porous and open structure gives PALLADIO BI 19 marked hygro-regulatory characteristics capable of improving health and raising the perception of well-being.</p>
<p><b>BI 19 - BULK</b></p>	<p>The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the evaporation of moisture present in the walls. The high alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria. The porous and open structure gives PALLADIO BI 19 marked hygro-regulatory characteristics capable of improving health and raising the perception of well-being.</p>
<p><b>BI 21</b></p>	<p>PALLADIO BI 21 is a highly workable plaster based on natural hydraulic lime NHL 5, aerial lime MICROCALCE CL 90-S, hydraulic binders, siliceous and calcareous sands with a maximum grain size of 2.0 mm, ideal for interventions in green building and in the restoration of historic buildings. PALLADIO BI 21 is classified as a GP-CSII-W0 category plaster in accordance with EN 998-1.</p>

<b>BI 21 - BULK</b>	<p>The particular quality of natural hydraulic lime NHL 5 gives the plaster physical chemical characteristics that make the mortar compatible with the materials found in historic buildings. The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the evaporation of moisture present in the walls. The alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria. The porous and open structure gives PALLADIO BI 21 marked hygro-regulatory characteristics capable of improving health and raising the perception of well-being.</p>
<b>RB 22</b>	<p>PALLADIO RB 22 is a modified polymer mortar with improved adhesion based on selected hydraulic and inert binders with a maximum size of 3.0 mm designed to perform snaring on smooth and non-absorbent supports, adhesion bridge for plasters, absorption regulator of particularly absorbent supports. PALLADIO RB 22 is classified as a GP-CSII-W0 category plaster in accordance with EN 998-1.</p> <p>PALLADIO RB 22 has high adhesion to brick, concrete, stone, solid brick supports, ensuring excellent mechanical resistance and good permeability to water vapor.</p>
<b>AB 09 RASOCAL</b>	<p>PALLADIO AB 09 RASOCAL is a skim plaster based on natural hydraulic lime NHL 5, slaked lime MICROCALCE CL 90-S, hydraulic binders, siliceous and calcareous sands with a maximum grain size of 0.8 mm, ideal for interventions in green building and in the restoration of historic buildings. PALLADIO AB 09 RASOCAL is classified as a GP-CSIII-W1 category plaster in accordance with EN 998-1. The particular quality of NHL 5 natural hydraulic lime gives the finish characteristics that make the product compatible with the materials found in historic buildings. The high lime content creates a porous, breathable structure permeable to water vapor, capable of facilitating the evaporation of moisture present in the walls. The alkalinity produced by lime creates a natural antibacterial effect that counteracts the onset of mold, algae, and bacteria.</p>
<b>MULTICALCE</b>	<p>PALLADIO MULTICALCE is a universal modified polymer skim plaster based on hydrated lime and hydraulic binder for levelling interventions of old or new plasters, indoors or outdoors, concrete, facades with the presence of old finishes, restoration of micro-cracked plasters. PALLADIO MULTICALCE is classified as a GP-CSII-W0 category plaster in accordance with EN 998-1. PALLADIO MULTICALCE is an extremely versatile finish, it has excellent workability, high adhesion, excellent degree of finish, allowing thicknesses from 3 up to 30 mm min in a single coat.</p>

## FIELDS OF USE

<b>BM 30</b>	<p>BM 30 is a mortar for bedding and for grouting exposed masonry inside and outside. Particularly suitable for green building and restoration, where mechanical and chemical compatibility of the mortar with the materials present in historic buildings is required. The maximum grain size of 1.2 mm allows for perfect styling of exposed-face grout. PALLADIO BM 30 can be used as a cling and regularization huff and underlay plaster.</p>
<b>BM 55</b>	<p>BM 55 is a mortar for lodging and for grouting exposed masonry inside and outside. Particularly suitable for green building and restoration, where mechanical and chemical compatibility of the mortar with the materials present in historic buildings is required.</p> <p>PALLADIO BM 55 can be used as a first coat of plaster having a clinging and regularization function.</p> <p>PALLADIO BM 55 is suitable for consolidating structural snags on stone or brick walls; bedding or stitching, structural reconstruction of stone or brick walls; reinforced seams with interposition of Aisi 316 stainless steel bars with improved adhesion (PALLADIO HELICAL BAR 6-8-10) on bedding joints of stone or solid brick walls; structural consolidation of masonry or mixed stone vaults by creating hoods that collaborate on the extrados with the interposition of nets and connectors/resistant alkali anchor or Aisi 316 stainless steel.</p> <p>Particularly suitable for green building and restoration, where mechanical and chemical compatibility of the mortar with the materials present in historic buildings is required. The maximum grain size of 1.2 mm allows for perfect styling of exposed-face grout. PALLADIO BM 55 can be used as a cling and regularization huff and underlay plaster.</p>
<b>BM 55 - BULK</b>	<p>Particularly suitable for green building and restoration, where mechanical and chemical compatibility of the mortar with the materials present in historic buildings is required. The maximum grain size of 1.2 mm allows for perfect styling of exposed-face grout. PALLADIO BM 55 can be used as a cling and regularization huff and underlay plaster.</p>
<b>BI 19</b>	<p>PALLADIO BI 19 is a natural plaster based on MICROCALCE CL 90-S and hydraulic binders, particularly suitable in green building and for the restoration of buildings of historical and monumental interest.</p>
<b>BI 19 – BULK</b>	<p>PALLADIO BI 19 can be applied by hand or with a plastering machine on internal or external brick, stone, pebble, tuff walls. Smooth concrete structures must be previously re-soaked with PALLADIO RG 12. PALLADIO BI 19 must not be applied to painted, flimsy or friable surfaces.</p>
<b>BI 21</b>	<p>PALLADIO BI 21 is a natural plaster based on NHL 5, MICROCALCE CL 90-S and hydraulic binders, particularly suitable in green building and for the restoration of buildings of historical and monumental interest. PALLADIO BI 21 can be applied by hand or with plastering machine on internal or external brick, stone, pebble, tuff walls. Smooth concrete structures must be previously re-soaked with PALLADIO RG 12. PALLADIO BI 21 must not be applied to painted, flimsy or friable surfaces.</p>
<b>BI 21 – BULK</b>	<p>PALLADIO BI 21 can be applied by hand or with plastering machine on internal or external brick, stone, pebble, tuff walls. Smooth concrete structures must be previously re-soaked with PALLADIO RG 12. PALLADIO BI 21 must not be applied to painted, flimsy or friable surfaces.</p>
<b>RB 22</b>	<p>PALLADIO RB 22 can be applied by hand or with a plastering machine as adhesion bridge, absorption regulator, clinging snare on internal and external surfaces in brick, solid brick in terracotta, concrete, mixed stone.</p>
<b>AB 09 RASOCAL</b>	<p>PALLADIO AB 09 RASOCAL can be used indoors or outdoors for finishing existing or newly created plasters, for reinforced skim plastering on micro-cracked facades providing suitable resistant alkali fiberglass mesh, a suitable finish for the subsequent installation of lime or silicate-based paintings.</p>

## MULTICALCE

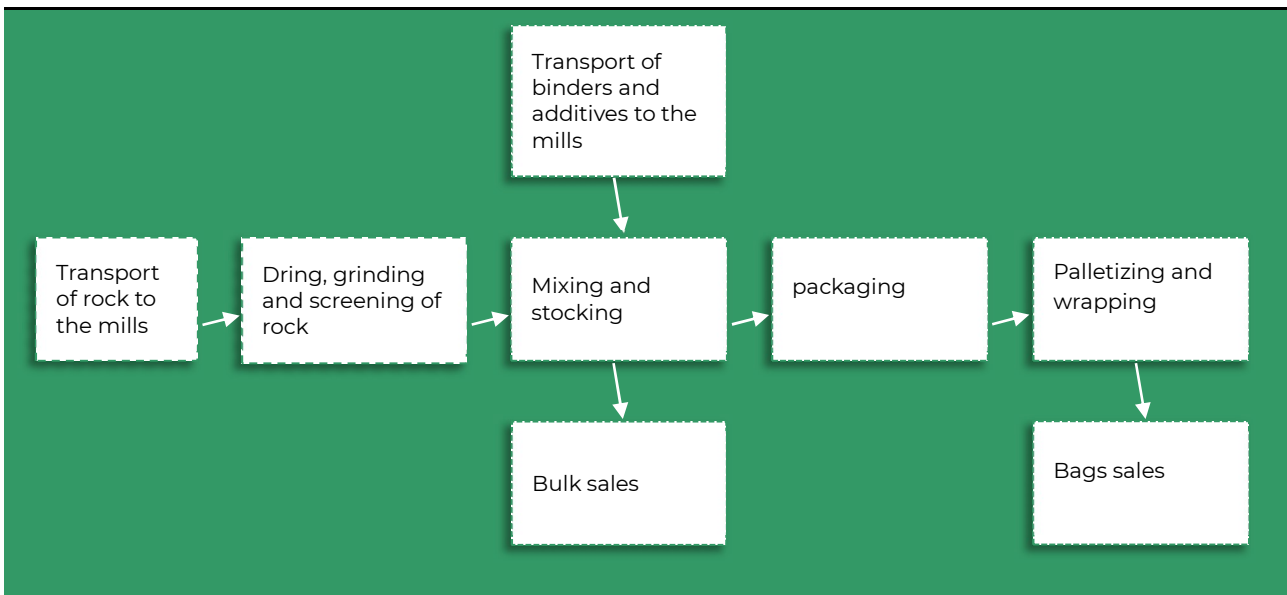
PALLADIO MULTICALCE can be used as a skim plaster on new or existing surfaces indoors or outdoors. It can be applied to painted surfaces or to thickness-coloured coatings after checking the stability of the support. PALLADIO MULTICALCE is indicated for finishing interventions, normal or with the interposition of fiberglass reinforcement mesh, of new or existing plasters and for the restoration of irregular surfaces, with application in thickness from 3 up to 30 mm in one hand. PALLADIO MULTICALCE can also be used to carry out safety interventions of a “non-structural” nature, such as anti-overturning wall and anti-crumbling floor structures, in combination with the fibreglass or basalt mesh of the PALLADIO line and specific fastening connectors.

# DESCRIPTION OF THE MANUFACTURING PROCESS

The production process for the premixed products under study consists of the following stages:

1. Transport of rock to the mills;
2. Drying, grinding, and screening of rock;
3. Mixing of rock, binders and additives, and storage of the premix;
4. Packaging;
5. Palletizing and wrapping.

The ground limestone, sorted by particle size, is conveyed to the storage silo via elevators located downstream of the grinding and screening process. The semi-finished products, which may be further sorted by particle size, are fed into dedicated silos. The plant is fully automated and operates in a closed-loop system. The production of premixed products involves mixing the raw materials, which are weighed according to the formulation and blended in a mixer. After the mixing process, the finished product can be sent to the bagging line, to bulk storage silos, or loaded directly into a tanker. A portion of the mixed product is stored in silos to meet various bulk requests from customers. Most of the finished product is bagged using a bagging machine and subsequently palletized.



**PRODUCT COMPOSITION**  
(excluding packaging)

Material	Min [kg]	Max [kg]
Aggregates	7,14E+02	8,86E+02
Binders	1,13E+02	2,70E+02
Additives	2,00E-01	2,64E+01

**PACKAGING COMPOSITION**

Material	Min [kg]	Max [kg]
Wood	0,00E+00	1,77E+01
Cardboard	0,00E+00	3,12E+00
Polyethylene	0,00E+00	1,15E-01
<b>Total</b>	<b>0,00E+00</b>	<b>2,09E+01</b>

## CALCULATION RULES

DECLARED UNIT	1000 kg
ASSUMPTIONS	No assumptions have been done
CUT-OFF RULES	No cut-off contributions have been considered
LCA METHOD	Cut-off by classification
CHARACTERISATION FACTORS	EF 3.1
EMPLOYEE COMMUTING	<ul style="list-style-type: none"> <li>• Staff movements;</li> <li>• Production of capital goods and buildings.</li> </ul>
DATA QUALITY	<p>UPSTREAM phase:</p> <ul style="list-style-type: none"> <li>• Site-specific data regarding weight, quantity, raw materials, raw materials packaging, raw materials transportation, electrical and thermal energy.</li> </ul> <p>CORE phase:</p> <ul style="list-style-type: none"> <li>• Site-specific data regarding auxiliary materials, emissions to the atmosphere, internal transport, waste transport and treatment.</li> </ul>
ALLOCATION	The allocation of input and output flows to the studied system was carried out on a mass basis considering the entire production of the plant.
GENERIC DATA	Criteria of geographical equivalence, technological equivalence, and equivalence with respect to system boundaries.

# SCENARIOS AND OTHER TECHNICAL INFORMATION

INCLUDED PROCESSES  
A1-A3

- The UPSTREAM phase (A1) includes:
- the extraction and transformation of raw materials into a raw material, not yet definable as a finished product, including the packaging used for the individual materials;
  - the generation and supply of energy required for the extraction and refining of the raw material;
  - the generation of energy used for the production of the finished product; specific electricity mix: 0,683 kg CO2 eq/kWh;
  - the production of waste resulting from these processes.
- The CORE phase (A2 and A3) includes:
- external and internal transportation;
  - product manufacturing;
  - production of auxiliary materials required to obtain the finished product;
  - production of the finished product packaging;
  - waste management related to the production process.

END OF LIFE SCENARIO  
C1-C4, D

The construction and demolition waste scenario from Eionet (European Environment Information and Observation Network) was used: "Construction and Demolition Waste: challenges and opportunities in a circular economy" (2020).

Phase	Scenario	Modelling	
<b>C1</b>	Dismantling	Diesel consumption, 0,044 MJ/kg product	
<b>C2</b>	Waste transport	kg product per 100 km	
Phase	Scenario	Concrete	Phase
<b>C3</b>	Recycling [%]	95,00%	<b>C3</b>
	Energy recovery [%]	0,00%	0,00%
<b>C4</b>	Landfill [%]	5,00%	<b>C4</b>







# ENVIRONMENTAL IMPACT INDICATORS

## Impact categories

<b>GWP</b>	Potential global warming at 100 years	<p><b>GWP – Global Warming Potential</b></p> <p>GWP quantifies the contribution of a greenhouse gas (e.g., CH<sub>4</sub>, N<sub>2</sub>O, CFCs, etc.) to the greenhouse effect relative to that of CO<sub>2</sub>, which has a reference potential of 1. The ultimate goal is to estimate the impacts caused by the rise in average temperature on humans, ecosystems, and materials.</p> <p>The method for characterizing the impacts of greenhouse gases is based on the EF 3.1 method, which uses kilograms of CO<sub>2</sub> equivalent over a 100-year time horizon as the impact indicator.</p>
<b>GWP-fossil</b>	Potential global warming at 100 years - Fossil	
<b>GWP-biogenic</b>	Potential global warming at 100 years - Biogenic	
<b>GWP-land use</b>	Potential global warming at 100 years – soil use and change in soil use	
<b>ODP</b>	Potential for depletion of the stratospheric ozone layer	<p><b>Ozone Layer Depletion</b></p> <p>Ozone is a gas found in the stratosphere that protects the Earth from the ultraviolet rays emitted by the sun. The depletion of the ozone layer caused by unstable compounds (such as CFCs, HCFCs, etc.) allows more UV rays to reach the Earth's surface, resulting in adverse effects on humans, ecosystems, and materials. The method for characterizing these impacts is based on the guidelines of the World Meteorological Organization (WMO), which uses kilograms of CFC-11 equivalent (ODP, Ozone Depletion Potential—based on a relative scale that compares the gas in question to CFC-11) as an impact indicator.</p>
<b>AP</b>	Potential for soil and water acidification	<p><b>Soil acidification</b></p> <p>The acidification indicator is linked to atmospheric emissions of specific acidifying substances that cause changes in the pH of rain, soil, and water. The method for characterizing the impacts of acidification is based on the findings of the Centre for Environmental Sciences in Leiden, NL (CML), which uses kilograms of SO<sub>2</sub> equivalent (AP, Acidification Potential—based on a relative scale that compares the substance in question with an equal mass of SO<sub>2</sub> equivalent) as an impact indicator.</p>
<b>EP-freshwater</b>	Eutrophication potential, freshwater	<p><b>Water Eutrophication</b></p> <p>This refers to a condition of excessive nitrate and phosphate levels in an aquatic environment, which leads to the proliferation of microscopic algae and increased bacterial activity; the resulting decrease in oxygen levels in the water and soil causes environmental degradation with serious impacts on ecosystems. The method for characterizing the impacts of eutrophication is based on the findings of the Centre for Environmental Sciences in Leiden, NL (CML), which uses kilograms of phosphorus equivalent (EP, Eutrophication Potential—based on a relative scale that compares the substance in question with an equal mass of P) as an impact indicator.</p>
<b>EP-marine</b>	Eutrophication potential, saltwater	
<b>EP-terrestrial</b>	Eutrophication potential, terrestrial	
<b>POCP</b>	Photochemical formation of ozone	<p><b>Formation of photochemical oxidants</b></p> <p>This phenomenon results from the reaction of unburned hydrocarbons and nitrogen oxides present in exhaust fumes when exposed to solar radiation, leading to the formation of ozone, which is harmful to health. The method for characterizing the impacts of photochemical smog is based on the guidelines established by the United Nations Economic Commission for Europe (UNECE), which uses kilograms of C<sub>2</sub>H<sub>4</sub>-equivalent POCP (Photochemical Ozone Creation Potential—based on a relative scale that compares the substance in question with an equal mass of C<sub>2</sub>H<sub>4</sub>-equivalent POCP) as an impact indicator.</p>
<b>ADPF</b>	Potential depletion of fossil abiotic resources	<p><b>ADP – Abiotic Depletion</b></p>
<b>ADPE</b>	Potential depletion of non-fossil abiotic resources	
<b>Water Use</b>	Water use	<b>Water Use</b>

## LCA RESULTS

### IMPACT CATEGORY INDICATORS

	<p>BM 30</p>
	<p>BM 55 BM 55 - BULK</p>
	<p>BI 19 BI 19 - BULK</p>
	<p>BI 21 BI 21 - BULK</p>
	<p>RB 22</p>
	<p>AB 09 RASOCAL</p>
	<p>MULTICALCE</p>

## BM 30 Medesano

### Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	2,50E+02	3,49E+01	6,00E+00	2,91E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	-5,75E-01	2,28E-02	5,53E-01	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO <sub>2</sub> eq.	3,16E-02	1,11E-02	4,60E-02	8,88E-02	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO <sub>2</sub> eq.	2,49E+02	3,49E+01	6,60E+00	2,91E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq.	9,36E-06	7,60E-07	2,44E-07	1,04E-05	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H <sup>+</sup> eq.	5,79E-01	1,32E-01	3,03E-02	7,41E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq.	3,18E-02	2,27E-03	3,69E-03	3,77E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq.	1,89E-01	4,54E-02	1,09E-02	2,45E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq.	1,97E+00	4,95E-01	9,87E-02	2,57E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq.	5,57E-01	1,92E-01	3,72E-02	7,86E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq.	1,29E-04	1,11E-04	2,69E-05	2,67E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	5,53E+02	3,71E+01	3,03E+01	6,21E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	2,61E+01	1,83E+00	4,51E+00	3,24E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

**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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	7,50E+01	7,72E+00	1,09E+02	1,92E+02	3,63E-01	4,41E+00	1,06E+01	1,45E+02	-9,94E+00
PERM	MJ	1,36E+01	0,00E+00	1,32E+02	1,45E+02	0,00E+00	0,00E+00	0,00E+00	-1,45E+02	0,00E+00
PERT	MJ	8,86E+01	7,72E+00	2,40E+02	3,37E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	5,29E+02	3,71E+01	0,00E+00	5,66E+02	2,24E+00	2,12E+01	3,48E+01	7,28E+01	-1,90E+01
PENRM	MJ	2,44E+01	0,00E+00	4,67E+01	7,11E+01	0,00E+00	0,00E+00	0,00E+00	-7,11E+01	0,00E+00
PENRT	MJ	5,53E+02	3,71E+01	4,67E+01	6,37E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	6,94E-01	5,88E-02	1,21E-01	8,74E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

**Acronyms**  
PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Indicator	indicato roi	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	2,34E-02	1,20E-02	2,26E-02	5,80E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	2,23E+01	2,23E+01	1,83E+00	4,64E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	1,20E-03	1,39E-04	1,94E-04	1,53E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	8,73E-01	8,73E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	1,38E-01
in the final product packaging	kg C	1,72E+00

# BM 55 Colleferro

## Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	2,37E+02	2,35E+01	7,79E+00	2,68E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	3,44E-01	1,60E-02	-3,59E-01	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO <sub>2</sub> eq.	2,53E-02	7,75E-03	4,60E-02	7,91E-02	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO <sub>2</sub> eq.	2,37E+02	2,36E+01	7,47E+00	2,68E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq.	6,71E-06	5,13E-07	2,13E-07	7,43E-06	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H <sup>+</sup> eq.	5,46E-01	7,75E-02	3,05E-02	6,54E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq.	2,93E-02	1,60E-03	3,68E-03	3,46E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq.	1,73E-01	2,62E-02	1,07E-02	2,10E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq.	1,86E+00	2,85E-01	1,00E-01	2,25E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq.	5,27E-01	1,17E-01	3,75E-02	6,82E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq.	1,24E-04	7,87E-05	2,67E-05	2,29E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	5,13E+02	2,61E+01	3,02E+01	5,69E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	2,38E+01	1,29E+00	4,54E+00	2,96E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

**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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	6,59E+01	5,41E+00	1,09E+02	1,80E+02	3,63E-01	4,41E+00	1,06E+01	1,38E+02	-9,94E+00
PERM	MJ	5,96E+00	0,00E+00	1,32E+02	1,38E+02	0,00E+00	0,00E+00	0,00E+00	-1,38E+02	0,00E+00
PERT	MJ	7,18E+01	5,41E+00	2,40E+02	3,18E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	5,07E+02	2,61E+01	0,00E+00	5,33E+02	2,24E+00	2,12E+01	3,48E+01	5,43E+01	-1,90E+01
PENRM	MJ	5,92E+00	0,00E+00	4,67E+01	5,27E+01	0,00E+00	0,00E+00	0,00E+00	-5,27E+01	0,00E+00
PENRT	MJ	5,13E+02	2,61E+01	4,67E+01	5,86E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	6,41E-01	4,11E-02	1,22E-01	8,04E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

**Acronyms**  
 PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Indicator	indicato roi	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	2,16E-02	8,38E-03	1,72E-02	4,72E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	2,07E+01	1,59E+01	1,57E+00	3,81E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	1,16E-03	9,75E-05	1,94E-04	1,45E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	2,60E+00	2,60E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,35E-01	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	8,00E-02
in the final product packaging	kg C	1,72E+00

## BM 55 - BULK Colferro

### Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	2,34E+02	2,35E+01	2,14E+00	2,60E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	3,49E-01	1,60E-02	6,39E-03	3,72E-01	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	2,46E-02	7,75E-03	3,45E-06	3,23E-02	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	2,35E+02	2,36E+01	2,15E+00	2,60E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	6,65E-06	5,13E-07	2,47E-10	7,16E-06	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	5,38E-01	7,75E-02	5,76E-04	6,17E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	2,86E-02	1,60E-03	3,03E-06	3,02E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	1,72E-01	2,62E-02	3,23E-04	1,98E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	1,85E+00	2,85E-01	3,16E-03	2,14E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	5,20E-01	1,17E-01	9,22E-04	6,38E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	1,20E-04	7,87E-05	3,31E-08	1,99E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	5,01E+02	2,61E+01	1,72E-02	5,27E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	2,35E+01	1,29E+00	1,31E-03	2,48E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

#### 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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	6,45E+01	5,41E+00	4,46E-03	7,00E+01	3,63E-01	4,41E+00	1,06E+01	6,19E+00	-9,94E+00
PERM	MJ	5,96E+00	0,00E+00	0,00E+00	5,96E+00	0,00E+00	0,00E+00	0,00E+00	-5,96E+00	0,00E+00
PERT	MJ	7,05E+01	5,41E+00	4,46E-03	7,59E+01	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	5,00E+02	2,61E+01	1,72E-02	5,27E+02	2,24E+00	2,12E+01	3,48E+01	1,77E+00	-1,90E+01
PENRM	MJ	1,12E-01	0,00E+00	0,00E+00	1,12E-01	0,00E+00	0,00E+00	0,00E+00	-1,12E-01	0,00E+00
PENRT	MJ	5,01E+02	2,61E+01	1,72E-02	5,27E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	6,32E-01	4,11E-02	4,00E-05	6,73E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

#### Acronyms

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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	2,08E-02	8,38E-03	2,21E-04	2,94E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	2,06E+01	1,59E+01	1,11E-02	3,65E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	1,12E-03	9,75E-05	1,07E-07	1,22E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	7,54E-02	7,54E-02	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,04E-02	1,04E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	8,00E-02
in the final product packaging	kg C	0,00E+00

# BI 19 Colleferro

## Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	1,04E+02	8,56E+00	7,79E+00	1,21E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	-3,46E-02	5,79E-03	2,98E-02	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	1,55E-01	2,79E-03	4,60E-02	2,04E-01	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	1,04E+02	8,57E+00	7,86E+00	1,21E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	9,28E-07	1,87E-07	2,13E-07	1,33E-06	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	2,42E-01	2,85E-02	3,05E-02	3,01E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	1,09E-02	5,75E-04	3,68E-03	1,51E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	6,93E-02	9,81E-03	1,07E-02	8,98E-02	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	8,12E-01	1,07E-01	1,00E-01	1,02E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	2,32E-01	4,33E-02	3,75E-02	3,13E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	9,76E-05	2,83E-05	2,67E-05	1,53E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	2,70E+02	9,39E+00	3,02E+01	3,10E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	1,10E+01	4,63E-01	4,54E+00	1,60E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01
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									

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,66E+01	1,95E+00	1,09E+02	1,37E+02	3,63E-01	4,41E+00	1,06E+01	1,54E+02	-9,94E+00
PERM	MJ	2,23E+01	0,00E+00	1,32E+02	1,54E+02	0,00E+00	0,00E+00	0,00E+00	-1,54E+02	0,00E+00
PERT	MJ	4,89E+01	1,95E+00	2,40E+02	2,91E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	3,67E+02	9,39E+00	0,00E+00	3,76E+02	2,24E+00	2,12E+01	3,48E+01	5,64E+01	-1,90E+01
PENRM	MJ	7,98E+00	0,00E+00	4,67E+01	5,47E+01	0,00E+00	0,00E+00	0,00E+00	-5,47E+01	0,00E+00
PENRT	MJ	3,75E+02	9,39E+00	4,67E+01	4,31E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	2,47E-01	1,48E-02	1,22E-01	3,83E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,24E-02	3,02E-03	1,72E-02	3,27E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	5,18E+00	5,71E+00	1,57E+00	1,25E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	6,77E-04	3,52E-05	1,94E-04	9,06E-04	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	2,60E+00	2,60E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,35E-01	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	3,96E-01
in the final product packaging	kg C	1,72E+00

## BI 19 - BULK Colleferro

### Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	1,02E+02	8,56E+00	2,14E+00	1,12E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	-2,95E-02	5,79E-03	2,47E-02	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	1,54E-01	2,79E-03	3,45E-06	1,57E-01	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	1,02E+02	8,57E+00	2,16E+00	1,13E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	8,70E-07	1,87E-07	2,47E-10	1,06E-06	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	2,35E-01	2,85E-02	5,76E-04	2,64E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	1,02E-02	5,75E-04	3,03E-06	1,07E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	6,76E-02	9,81E-03	3,23E-04	7,77E-02	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	7,95E-01	1,07E-01	3,16E-03	9,05E-01	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	2,25E-01	4,33E-02	9,22E-04	2,69E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	9,34E-05	2,83E-05	3,31E-08	1,22E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	2,58E+02	9,39E+00	1,72E-02	2,67E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	1,07E+01	4,63E-01	1,31E-03	1,12E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

#### 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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,53E+01	1,95E+00	4,46E-03	2,72E+01	3,63E-01	4,41E+00	1,06E+01	2,25E+01	-9,94E+00
PERM	MJ	2,23E+01	0,00E+00	0,00E+00	2,23E+01	0,00E+00	0,00E+00	0,00E+00	-2,23E+01	0,00E+00
PERT	MJ	4,75E+01	1,95E+00	4,46E-03	4,95E+01	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	3,60E+02	9,39E+00	1,72E-02	3,70E+02	2,24E+00	2,12E+01	3,48E+01	3,82E+00	-1,90E+01
PENRM	MJ	2,17E+00	0,00E+00	0,00E+00	2,17E+00	0,00E+00	0,00E+00	0,00E+00	-2,17E+00	0,00E+00
PENRT	MJ	3,62E+02	9,39E+00	1,72E-02	3,72E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	2,38E-01	1,48E-02	4,00E-05	2,53E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

#### Acronyms

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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,16E-02	3,02E-03	2,21E-04	1,49E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	5,10E+00	5,71E+00	1,11E-02	1,08E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	6,37E-04	3,52E-05	1,07E-07	6,73E-04	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	7,54E-02	7,54E-02	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,04E-02	1,04E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	3,96E-01
in the final product packaging	kg C	0,00E+00

## BI 21 Colleferro

### Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	1,68E+02	1,57E+01	7,79E+00	1,92E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	-2,35E+00	1,05E-02	2,34E+00	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	1,61E-01	5,18E-03	4,60E-02	2,12E-01	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	1,66E+02	1,57E+01	1,02E+01	1,92E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	2,90E-05	3,41E-07	2,13E-07	2,95E-05	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	4,30E-01	5,62E-02	3,05E-02	5,17E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	2,91E-02	1,06E-03	3,68E-03	3,38E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	1,86E-01	1,87E-02	1,07E-02	2,15E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	1,44E+00	2,03E-01	1,00E-01	1,74E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	3,83E-01	8,11E-02	3,75E-02	5,01E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	1,07E-04	5,19E-05	2,67E-05	1,86E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	4,71E+02	1,72E+01	3,02E+01	5,19E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	1,73E+01	8,50E-01	4,54E+00	2,26E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

#### 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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	4,52E+01	3,57E+00	1,09E+02	1,58E+02	3,63E-01	4,41E+00	1,06E+01	1,68E+02	-9,94E+00
PERM	MJ	3,63E+01	0,00E+00	1,32E+02	1,68E+02	0,00E+00	0,00E+00	0,00E+00	-1,68E+02	0,00E+00
PERT	MJ	8,15E+01	3,57E+00	2,40E+02	3,25E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	5,34E+02	1,72E+01	0,00E+00	5,51E+02	2,24E+00	2,12E+01	3,48E+01	5,90E+01	-1,90E+01
PENRM	MJ	1,06E+01	0,00E+00	4,67E+01	5,74E+01	0,00E+00	0,00E+00	0,00E+00	-5,74E+01	0,00E+00
PENRT	MJ	5,45E+02	1,72E+01	4,67E+01	6,09E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	4,17E-01	2,72E-02	1,22E-01	5,66E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

#### Acronyms

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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,88E-02	5,53E-03	1,72E-02	4,15E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	1,22E+01	1,04E+01	1,57E+00	2,42E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	7,86E-04	6,44E-05	1,94E-04	1,04E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	2,60E+00	2,60E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,35E-01	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	5,64E-01
in the final product packaging	kg C	1,72E+00

## BI 21 - BULK Colleferro

### Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	1,65E+02	1,57E+01	2,14E+00	1,83E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	-2,34E+00	1,05E-02	2,33E+00	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	1,60E-01	5,18E-03	3,45E-06	1,65E-01	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	1,63E+02	1,57E+01	4,47E+00	1,83E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	2,89E-05	3,41E-07	2,47E-10	2,93E-05	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	4,22E-01	5,62E-02	5,76E-04	4,79E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	2,84E-02	1,06E-03	3,03E-06	2,95E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	1,84E-01	1,87E-02	3,23E-04	2,03E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	1,42E+00	2,03E-01	3,16E-03	1,63E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	3,75E-01	8,11E-02	9,22E-04	4,57E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	1,03E-04	5,19E-05	3,31E-08	1,55E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	4,59E+02	1,72E+01	1,72E-02	4,76E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m3 world eq deprived	1,70E+01	8,50E-01	1,31E-03	1,78E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

**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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	4,39E+01	3,57E+00	4,46E-03	4,74E+01	3,63E-01	4,41E+00	1,06E+01	3,65E+01	-9,94E+00
PERM	MJ	3,63E+01	0,00E+00	0,00E+00	3,63E+01	0,00E+00	0,00E+00	0,00E+00	-3,63E+01	0,00E+00
PERT	MJ	8,02E+01	3,57E+00	4,46E-03	8,37E+01	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	5,28E+02	1,72E+01	1,72E-02	5,45E+02	2,24E+00	2,12E+01	3,48E+01	6,46E+00	-1,90E+01
PENRM	MJ	4,81E+00	0,00E+00	0,00E+00	4,81E+00	0,00E+00	0,00E+00	0,00E+00	-4,81E+00	0,00E+00
PENRT	MJ	5,33E+02	1,72E+01	1,72E-02	5,50E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	4,08E-01	2,72E-02	4,00E-05	4,35E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

**Acronyms**  
 PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,79E-02	5,53E-03	2,21E-04	2,37E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	1,21E+01	1,04E+01	1,11E-02	2,26E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	7,46E-04	6,44E-05	1,07E-07	8,11E-04	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	7,54E-02	7,54E-02	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,04E-02	1,04E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	5,64E-01
in the final product packaging	kg C	0,00E+00

# RB 22 Colleferro

## Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	1,53E+02	1,27E+01	7,79E+00	1,73E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	9,43E-01	8,60E-03	-9,50E-01	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	8,15E-02	4,14E-03	4,60E-02	1,32E-01	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	1,54E+02	1,27E+01	6,88E+00	1,73E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	1,10E-06	2,76E-07	2,13E-07	1,59E-06	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	4,02E-01	4,17E-02	3,05E-02	4,74E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	1,78E-02	8,54E-04	3,68E-03	2,23E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	1,11E-01	1,42E-02	1,07E-02	1,36E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	1,28E+00	1,55E-01	1,00E-01	1,54E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	3,60E-01	6,32E-02	3,75E-02	4,60E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	1,59E-04	4,21E-05	2,67E-05	2,28E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	3,49E+02	1,39E+01	3,02E+01	3,93E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	1,48E+01	6,88E-01	4,54E+00	2,00E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

**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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	5,81E+01	2,90E+00	1,09E+02	1,70E+02	3,63E-01	4,41E+00	1,06E+01	1,57E+02	-9,94E+00
PERM	MJ	2,56E+01	0,00E+00	1,32E+02	1,57E+02	0,00E+00	0,00E+00	0,00E+00	-1,57E+02	0,00E+00
PERT	MJ	8,37E+01	2,90E+00	2,40E+02	3,27E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	3,43E+02	1,39E+01	0,00E+00	3,56E+02	2,24E+00	2,12E+01	3,48E+01	5,50E+01	-1,90E+01
PENRM	MJ	6,61E+00	0,00E+00	4,67E+01	5,34E+01	0,00E+00	0,00E+00	0,00E+00	-5,34E+01	0,00E+00
PENRT	MJ	3,49E+02	1,39E+01	4,67E+01	4,10E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	3,71E-01	2,20E-02	1,22E-01	5,15E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,86E-02	4,49E-03	1,72E-02	4,03E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	1,05E+01	8,49E+00	1,57E+00	2,06E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	1,53E-03	5,22E-05	1,94E-04	1,77E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	2,60E+00	2,60E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,35E-01	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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

Acronyms HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed  
 CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity;  
 EET = Exported energy, thermal

Disclaimer [1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators

Biogenic carbon	Unit	Value
in the final product	kg C	4,24E-01
in the final product packaging	kg C	1,72E+00

## AB 09 RASOCAL Colleferro

### Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	2,91E+02	2,51E+01	7,79E+00	3,24E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	-6,44E+00	1,71E-02	6,43E+00	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	5,43E+00	8,26E-03	4,60E-02	5,49E+00	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	2,90E+02	2,51E+01	1,43E+01	3,29E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	3,90E-05	5,48E-07	2,13E-07	3,98E-05	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	7,76E-01	8,16E-02	3,05E-02	8,88E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	3,97E-02	1,70E-03	3,68E-03	4,51E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	2,34E-01	2,77E-02	1,07E-02	2,73E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	2,35E+00	3,01E-01	1,00E-01	2,75E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	7,31E-01	1,24E-01	3,75E-02	8,92E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	4,26E-04	8,41E-05	2,67E-05	5,37E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	7,28E+02	2,78E+01	3,02E+01	7,86E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	3,80E+01	1,37E+00	4,54E+00	4,39E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

**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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,26E+02	5,78E+00	1,09E+02	3,41E+02	3,63E-01	4,41E+00	1,06E+01	1,95E+02	-9,94E+00
PERM	MJ	6,28E+01	0,00E+00	1,32E+02	1,94E+02	0,00E+00	0,00E+00	0,00E+00	-1,94E+02	0,00E+00
PERT	MJ	2,89E+02	5,78E+00	2,40E+02	5,35E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	4,34E+02	2,78E+01	0,00E+00	4,62E+02	2,24E+00	2,12E+01	3,48E+01	3,42E+02	-1,90E+01
PENRM	MJ	2,94E+02	0,00E+00	4,67E+01	3,41E+02	0,00E+00	0,00E+00	0,00E+00	-3,41E+02	0,00E+00
PENRT	MJ	7,28E+02	2,78E+01	4,67E+01	8,03E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	1,02E+00	4,39E-02	1,22E-01	1,19E+00	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

**Acronyms**  
 PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	5,97E-02	8,95E-03	1,72E-02	8,59E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	2,25E+01	1,69E+01	1,57E+00	4,10E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	1,93E-03	1,04E-04	1,94E-04	2,23E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	2,60E+00	2,60E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,35E-01	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity; EET = Exported energy, thermal									
Disclaimer	[1] ADPF, ADPE, Water Use: the results of these environmental impact indicators must be used carefully as the uncertainties of these results are high or as there is limited experience with such indicators									

Biogenic carbon	Unit	Value
in the final product	kg C	1,04E+00
in the final product packaging	kg C	1,72E+00

# MULTICALCE Colleferro

## Results by Declared Unit: 1000 kg

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq	2,14E+02	1,50E+01	7,79E+00	2,37E+02	4,43E+00	1,90E+01	1,79E+01	1,13E+00	-4,95E+00
GWP-biogenic	kg CO2 eq	-2,69E+00	1,02E-02	2,68E+00	1,00E-03	8,98E-04	1,30E-02	6,01E-02	1,30E-03	-1,43E-01
GWP-luluc	kg CO2 eq	1,94E+00	4,91E-03	4,60E-02	1,99E+00	4,53E-04	6,30E-03	6,82E-03	2,38E-03	-2,21E-03
GWP-total	kg CO2 eq	2,13E+02	1,50E+01	1,05E+01	2,39E+02	4,43E+00	1,90E+01	1,80E+01	1,14E+00	-5,08E+00
ODP	kg CFC 11 eq	2,48E-06	3,27E-07	2,13E-07	3,02E-06	6,60E-08	4,15E-07	3,73E-07	2,12E-08	-7,13E-08
AP	mol H+ eq	5,00E-01	4,91E-02	3,05E-02	5,79E-01	3,96E-02	6,11E-02	1,46E-01	6,90E-03	-3,33E-02
EP-freshwater	kg P eq	2,42E-02	1,01E-03	3,68E-03	2,89E-02	1,43E-04	1,30E-03	8,10E-03	1,01E-04	-1,26E-03
EP-marine	kg N eq	1,39E-01	1,67E-02	1,07E-02	1,66E-01	1,84E-02	2,06E-02	5,54E-02	2,79E-03	-8,84E-03
EP-terrestrial	mol N eq	1,46E+00	1,82E-01	1,00E-01	1,75E+00	2,02E-01	2,24E-01	6,01E-01	3,03E-02	-1,14E-01
POCP	kg NMVOC eq	5,15E-01	7,45E-02	3,75E-02	6,27E-01	6,04E-02	9,26E-02	1,92E-01	1,02E-02	-3,17E-02
ADP-minerals&metals [1]	kg Sb eq	4,15E-04	4,99E-05	2,67E-05	4,91E-04	1,58E-06	6,41E-05	3,99E-05	2,47E-06	-5,14E-05
ADP-fossil [1]	MJ	6,19E+02	1,65E+01	3,02E+01	6,66E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
WDP [1]	m <sup>3</sup> world eq deprived	2,70E+01	8,16E-01	4,54E+00	3,24E+01	1,23E-01	1,05E+00	-4,78E+01	3,83E-01	-1,42E+01

**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

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,02E+02	3,43E+00	1,09E+02	2,14E+02	3,63E-01	4,41E+00	1,06E+01	1,80E+02	-9,94E+00
PERM	MJ	4,81E+01	0,00E+00	1,32E+02	1,80E+02	0,00E+00	0,00E+00	0,00E+00	-1,80E+02	0,00E+00
PERT	MJ	1,50E+02	3,43E+00	2,40E+02	3,94E+02	3,63E-01	4,41E+00	1,06E+01	2,32E-01	-9,94E+00
PENRE	MJ	3,91E+02	1,65E+01	0,00E+00	4,08E+02	2,24E+00	2,12E+01	3,48E+01	4,96E+02	-1,90E+01
PENRM	MJ	4,48E+02	0,00E+00	4,67E+01	4,94E+02	0,00E+00	0,00E+00	0,00E+00	-4,94E+02	0,00E+00
PENRT	MJ	8,39E+02	1,65E+01	4,67E+01	9,02E+02	2,24E+00	2,12E+01	3,48E+01	1,65E+00	-1,90E+01
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
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
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
FW	m <sup>3</sup>	6,20E-01	2,61E-02	1,22E-01	7,68E-01	4,04E-03	3,35E-02	-1,02E+00	9,45E-03	-3,23E-01

**Acronyms**  
 PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	4,73E-02	5,32E-03	1,72E-02	6,99E-02	5,40E-04	6,81E-03	4,34E-02	3,84E-04	-2,40E-02
NHWD	kg	1,06E+01	1,01E+01	1,57E+00	2,22E+01	3,89E-02	1,29E+01	3,85E+02	5,05E+01	-9,12E-01
RWD	kg	1,32E-03	6,19E-05	1,94E-04	1,57E-03	6,03E-06	7,93E-05	2,50E-04	3,20E-06	-7,21E-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
MFR	kg	0,00E+00	0,00E+00	2,60E+00	2,60E+00	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	1,35E-01	1,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	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
EET	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

Acronyms HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed  
 CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy, electricity;  
 EET = Exported energy, thermal

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Biogenic carbon	Unit	Value
in the final product	kg C	8,51E-01
in the final product packaging	kg C	1,72E+00

## GUIDELINES

Guidelines	UNI ISO 14040: 2021
	UNI ISO 14044: 2021
	EN ISO 14025:2010
	EN 15804:2012+A2:2019/AC:2021
	PCR per i prodotti da costruzione: ICMQ-001/15 rev 3.2 (compliant to EN 15804+A2)
	LCA Report_Analisi del ciclo di vita di premiscelati, cementi e leganti plastici, pitture e tonachini Novembre 2025_rev.05
Regolamento EPDITALY v. 6.0 Published on: 30/10/2023	

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