

# ENVIRONMENTAL PRODUCT DECLARATION

*In accordance with ISO 14025 for*

**MAPELASTIC CI**  
**MAPELASTIC WATERSTOP**  
**MAPELASTIC AQUADEFENSE**



An EPD should provide current information and may be updated if conditions change. The stated validity is, therefore, subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com).

Programme:  
**The International  
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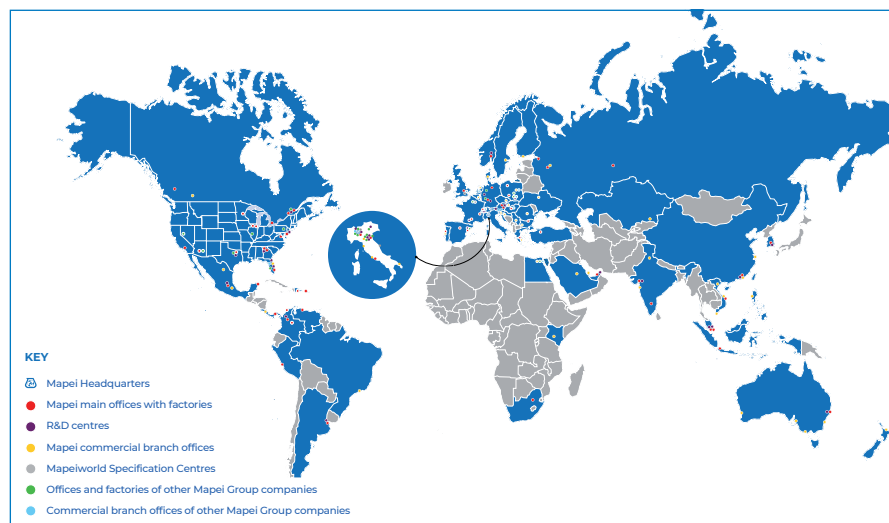


## 1. COMPANY DESCRIPTION / GOAL & SCOPE

Founded in 1937 in Milan, Italy, Mapei produces adhesives and complementary products for laying all types of floor, wall and coating materials, and also specializes in other chemical products used in the building industry, such as waterproofing products, specialty mortars, admixtures for concrete, products for underground constructions and for the restoration of concrete and historical buildings.

There are currently 85 subsidiaries in the Mapei Group, with a total of 80 production facilities located around the world in 35 different countries and in 5 different continents. Mapei also has 18 central laboratories. Most locations are ISO 9001 and ISO 14001 or EMAS-certified.

Mapei's strategy of internationalization is based on two main objectives: being closer to local needs and lowering transportation costs. With the declared objective of being close to buyers and clients, Mapei's presence in the five continents enables the



**LEED V4** is the latest version of Leadership in Environmental and Energy Design, an American protocol that enables buildings to be certified as eco-sustainable according to parameters

and credits described in the most widely adopted green building criteria in the world. Issued by the GBC US, it is mandatory for all LEED projects registered after October 2016.

Numerous changes have been made to the previous version: Mapei products play a part in obtaining important credits thanks to their EPD's (type III environmental declarations) and their products with very low emission of VOC.

Launched in the UK in 1990, **BREEAM** (BRE Environmental Assessment Method) is a protocol for sustainable building practices adopted mainly in the United Kingdom and in Scandinavian countries with the version **BREEAM NOR**.

By adopting this protocol, thanks to their EPD's and very low emission of VOC, Mapei products help towards obtaining relative credits.

company to comply with the requirements of each location, and to use only locally-based managers and qualified personnel, without changing the approach of Mapei.

Mapei invests 12% in its company's total work-force and 5% of its turnover in Research & Development; in particular, 70% of its R&D efforts are directed to develop eco-sustainable and environmentally friendly products, which give important contribution to all major green rating systems for eco-sustainable buildings such as LEED and BREEAM.

Furthermore, Mapei has developed a sales and technical service network with offices all over the world and offers an efficient

Technical Assistance Service that is valued by architects, engineers, contractors and owners.

The goal of the study is to provide necessary data and documentation to produce an EPD according to the requirements of PCR Environdec (version 2.2, date 2017-05-30) under EN 15804:2014 and to have more comprehension about the environmental impacts to **Mapelastic CI**, **Mapelastic WaterStop** and **Mapelastic AquaDefense** manufactured in Mapei Corp. (US) located in West Chicago plant, including packaging of the finished products. The primary data used to produce this EPD came from US and global datasets available in the ecoinvent v 3.3 and GaBi database LCA software. Table 19 in the Data Quality section lists the dataset sources and specific geographical references.

Target audiences of the study are customers and other parties with an interest in the environmental impacts of **Mapelastic CI**, **Mapelastic WaterStop** and **Mapelastic AquaDefense**. This analysis shall not support comparative assertions intended to be disclosed to the public.

## 2. PRODUCT DESCRIPTION

Mapelastic CI is a premixed, liquid-rubber, quick-drying crack-isolation membrane for installation under ceramic tile or stone in residential and commercial interior and exterior environments. Mapelastic CI meets ANSI A118.12 requirements and prevents nonstructural, in-plane floor cracks up to 1/8" (3 mm) from transferring through grout, ceramic tile and stone.

Mapelastic WaterStop is a flexible, thin, fast-drying, one-component,

liquidrubber waterproofing and crack-isolation membrane for installation under ceramic tile or stone in residential, commercial and industrial environments. It provides a continuous barrier to protect adjacent floors and rooms below from water damage. Mapelastic WaterStop also prevents in-plane floor cracks (up to 1/8" [3 mm]) from transmitting through tile or stone. Mapelastic AquaDefense is a premixed, advanced liquid-rubber, extremely quick-drying waterproofing and crack-isolation membrane for installation under ceramic tile or stone in residential, commercial and industrial environments. Mapelastic AquaDefense provides a thin, continuous barrier to protect adjacent rooms and floors below from water damage.

## 3. CONTENT DECLARATION

The main components and ancillary materials of **Mapelastic CI**, **Mapelastic WaterStop** and **Mapelastic AquaDefense** are the following:

Table 1: Composition

Materials	Percentage (%) by mass
Emulsion Polymers	< 70
Filler	< 40
Biocide	< 0.5
Pigments	< 1
Additives & Packaging	< 6

The product does not contain a concentration higher than 0,1% (by unit weight) of either carcinogenic substances or substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency.

## 4. DECLARED UNIT AND REFERENCE SERVICE LIFE

The declared unit is 1 kg of packaged product.

	Declared Unit	Density	Application rate**
Mapelastic CI	1 kg*	1.3 g/ml	0.74 kg/m <sup>2</sup>
Mapelastic WaterStop	1 kg*	1.3 g/ml	1.05 kg/m <sup>2</sup>
Mapelastic AquaDefense	1 kg*	1.3 g/ml	0.88 kg/m <sup>2</sup>

\*: packaging included

\*\*: as indicated in TDS

All the technical information related to the products are described in the specific TDS (Technical Data Sheet).

The finished products studied are delivered as follows:

- 13.2 l plastic pail (3.5 gal)
- LDPE (wrapping material)
- Wooden pallet

The service life of the mortars depends on their care, but is expected to be equivalent to the service life of the building in which the products are installed (TCNA, 2014). A building's reference service life (RSL) is typically assumed to be 60 years. The mortars are thus assumed to have a RSL of 60 years.

## 5. SYSTEM BOUNDARIES AND ADDITIONAL TECHNICAL INFORMATION

The approach is “cradle to gate”. The following modules have been considered:

- A1-A3 (Product stage): extraction and transport of raw materials, packaging included, production process.

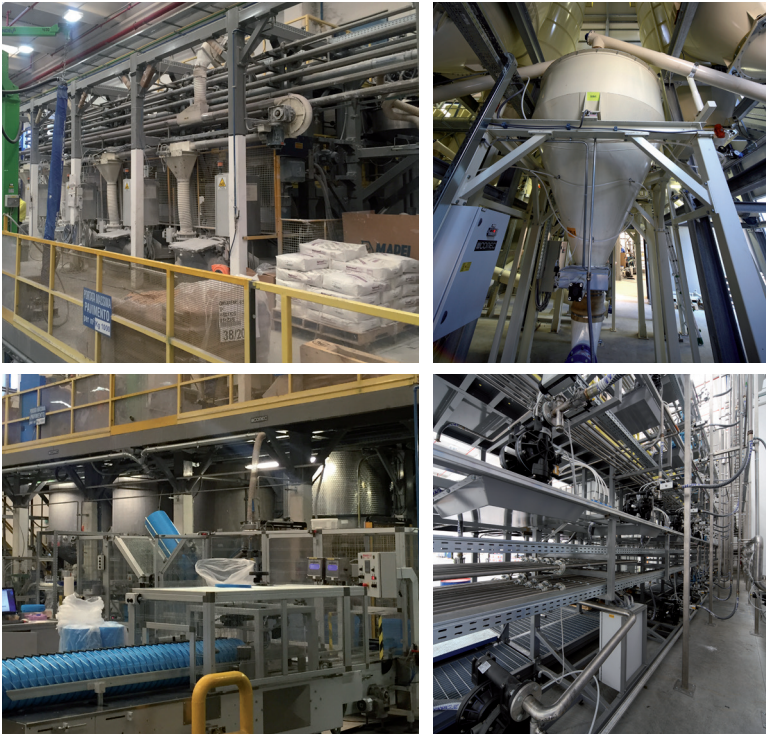
Table 2: System boundaries

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Geography	US	US	US	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specific data	> 90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not-relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not-relevant					-	-	-	-	-	-	-	-	-	-	-	-

ND: Not Declare



Figure 1: Production process detail



A brief description of production process is the following:

The production process starts from raw materials, that are purchased from external and intercompany suppliers and stored in the plant. Bulk raw materials are stored in specific silos and added automatically in the production mixer, according to the formula of the product. Other raw materials, supplied in bags, big bags or tanks, are stored in the warehouse and added automatically or manually in the mixer. The production is a discontinuous process, in which all the components are mechanically mixed in batches. The semi-finished product is then packaged, put on wooden pallets and stored in the finished products warehouse. The quality of final products is controlled before the sale.

## 6. CUT-OFF RULES AND ALLOCATION

Criteria for the exclusion of inputs and outputs (cut-off rules) in the LCA, information modules and any additional information are intended to support an efficient calculation procedure. They are not applied in order to hide data.

The following procedure is followed for the exclusion of inputs and outputs:

- All inputs and outputs to a unit process, for which data are available, are included in the calculation.
- Cut-off criteria, where applied, are described in Table 3.

Table 3: Cut-off criteria

Process excluded from study	Cut-off criteria	Quantified contribution from process
A3: direct emission to air (particulate matter)	Less than 10 <sup>-5</sup> kg/kg of finished product	Sensitivity study demonstrates a relative contribution lower than 0.1%

For the allocation procedure and principles consider the following table (Table 4):

Table 4: Allocation procedure and principles

Module	Allocation Principle
A1	All data refer to 1 kg of powder A1: electricity is allocated to the whole plant
A3	data refer to 1 kg of packaged product A3-wastes: all data are allocated to the whole plant

## 7. ENVIRONMENTAL PERFORMANCE AND INTERPRETATION



**GWP**

### Climate change

GWPTotal - Global Warming Potential refers to the emission/presence of GHGs (greenhouse gases) in the atmosphere (mainly CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>) which contribute to the increase in the temperature of the planet.

GWP-total considers:

- GWP-fossil
- GWP-biogenic
- GWP-luluc (land use and land use change)



**ODP**

### Ozone Depletion

Ozone Depletion Potential refers to the degradation of the stratospheric layer of the ozone involved in blocking the UV component of sunrays. Depletion is due to particularly reactive components that originate from chlorofluorocarbon (CFC) or chlorofluoromethane (CFM).



**AP**

### Acidification

Acidification Potential refers to the emission of specific acidifying substances (i.e. NO<sub>x</sub>, SO<sub>x</sub>) in the air. These substances decrease the pH of the rainfall with predictable damages to the ecosystem.



**EP**

### Eutrophication

Eutrophication Potential refers to the nutrient enrichment, which determines unbalance in ecosystems and causes the death of the fauna and decreased biodiversity in flora.

It considers:

- EP-freshwater: aquatic freshwater
- EP-marine: aquatic marine
- EP-terrestrial



**POCP**

### Photochemical ozone formation

The Photochemical Ozone Creation Potential is the ozone formation in low atmosphere. This is quite common in the cities where a great amount of pollutants (like VOC and NO<sub>x</sub>) are emitted every day (industrial emissions and vehicles). It is mainly diffused during the summertime.



**ADP  
minerals&metals**

### Depletion of abiotic resources – minerals and metals

Abiotic Depletion Potential elements refers to the depletion of the mineral resources.



**ADP - fossil**

### Depletion of abiotic resources – fossil fuel

Abiotic Depletion Potential fossil fuel refers to the depletion of the fossil fuel resources.



**WDP**

### Water use

It expresses the potential deprivation of water, that consists in not having the water needs satisfied.

The following tables show environmental impacts for the products considered according to CML2001 (Jan. 2016) methodology and TRACI 2.1 methodology. The impacts refer to the declared unit (see § 4).

## Mapelastic CI

(1 kg of product in bulk)

Table 5: Mapelastic CI: Environmental categories, impacts for 1 kg of product and for 1 m<sup>2</sup> of product calculated according to CML2001 methodology

Environmental category	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	1.43E+00	1.06E+00
ADP <sub>E</sub> (elements)	(kg Sb eq.)	1.01E-02	7.44E-03
ADP <sub>F</sub> (fossil)	(MJ)	3.19E+01	2.36E+01
AP	(kg SO <sub>2</sub> eq.)	8.97E-03	6.64E-03
EP	(kg (PO <sub>4</sub> ) <sup>3-</sup> eq.)	6.88E-04	5.09E-04
ODP	(kg R-11 eq.)	6.95E-07	5.14E-07
POCP	(kg ethylene eq.)	7.25E-04	5.36E-04

**GWP<sub>100</sub>**: Global Warming Potential; **ODP**: Ozone Depletion Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **POCP**: Photochemical Ozone Creation Potential; **ADP<sub>E</sub>**: Abiotic Depletion Potential (elements); **ADP<sub>F</sub>**: Abiotic Depletion Potential (fossil).

Table 6: Mapelastic CI: Environmental categories, impacts for 1 kg of product and for 1 m<sup>2</sup> of product calculated according to TRACI 2.1 methodology

Environmental category	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	1.43E+00	1.06E+00
ODP	(kg CFC-11 eq.)	6.96E-07	5.15E-07
AP	(kg SO <sub>2</sub> eq.)	8.24E-03	6.10E-03
EP	(kg N eq.)	9.10E-04	6.73E-04
SFP	(kg O <sub>3</sub> eq.)	6.33E-02	4.68E-02

**GWP<sub>100</sub>**: Global Warming Potential; **ODP**: Ozone Depletion Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **SFP**: Smog Formation Potential.



Table 7: Mapelastic CI: Other environmental indicators, impacts for 1 kg of product and for 1 m<sup>2</sup> of product

Environmental indicator	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
RPEE	MJ	1.01E+00	7.45E-01
RPEM	MJ	-	-
TPE	MJ	1.01E+00	7.45E-01
NRPE	MJ	3.31E+01	2.45E+01
NRPM	MJ	-	-
TRPE	MJ	3.31E+01	2.45E+01
SM	kg	-	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	2.31E-02	1.71E-02

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilization; **TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier; **NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources; **SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels; **W** Net use of fresh water

Table 8: Mapelastic CI: waste production & other output flows, impacts for 1 kg of product and for 1 m<sup>2</sup> of product

Output flow	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
NHW	kg	3.18E-02	2.35E-02
HW	kg	4.21E-03	3.11E-03
RW	kg	0.00E+00	0.00E+00
Components for re-use	kg	-	-
Materials for recycling	kg	-	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HHW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed

## Mapelastic WaterStop

(1 kg of product in bulk)

Table 9: Mapelastic Waterstop: Environmental categories. impacts for 1 kg of product and for 1 m<sup>2</sup> of product calculated according to CML2001 methodology

Environmental category	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	1.43E+00	1.51E+00
ADP <sub>E</sub> (elements)	(kg Sb eq.)	1.01E-02	1.07E-02
ADP <sub>F</sub> (fossil)	(MJ)	3.19E+01	3.36E+01
AP	(kg SO <sub>2</sub> eq.)	8.99E-03	9.46E-03
EP	(kg (PO <sub>4</sub> ) <sup>3-</sup> eq.)	6.92E-04	7.28E-04
ODP	(kg R-11 eq.)	6.99E-07	7.36E-07
POCP	(kg ethylene eq.)	7.28E-04	7.66E-04

**GWP<sub>100</sub>**: Global Warming Potential; **ODP**: Ozone Depletion Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **POCP**: Photochemical Ozone Creation Potential; **ADP<sub>E</sub>**: Abiotic Depletion Potential (elements); **ADP<sub>F</sub>**: Abiotic Depletion Potential (fossil).

Table 10: Mapelastic Waterstop: Environmental categories. impacts for 1 kg of product and for 1 m<sup>2</sup> of product calculated according to TRACI 2.1 methodology

Environmental category	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	1.43E+00	1.50E+00
ODP	(kg CFC-11 eq.)	7.00E-07	7.37E-07
AP	(kg SO <sub>2</sub> eq.)	8.25E-03	8.69E-03
EP	(kg N eq.)	9.16E-04	9.65E-04
SFP	(kg O <sub>3</sub> eq.)	6.35E-02	6.69E-02

**GWP<sub>100</sub>**: Global Warming Potential; **ODP**: Ozone Depletion Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **SFP**: Smog Formation Potential.

Table 11: Mapelastic Waterstop: Other environmental indicators. impacts for 1 kg of product and for 1 m<sup>2</sup> of product

Environmental indicator	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
RPEE	MJ	9.91E-01	1.04E+00
RPEM	MJ	-	-
TPE	MJ	9.91E-01	1.04E+00
NRPE	MJ	3.31E+01	3.48E+01
NRPM	MJ	-	-
TRPE	MJ	3.31E+01	3.48E+01
SM	kg	-	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	2.05E-02	2.16E-02

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilization; **TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier; **NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources; **SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels; **W** Net use of fresh water

Table 12: Mapelastic Waterstop: waste production & other output flows. impacts for 1 kg of product and for 1 m<sup>2</sup> of product

Output flow	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
NHW	kg	3.18E-02	3.35E-02
HW	kg	4.21E-03	4.43E-03
RW	kg	0.00E+00	0.00E+00
Components for re-use	kg	-	-
Materials for recycling	kg	-	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HHW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed

## Mapelastic AquaDefense

(1 kg of product in bulk)

Table 13: Mapelastic Aquadefense: Environmental categories. impacts for 1 kg of product and for 1 m<sup>2</sup> of product calculated according to CML2001 methodology

Environmental category	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	1.45E+00	1.27E+00
ADP <sub>E</sub> (elements)	(kg Sb eq.)	1.01E-02	8.86E-03
ADP <sub>F</sub> (fossil)	(MJ)	3.21E+01	2.83E+01
AP	(kg SO <sub>2</sub> eq.)	9.09E-03	8.00E-03
EP	(kg (PO <sub>4</sub> ) <sup>3-</sup> eq.)	7.52E-04	6.62E-04
ODP	(kg R-11 eq.)	6.97E-07	6.13E-07
POCP	(kg ethylene eq.)	7.42E-04	6.53E-04

**GWP<sub>100</sub>**: Global Warming Potential; **ODP**: Ozone Depletion Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **POCP**: Photochemical Ozone Creation Potential; **ADP<sub>E</sub>**: Abiotic Depletion Potential (elements); **ADP<sub>F</sub>**: Abiotic Depletion Potential (fossil).

Table 14: Mapelastic Aquadefense: Environmental categories. impacts for 1 kg of product and for 1 m<sup>2</sup> of product calculated according to TRACI 2.1 methodology

Environmental category	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	1.44E+00	1.27E+00
ODP	(kg CFC-11 eq.)	6.98E-07	6.14E-07
AP	(kg SO <sub>2</sub> eq.)	8.36E-03	7.36E-03
EP	(kg N eq.)	1.01E-03	8.91E-04
SFP	(kg O <sub>3</sub> eq.)	6.46E-02	5.68E-02

**GWP<sub>100</sub>**: Global Warming Potential; **ODP**: Ozone Depletion Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **SFP**: Smog Formation Potential.

Table 15: Mapelastic Aquadefense: Other environmental indicators. impacts for 1 kg of product and for 1 m<sup>2</sup> of product

Environmental indicator	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
RPEE	MJ	1.01E+00	8.86E-01
RPEM	MJ	-	-
TPE	MJ	1.01E+00	8.86E-01
NRPE	MJ	3.33E+01	2.93E+01
NRPM	MJ	-	-
TRPE	MJ	3.33E+01	2.93E+01
SM	kg	-	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	2.07E-02	1.82E-02

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilization; **TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier; **NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources; **SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels; **W** Net use of fresh water

Table 16: Mapelastic Aquadefense: waste production & other output flows. impacts for 1 kg of product and for 1 m<sup>2</sup> of product

Output flow	Unit	A1 – A3 [for 1 kg of product]	A1 – A3 [for 1 m <sup>2</sup> of product]
NHW	kg	3.18E-02	2.80E-02
HW	kg	4.21E-03	3.70E-03
RW	kg	0.00E+00	0.00E+00
Components for re-use	kg	-	-
Materials for recycling	kg	-	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HHW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed



The CML 2001 (Jan. 2016) and the TRACI 2.1 life cycle impact assessment methodologies are different due to their distinct modeling approaches as well as to the regions they represent. The production of raw materials and the energy for manufacturing give the highest contribution in all impact categories considered and for both CML 2001 and TRACI 2.1. Raw materials extraction and processing show the most relevant environmental load; emulsion polymers and fillers represent the most relevant contribution for all the environmental categories and indicators (up to 99% - see the detail in the plots below).

The electricity consumption during the production phase has a relative contribution up to 5% (in term of  $GWP_{100}$ ) based on the electricity grid mix; more details about the electrical mix used in this EPD are reported in next table:

	Data source	Amount	Unit
Electricity grid mix (US) – 2014	GaBi database	0.614	kg CO <sub>2</sub> -eqv/kWh

The contribution of the module A3 is relevant because the packaging components (plastic parts) have quite high emission factors. The details about the relative contribution of the different modules considered in the system boundaries are shown in Table 17 and Table 18.

Table 17: Environmental impact as percentage according to CML2001 (Jan. 2016) methodology (referred to the three products)

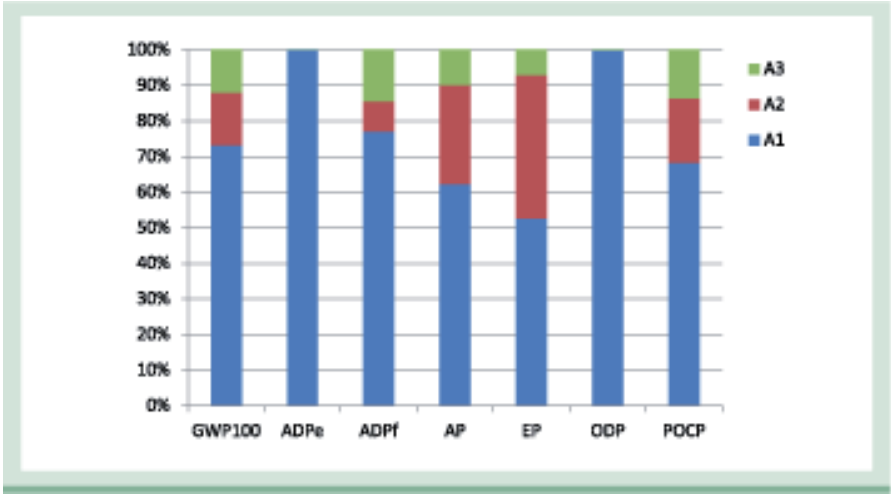


Table 18: Environmental Impact as percentage according to TRACI 2.1 methodology (referred to the three products)



## 8. DATA QUALITY

Table 19: Data quality

Dataset & Geographical reference	Database (source)	Temporary reference
<b>A1; A3</b>		
Emulsion Polymer	EPDLA	2013
Fillers (GLO)	ecoinvent v 3.3	2014
Biocide	ecoinvent 3.3	2013
Additives & others (Packaging components)	ecoinvent v 3.3	2005 - 2017
Electricity grid mix (US)	GaBi Database	2013
<b>A2</b>		
Truck transport (euro 3, 27t payload – GLO)	GaBi Database	2017
Oceanic ship (27500 DWT - GLO)	GaBi Database	2017
Light Train (Gross Ton Weight 500 Tons - GLO)	GaBi Database	2017
Electricity mix (US)	GaBi Database	2014
Diesel for transport (US)	GaBi Database	2014
Heavy Fuel Oil (US)	GaBi Database	2014

All data included in table above refer to a period between 2005 and 2017; all datasets come from global or US databases and they are all less than 10 years old (according to EN 15804 § 6.3.7 “Data quality requirements”).

Primary data concern the year 2017 and represent the whole annual production.

## 9. SIGNIFICANT CHANGES FROM PREVIOUS VERSION

In this version, the results per square meter have been updated.

## 10. VERIFICATION AND REGISTRATION

EPD of construction products may not be comparable if they do not comply with EN 15804.

Environmental product declarations within the same product category from different programs may not be comparable.

### CEN standard EN15804 contenente le PCR

PCR:	PCR 2012:01 Construction products and Construction services, Version 2.2, 2017-05-30
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino Contact via <a href="mailto:info@environdec.com">info@environdec.com</a>
Independent verification of the declaration and data, according to ISO 14025	<input checked="" type="checkbox"/> EPD Process Certification (Internal) <input type="checkbox"/> EPD Verification (external)
Third party verifier:	Certiquality S.r.l. Number of accreditation: 003H rev14
Procedure for follow-up of data during EPD validity involves third-party verifier	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

## 11. REFERENCES

- GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM. VERSION 3.0
- PCR 2012:01; "PRODUCT GROUP CLASSIFICATION: MULTIPLE UN CPC CODES CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES"; VERSION 2.2
- ISO 14044: ENVIRONMENTAL MANAGEMENT - LIFE CYCLE ASSESSMENT - REQUIREMENTS AND GUIDELINES
- ISO 14040: ENVIRONMENTAL MANAGEMENT - LIFE CYCLE ASSESSMENT - PRINCIPLES AND FRAMEWORKS
- ISO 14025: ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES

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