Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

DIATHONITE Family: Diathonite Evolution, Diathonite Acoustix, Diathonite Acoustix+, Diathonite Deumix+, Diathonite Massetto, Diathonite Thermactive.037, Diathonite Sismactive

From ***DIASEN SRL***

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-03516
Publication date:	2021-04-12
Valid until:	2026-04-05

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): *PCR 2019:14 Construction products, Version 1.1*
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006: ☐ EPD process certification ☒ EPD verification
Third party verifier: Certiquality S.r.l. Accredited by: Accredia (Accreditation Number: n.003H Rev. 15)
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

DIASEN ITALIA, as EPD owner, has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Diasen Srl

Contact: Davide Tomassoni

Description of the organisation:
Diasen is an Italian company operating in the ecological building sector, which oriented its production target towards innovative, low environmental impact, high technological content and quality products. For the purpose, the company provides high performance and green solutions in terms of thermal and acoustic insulating systems, waterproofing systems, coatings and coverings for the public, private and sport building sector.
The respect of the legislation, regulations and prescriptions applicable to the environmental protection, as well as to the reduction and control of environmental impacts, are the basic principles that characterize each single project. Since 2007 Diasen has carried out a certified Environmental Management System in compliance with the standard EN ISO 14001. Moreover, **LEED mapping** for 14 key products has been pursued.
Specific attention is paid to the reduction of waste production through a careful and effective activity of monitoring and control, by favouring, when possible, the production of recoverable waste.
Research and Development activity, is focused on the possibility of using raw materials deriving from manufacturing waste or from recoverable waste. The planning phases is oriented to thermo-insulating products to reduce the energy use and consumption inside the house.

Product-related or management system-related certifications: ISO 9001:2015 - EN ISO 14001:2015 – OHSAS 18001

Name and location of production site(s): DIASEN SRL - Zona Ind. Berbentina, 5 - 60041 Sassoferrato (AN) - Italy

Manufacturing

The manufacturing process starts from raw materials storage as they are received from suppliers. For this purpose, some raw materials arrive in big bags, while others come with no packages, thus are stored inside specific silos. These materials are automatically fed in the production mixer. Other materials arrive in their package and are stored in the warehouse. Afterwards, they are sent to the mixer by mean of an electric forklift or fed to the mixer.
Moreover a bulk raw material is stored in specific container and subjected to a proper volume reduction process through a specific milling stage. Subsequently it is added in the production mixer, according to the formula of the products.
The production is a discontinuous process, in which all the components are mechanically mixed in batches. The product is then packaged in bags, placed on wooden pallets, protected with a hooding polymer film and stored in the Finished Products' warehouse. The quality of final product is controlled during the production phase and also before the sale.
This manufacturing process does not involve water and it is almost a close-loop process, without scraps and wastes. Most of the residual dust, collected in the filter system during production, are returned to the production process.

Product information

1. Product name: DIATHONITE EVOLUTION
   Product identification: see table 1
   Product description: Natural plaster, for external wall insulation, formulated with cork, natural hydraulic lime, clay and diatomaceous earth, with high thermal insulation power, sound absorbing, breathable and dehumidifying.
   UN CPC code: 37410 – Plaster
   DIASEN PRODUCT CODE: 1946136;

2. Product name: DIATHONITE ACOUSTIX
Product identification: see table 2
Product description: Natural plaster with high dehumidifying capacity, formulated with cork, pure natural hydraulic lime, clay and Diatomaceous powders. To be used for dehumidification and restoration of walls affected by rising damp.
UN CPC code: 37410 – Plaster
DIASEN PRODUCT CODE: 2006037;

3. Product name: DIATHONITE ACOUSTIX+
Product identification: see table 3
Product description: Premixed plaster used in the production of sound absorbing coatings for wall and ceilings, formulated with cork, clay, Diatomaceous powder, and natural hydraulic lime. It is characterised also by good breathability, thermal insulation, dehumidifying properties and good fire resistance.
UN CPC code: 37410 – Plaster
DIASEN PRODUCT CODE: 2027013;

4. Product name: DIATHONITE DEUMIX+
Product identification: see table 4
Product description: Lightened, macro-porous plaster with by dehumidifying and salt proof Characteristics, which is formulated with cork, clay, and natural hydraulic lime, other than functional additives, improving adhesion to common supports and breathability.
UN CPC code: 37410 – Plaster
DIASEN PRODUCT CODE: 1720500;

5. Product name: DIATHONITE MASSETTO
Product identification: see table 5
Product description: Fibre-reinforced mat formulated with cork, clay, Diatomaceous powder and hydraulic binders to be used in the production of thermally insulating, for slabs, floor and ventilated roofs.
UN CPC code: 37410 - Plaster
DIASEN PRODUCT CODE: 2005273;

6. Product name: DIATHONITE THERMACTIVE.037
Product identification: see table 6
Product description: Natural thermal coat, formulated with expanded amorphous silica, perlite and pumice, natural hydraulic lime. It is characterised by antibacterial properties, fire resistance, porosity and breathability.
UN CPC code: 37410 - Plaster
DIASEN PRODUCT CODE: 2004234;

7. Product name: DIATHONITE SISMACTIVE
Product identification: see table 7
Product description: Natural thermal mortar, formulated with clay, Diatomaceous powder and natural hydraulic lime to be used in combination with reinforcing networks for reinforcing plasters.
UN CPC code: 37410 – Plaster
DIASEN PRODUCT CODE: 2005273;

***Table 1**: Diathonite Evolution.*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,045	UNI EN 1745	EN 998-2
Compression Strength (N/mm^2)	M2,5	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	4	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	0,40	UNI EN 1015-18	
Adhesion (N/mm^2)	$\geq$ 0,10 – FP:B	UNI EN 1015-12	
Specific weight (kg/m^3)	360 ± 20	UNI EN 1015-15	
CI Content (%)	0,011	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide	CE Regulation 1272/2008	

***Table 2**: Diathonite Acoustix.*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,083	UNI EN 1745	EN 998-2
Compression Strength (N/mm^2)	M5	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	4	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	0,35	UNI EN 1015-18	
Adhesion (N/mm^2)	$\geq$ 0,10 – FP:B	UNI EN 1015-12	
Specific weight (kg/m^3)	470 ± 30	UNI EN 1015-15	
CI Content (%)	0,019	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide	CE Regulation 1272/2008	

***Table 3**: Diathonite Acoustix$^+$.*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,075	UNI EN 1745	EN 998-2
Compression Strength (N/mm^2)	M2,5	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	4	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	0,35	UNI EN 1015-18	
Adhesion (N/mm^2)	$\geq$ 0,10 – FP:B	UNI EN 1015-12	
Specific weight (kg/m^3)	400 ± 30	UNI EN 1015-15	
CI Content (%)	0,019	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide	CE Regulation 1272/2008	

***Table 4**: Diathonite Deumix$^+$.*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,055	UNI EN 1745	EN 998-2
Compression Strength (N/mm^2)	M5	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	4	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	0,63	UNI EN 1015-18	
Adhesion (N/mm^2)	$\geq$ 0,10 – FP:B	UNI EN 1015-12	
Specific weight (kg/m^3)	450 ± 10	UNI EN 1015-15	
CI Content (%)	0,015	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide	CE Regulation 1272/2008	

***Table 5**: Diathonite Massetto.*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,060	UNI EN 1745	EN 13813
Compression Strength (N/mm^2)	M10	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	4	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	ND	UNI EN 1015-18	
Adhesion (N/mm^2)	ND	UNI EN 1015-12	
Specific weight (kg/m^3)	600 ± 10	UNI EN 1015-15	
CI Content (%)	ND	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide	CE Regulation 1272/2008	

***Table 6**: Diathonite Thermactive.037*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,037	UNI EN 1745	EN 998-2
Compression Strength (N/mm^2)	M2,5	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	3	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	1,00	UNI EN 1015-18	
Adhesion (N/mm^2)	≥ 0,10 – FP:B	UNI EN 1015-12	
Specific weight (kg/m^3)	250 ± 10	UNI EN 1015-15	
CI Content (%)	0,012	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide, Sodium salt of salicylic acid, Potassium salt of salicylic acid	CE Regulation 1272/2008	

***Table 7**: Diathonite Sismactive.*

Property	Value	Test methodology	Technical specification
Thermal Conductivity (W/mK)	0,065	UNI EN 1745	EN 998-2
Compression Strength (N/mm^2)	M10	UNI EN 998-2	
Fire reaction	Class A1	UNI EN 13501-1	
Vapour permeability coefficient - μ	5	UNI EN 1015-19	
Capillarity water absorption (kg/m^{2}h^{0,5})	0,30	UNI EN 1015-18	
Adhesion (N/mm^2)	≥ 0,50 – FP:B	UNI EN 1015-12	
Specific weight (kg/m^3)	600 ± 60	UNI EN 1015-15	
CI Content (%)	0,015	UNI EN 1015-17	
Hazardous substances	Lime (chemical) - Hydraulic method; Calcium Di-hydroxide	CE Regulation 1272/2008	

For the purpose, the bags used are paper and plastic-based, according to a weight ratio of about 80:20. The product Diathonite Evolution is supplied in 18 kg bags. Diathonite Acoustix, Diathonite Acoustix$^+$ and Diathonite Deumix$^+$ are supplied with 20 kg bags. Diathonite Massetto and Diathonite Sismactive are supplied in 25 kg bags. Diathonite Thermactive.037 is supplied in 15 kg bags.
Over a single euro-pallet, Diathonite Massetto and Diathonite Sismactive are supplied in 50 bags, while all the other products are supplied with 60 bags.

Content information

***Table 8:** Content declaration and substances list for the system Diathonite Evolution.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0.04 ÷ 0.07	310-127-6	61790-53-2	0	-
Cork	0.45 ÷ 0.55	-	-	85 (post-industrial)	100
Clay	0.10 ÷ 0.15	-	-	0	-
Hydraulic Lime	0.10 ÷ 0.15	-	-	0	-
Hydrated Lime	0.15 ÷ 0.19	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0.01	285-561-1	85117-09-5	0	-
Organic Additives	0.04 ÷ 0.07	-	9004-65-3	0	-
Inorganic Additives	< 0.01	143-22-6	205-592-53	0	-

***Table 9:** Content declaration and substances list for the system Diathonite Acoustix.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0.03 ÷ 0.06	310-127-6	61790-53-2	0	-
Cork	0.45 ÷ 0.55	-	-	85 (post-industrial)	100
Clay	0.10 ÷ 0.15	-	-	0	-
Hydraulic Lime	0.10 ÷ 0.15	-	-	0	-
Hydrated Lime	0.15 ÷ 0.19	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0.01	285-561-1	85117-09-5	0	-
Organic Additives	0.05 ÷ 0.08	-	9004-65-3	0	-
Inorganic Additives	< 0.01	68439-49-6	500-49-6	0	-

Table 10: *Content declaration and substances list for the system Diathonite Acoustix^{+}.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0.04 ÷ 0.07	310-127-6	61790-53-2	0	-
Cork	0.47 ÷ 0.52	-	-	85 (post-industrial)	100
Clay	0.10 ÷ 0.15	-	-	0	-
Hydraulic Lime	0.08 ÷ 0.12	-	-	0	-
Hydrated Lime	0.15 ÷ 0.18	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0.01	285-561-1	85117-09-5	0	-
Organic Additives	0.05 ÷ 0.08	-	9004-65-3	0	-
Inorganic Additives	< 0.01	68439-49-6	500-49-6	0	-

Table 11: *Content declaration and substances list for the system Diathonite Deumix^{+}.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0.02 ÷ 0.06	310-127-6	61790-53-2	0	-
Cork	0.42 ÷ 0.48	-	-	85 (post-industrial)	100
Clay	0.11÷ 0.16	-	-	0	-
Hydraulic Lime	0.15 ÷ 0.19	-	-	0	-
Hydrated Lime	0.17 ÷ 0.21	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0.01	285-561-1	85117-09-5	0	-
Organic Additives	0.01 ÷ 0.05	-	9004-65-3	0	-
Inorganic Additives	< 0.01	143-22-6	205-592-53	0	-

Table 12: *Content declaration and substances list for the system Diathonite Massetto.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0,02 ÷ 0,05	310-127-6	61790-53-2	0	-
Cork	0,37 ÷ 0,44	-	-	85 (post-industrial)	100
Clay	0,18 ÷ 0,22	-	-	0	-
Hydraulic Lime	0,14 ÷ 0,18	-	-	0	-
Hydrated Lime	0,16 ÷ 0,20	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0,01	285-561-1	85117-09-5	0	-
Organic Additives	0,01 ÷ 0,05	-	9004-65-3	0	-
Inorganic Additives	< 0,01	143-22-6	205-592-53	0	-

Table 13: *Content declaration and substances list for the system Diathonite Thermactive.037.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0.03 ÷ 0.06	310-127-6	61790-53-2	0	-
Cork	0.48 ÷ 0.51	-	-	85 (post-industrial)	100
Pumice	0.05 ÷ 0.09	-	130885-09-5	0	-
Perlite	0.02 ÷ 0.04	603-719-3	1332-09-8		-
Expanded Silica	0.03 ÷ 0.07	-	-	0	-
Hydraulic Lime	0.10 ÷ 0.15	-	-	0	-
Hydrated Lime	0.12 ÷ 0.16	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0.01	285-561-1	85117-09-5	0	-
Organic Additives	0.4 ÷ 0.07	-	9004-65-3	0	-
Inorganic Additives	< 0.01	143-22-6	205-592-53	0	-

Table 14: *Content declaration and substances list for the system Diathonite Sismactive.*

Components	Weight (%)	EC No.	CAS No.	Recycled material (%)	Renewable material (%)
Diatomaceous powder	0.04 ÷ 0.07	310-127-6	61790-53-2	0	-
Cork	0.42 ÷ 0.48	-	-	85 (post-industrial)	100
Clay	0.11 ÷ 0.16	-	-	0	-
Hydraulic Lime	0.10 ÷ 0.14	-	-	0	-
Hydrated Lime	0.16 ÷ 0.20	215-137-3	1305-62-0	0	-
Polypropylene Fibres	< 0.01	285-561-1	85117-09-5	0	-
Organic Additives	0.03 ÷ 0.06	-	9004-65-3	0	-
Inorganic Additives	< 0.01	143-22-6	205-592-53	0	-

***Table 15**: Raw materials used in the family products of Diathonite.*

Material	Hazard Phrase	Function
Diatomaceous powders	H315; H319; H335	Thermal and Acoustic Insulation
Cork	No	Thermal Insulation
Clay	No	Hygroscopic enhancing properties
Hydrated Lime	H315; H318; H335	Natural and antibacterial binder
Hydraulic Lime	H315; H318; H335	Eco-sustainable binder
Polypropylene Fibres	No.	Flexural and cracking strength
Organic Additives	No	Adhesion, working-ability and Flexibility
Inorganic Additives	H318	Aerating and anti-shrinkage
Pumice	No	Light Thermal and Acoustic Insulation
Perlite	No	Light Thermal and Acoustic Insulation
Expanded silica	N.D.	Light Thermal and Acoustic Insulation

The products are not classified as hazardous or dangerous for the environment in accordance with Directives 67/548/EEC and 1999/45/EC. There are no substances included in the Authorisation List (Attachment XIV) or the Candidate List of Substances of Very High Concern for Authorisation issued by the European Chemicals Agency, nor do they contain such substances.
Under normal storage and use conditions, these products can be handled with no particular precautions or special protective equipment. Detailed composition of products is DIASEN S.r.l, know-how and cannot be published.

LCA information

Product environmental performance was assessed using the Life Cycle Assessment (LCA) method, in accordance with the EN ISO 14044:2006 standard, and the Life Cycle Impact assessment (LCIA) method, in accordance with standard UNI EN 15804:2014, served as the core PCR. On this regards**,** Product Category Rules (PCR) – "Construction Products PCR 2019:14 - Version 1.1" was used as reference document.
Among the other reference standards, the following ones have been take into account for the development of the LCA and the LCIA other than to carry out this EPD:

- ISO 14025:2010 - Environmental labels and declarations - Type III environmental declarations – Principles and procedures;
- ISO 14067:2018 - Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification;
- ISO 15942:2011 - Sustainability of construction works — Environmental product declarations — Communication format business-to-business;
- ISO 21930:2017 - Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services;
- ISO 14020:2000 - Environmental labels and declarations — General principles;
- General Programme Instructions For The International EPD® System - Version 3.01 2019-09-18;

The results of the estimated environmental impacts are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.
The field of application of the different products is quite the same, despite the related properties are a little bit different. Any products could perform several functionalities inside a building component (also different performances), thus the definition of a single and specific functionality for each products is quite difficult. For this reason a declared unit has been taken into account instead of a functional unit, as recommended by the used standardisation.
It can be introduced that for all products considered in the EPD, the "declared unit" is defined as 1.00kg of product, ready to be sold and transported towards the end user (builder), together with the related packaging (bag), already covered with related quote part of plastic film and laid out over the euro pallet on which it is transported on.
It has to be pointed out that the production of the investigated systems takes place inside the Diasen Manufacturing Plant in Sassoferrato (AN) – Italy.
More products can be included in the same EPD if the reference PCRs are the same and if they are made by the same company according to the same production process.

Declared unit and Reference service life :
1 kg of product as dry product mix is defined as Declared Unit (DU).
The environmental impact of 1 kg of powder product (packaging included) for each products involved is described. According to the system boundary of this EPD, a Reference Service Life has not been provided.

Time representativeness: Data are referred to the production carried out in 2020 and have been provided by Diasen Srl. Also data regarding the geographic origin of any raw materials, packaging materials etc. have been provided, as well as the transportation media.

Database and LCA software used: Ecoinvent 3.6 used as a database and SimaPrò Version 9.1.1 as a software

Description of system boundaries:
Cradle to gate (A1–A3).
All the energies and materials inputs and outputs of each phase (among the considered ones) have been included. No data regarding raw materials and components have been neglected, independently on the related contribution over the environmental impact or over any impact indicators.
Modules not accounted in the LCA since they are not assessed are marked as "ND" (Not Declared), as shown in table 16.

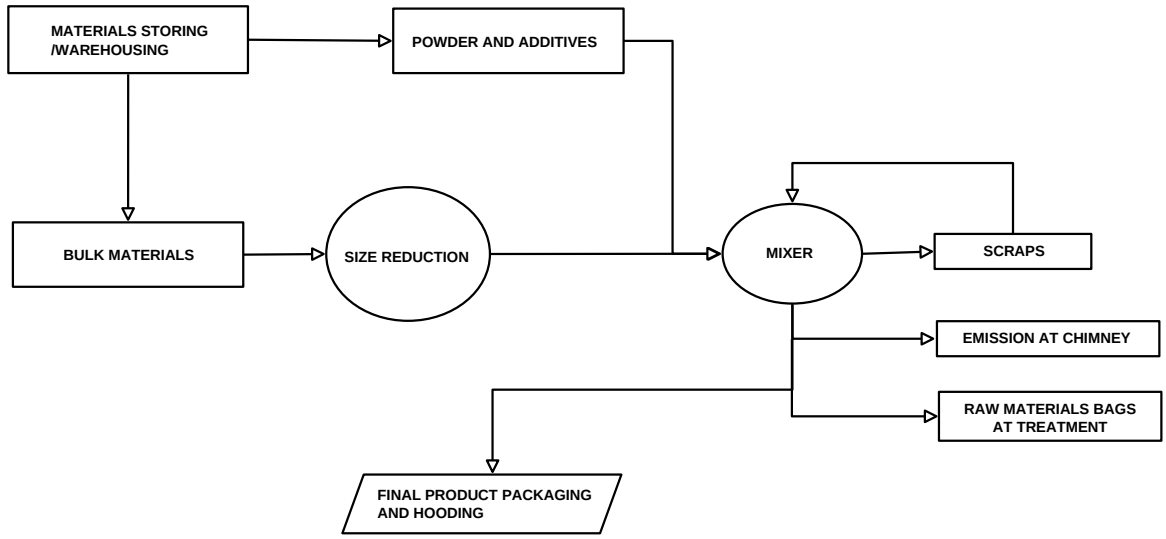


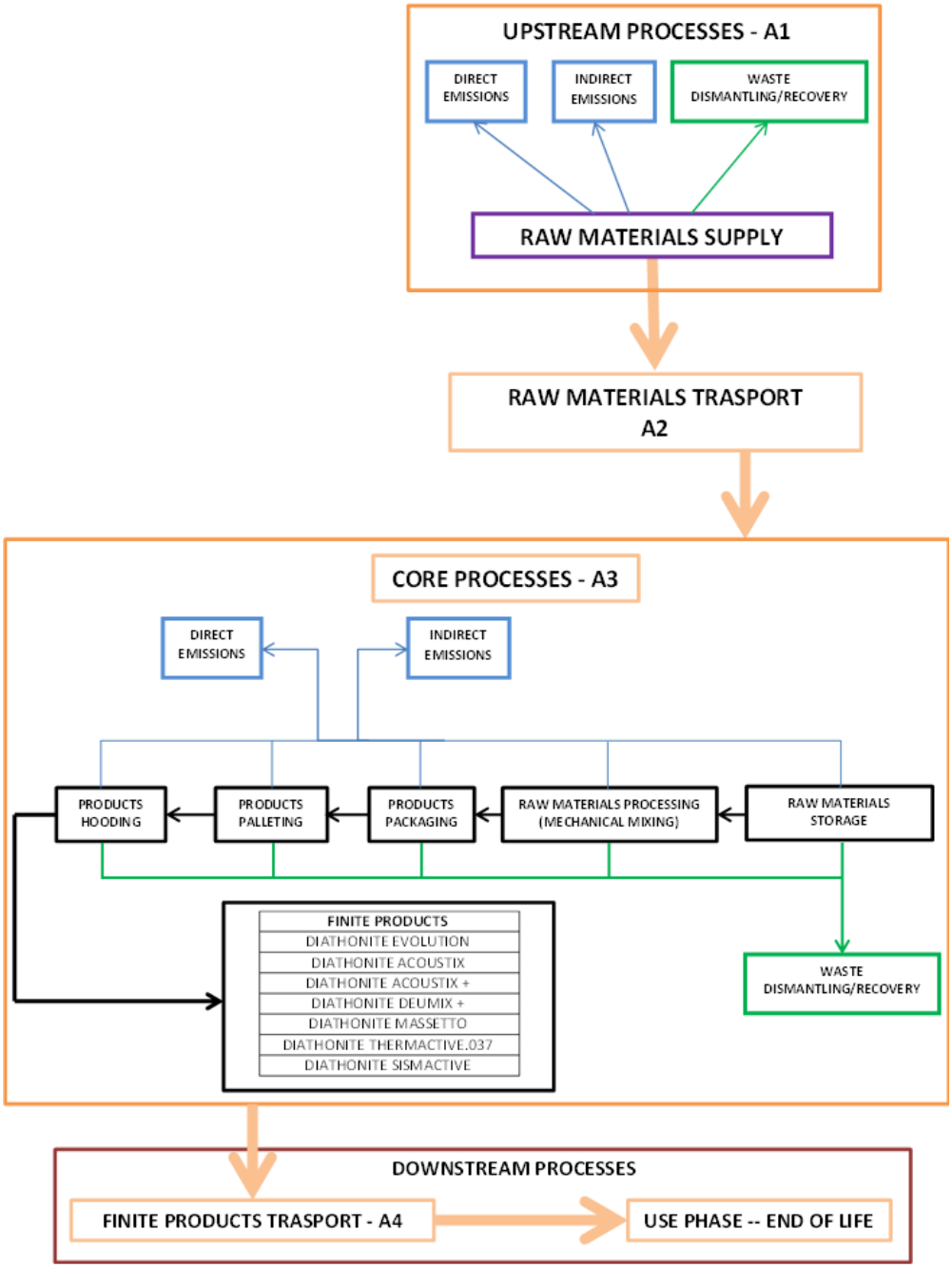
***Figure 1**: Preliminary scheme of the Diathonite family Production phase.*

A low amount of emissions is produced, as the main amount of scraps (powders) are collected by specific filters and re-processed.
The starting point regards the material arrive and storage. The widest part of the raw materials are provided without any packages (Clay, Hydrated and Hydraulic lime, Perlite, Pumice, expanded silica), cork arrive inside big bags. These packages are returned to the raw material provider, thus they are not included inside the system boundaries.
PP fibres are received inside plastic bags, while additives and Diathonite powder inside Kraft paper bags. The weight of the mentioned packages have been measured and included in the system boundaries together the raw materials.
These packages are partially recycled (70% as reported in CONAI database) after the processing phase in a proper plant, as mixed packages.

Transport of raw materials and their related packages, as well as the transport stage of those packages used for the final product's storage have been included (Euro Pallet., PE film and Kraft paper).
Moreover, these latter packages have also been included in the system boundaries.
Some raw materials are conveyed or transported to in the mixing plant as received, while cork is subjected to milling operations and subsequently sent to the mixing plant, as described in the scheme of figure 1.

Exactly the planned amount of each raw materials is processed inside the manufacturing facility (neither variability in each product composition nor averaged amounts have taken into account).

System diagram:



At the end of the mixing time, each product is put inside the related bag, stacked inside the pallet and protected by mean of polyethylene film.
The exact weight of each packaging media has been provided, as well as the energy consumption related to each manufacturing operations.

Table 16: *Reporting table for Diathonite Family: Evolution, Acoustix, Acoustix+, Deumix+, Massetto, Thermactive.037, Sismactive.*

	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	IT	IT	IT	-	-	-	-	-	-	-	-	-	-	-	-	-	-

More information:
Name and contact information of the organisation carrying out the underlying LCA study: University of Perugia – Strada di Pentima, 4 – 05100 –Terni (Italy)

Assumption and Estimation:
In accordance with the General Programme Instructions for the International EPD® System (2015) and the reference PCR, secondary materials -such as cork- are contained only in the Diathonite family. This constituent has be accounted adopting the following approach:

- Environmental impacts related to the "previous life cycle" have not been considered;
- Secondary materials does not need to be processed before the new use;
- Transports to the factory gate have been considered;
- The energy content associated to the secondary material which contains energy (Cork) has been estimated considering the gross calorific value (19,6 MJ/kg) and presented as secondary energy resource (feedstock energy from waste or scraps or similar);

The whole amount of expanded cork is recycled (or it becomes a secondary material), and it comes from the recovering of industrial processing scrap (no end of life but pre-consumer product).

Table 17*: Recycled materials used in the production process of Diasen Product.*

Material	**Weight fraction in Diasen products (%)**	**Recycled content (%)**	**Definition**
Cork	40 ÷ 50	85	PRE-consumer recycled content is defined as materials that are diverted from the manufacturing waste stream and used to make a new product. Normally, the materials are purchased from companies that collect discarded waste from other manufacturers. To qualify, the materials must be considered a waste product and not normally reused by industry within the original manufacturing process. Paper product scraps that must be re pulped can be considered PRE-consumer content

Product	**Recycled Cork (%)**
Diathonite Evolution	38.95
Diathonite Acoustix	
Diathonite Acoustix+	42.50
Diathonite Deumix+	38.25
Diathonite Sismactive	
Diathonite Massetto	34.00
Diathonite Thermactive.037	41.23

About the used additives, both organic and inorganic counterpart, their composition has been modelled according to the information contained in the related technical and safety data sheet, provided by the specific provider.
Transports of both raw materials and packaging, from provider's sites to Diasen Processing plant, have been carried out by mean EURO4 lorries. This data represent the Italian road Transport system average framework.
According to Diasen, scraps have been labelled as powder collected by the suction systems (CER 08.02.01) and as chimney fine powder (E11). The former ones are recovered and introduced again in the processing cycle, while the second one are considered to be emitted as fine powder.
Data regarding the energy exploitation have been provided as an aggregate by the producer, and concern the whole processing cycle of any products dealt with in this document: (Italy Residual Mix).
As for the packaging, this is strongly dependant from the product. In fact, the envelopes are both used as "Distribution Packaging" (e.g.: euro-pallet and PE film are used for transport purposes, handling and protection) and also as "Consumer Packaging" (Kraft paper/plastic bags, with its content, constitutes a sales unit for the final user or consumer (ISO 21067-1:2016).

***Table 18**: Packages for the Diathonite series.*

Product	Evolution	Acoustix	Acoustix^{+}	Deumix^{+}	Massetto	Thermactive.037	Sismactive
Weight (kg/bag)	18.00	20.00	20.00	20.00	25.00	15.00	25.00
N° bag/Pallet	60	60	60	60	50	60	50
Paper bag (kg/kg product)	$1.67*10^{-3}$	$1.50*10^{-3}$	$1.50*10^{-3}$	$1.50*10^{-3}$	$1.20*10^{-3}$	$2.00*10^{-3}$	$1.20*10^{-3}$
Film PE (kg/kg product)	$3.70*10^{-4}$	$3.30*10^{-4}$	$3.30*10^{-4}$	$3.30*10^{-4}$	$3.20*10^{-4}$	$4.40*10^{-4}$	$3.20*10^{-4}$
Euro-pallet (unit/kg product)	$9.30*10^{-4}$	$8.30*10^{-4}$	$8.30*10^{-4}$	$8.30*10^{-4}$	$8.00*10^{-4}$	$1.11*10^{-3}$	$8.00*10^{-4}$

Packaging used for some raw materials and, mainly, the packaging used for transport, handling and containment has been included. The related presence has been also taken into account in the transport phase (A2).
Polypropylene fibres (30 kg) are contained inside a PE bag of 95.36 g, inorganic and organic additives (20 kg) are contained inside a Kraft paper bag (67 g), while Diatomaceous powder (20 kg) inside another kind of Kraft paper bag, whose weight amounts to 65 g. Table 18 contains the information about all the packages included in the final product.

Cut-off criteria:
The consumption of raw materials and energy related to ordinary and extraordinary maintenance operations was not included, as well as energy consumption associated to illumination and heating of personnel, since they were not considered relevant to environmental impact calculations.

No consumption of auxiliary materials and waste related to extraordinary activities (A3), having a periodicity exceeding 3 years, take place.

Allocation criteria:
The production process leads to the production of a single product as an output in any processing cycle. No co-products or by-products are obtained. Moreover, the producer, as mentioned, has been able to provide the main part of the data and energy consumption, as well as scraps and wastes. Consequently no allocation procedures have been needed.
Any product is subjected to batch model production (not continuous production) also at regime, thus, at the end of each single production stage only one product is produced inside the manufacturing facility. After a simple cleaning stage, a completely different material con be processed in the same device.

Data quality:
As introduced, the background data used in this EPD were retrieved from the Ecoinvent 3.6 databank. For inventory modelling, SimaPro 9.1.1 software was used. The geographical reference was Italy, or, to the greatest extent, Central Europe, while the time period spanned the last 5 years.
Data collection included the analysis of internal production and environmental data from Diasen S.r.l. production site, the acquisition of relevant data (site specific data) for all the production processes included in the LCA and the disclosure of information about the energy sources used (Use of Italian Residual Mix[10]).

About the raw materials, the most relevant data are European or specific from supplier. Finally, the reference time period for the LCA (product composition, transport, production rates, etc.) are referred to 2020.

Data comparability:
All the data and results related to Diathonite products were collected and obtained based on the EN 15804 standard, in the context of their final use in the building manufacturing system. Thus, the environmental impacts associated with the Diathonite products are comparable with the environmental impacts of other similar products calculated according to the same UNI EN 15804 standard. EPDs of construction products may not be comparable if they do not comply with UNI EN 15804. Environmental product declaration within the same product category from different programs may not be comparable.

Environmental Information

Environmental profiles of the products covered by this EPD, using the LCA method, have been reported in this section.
As introduced, a "Cradle-to-gate" approach has been carried out, and phases A1-A3 have been included within the system boundaries. Different calculation tools have been used, as recommended by the EPD regulation.

Potential environmental impact – mandatory indicators according to EN 15804

- **Global Warming Potential (GWP):** It is directly linked to Climate Change**,** as a measure of greenhouse gas emissions, such as carbon dioxide and methane. These emissions increase absorption of radiation emitted by the earth, intensifying the natural greenhouse effect;

- **Abiotic Depletion Potential (ADP):** It directly regards the consumption of resources in relation to the corresponding source current availability. The exploitation of non-renewable resources leads to a decrease in the future availability of the related performed functions. This impact category can be shared in depletion of mineral resource elements (ADPE) and non-renewable fossil energy resources (ADPF). In the report these are reported separately;

- **Ozone Depletion Potential (ODP):** This indicator directly regards the increase in the tropospheric zone hole. It is another measure of the emissions of greenhouses gasses, as they increase the absorption of radiation emitted by the earth, which increases also the natural greenhouse effect;

- **Photochemical Ozone Creation Potential (POCP):** Photochemical Smog**.** It is a measure of precursors emissions contributing to ground level smog formation (mainly ozone O_3), produced by the reaction of volatile organic compounds (VOCs) and carbon monoxide in the presence of nitrogen oxides under the influence of UV light. Ground level ozone can be harmful for human and ecosystem health and may also damage agriculture;

- **Acidification Potential (AP):** It is related to the Acid Rains. It is a measure of emissions leading to acidifying effects on the environment. From a technical base point, the involved indicator is a measure of the capacity of a given molecule or chemical species to increase the hydrogen ion (H^+) concentration in the water (lakes, rivers, etc.), thus decreasing the related pH value. Moreover, potential effects include forest and building materials deterioration;

- **Eutrophication Potential (EP):** It regards the Algal Blooms. It is a measure of nutrient enrichment that can lead to an undesirable shift in species composition and elevated biomass production in terrestrial and aquatic ecosystems. It includes potential impacts of excessively high levels of nitrogen and phosphorus macronutrients.

Table 19: *Impact indicators for the system Diathonite Evolution.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$7.42*10^{-1}$	$3.72*10^{-2}$	$2.53*10^{-2}$	$8.05*10^{-1}$
GWP-fossil	kg CO_2 eq.	$7.41*10^{-1}$	$3.72*10^{-2}$	$2.51*10^{-2}$	$8.03*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$4.75*10^{-4}$	$1.11*10^{-5}$	$1.60*10^{-4}$	$6.50*10^{-4}$
GWP-luluc	kg CO_2 eq.	$2.61*10^{-4}$	$1.32*10^{-5}$	$9.67*10^{-5}$	$3.70*10^{-4}$
ODP	kg CFC 11 eq.	$2.02*10^{-7}$	$6.90*10^{-9}$	$1.87*10^{-9}$	$2.11*10^{-7}$
AP	mol H^+ eq.	$2.67*10^{-3}$	$2.24*10^{-4}$	$1.44*10^{-4}$	$3.04*10^{-3}$
	kgSO_2_eq.	$2.28*10^{-3}$	$1.97*10^{-4}$	$1.24*10^{-4}$	$2.60*10^{-3}$
POCP	kg NMVOC eq.	$1.59*10^{-3}$	$2.28*10^{-4}$	$1.27*10^{-4}$	$1.95*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$8.74*10^{-5}$	$2.70*10^{-6}$	$8.97*10^{-6}$	$9.91*10^{-5}$
	kg_ P_eq.	$2.68*10^{-4}$	$8.29*10^{-6}$	$2.75*10^{-5}$	$3.04*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$6.66*10^{-6}$	$2.29*10^{-7}$	$1.11*10^{-6}$	$8.00*10^{-6}$
Eutrophication Terrestrial	mole N_eq.	$5.52*10^{-3}$	$8.00*10^{-4}$	$3.69*10^{-4}$	$6.69*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$3.19*10^{-6}$	$8.82*10^{-7}$	$3.23*10^{-7}$	$4.40*10^{-6}$
ADP-fossil*	MJ	6.03	0.561	0.449	7.04
Water Use	m^3_world eq. depr	$2.28*10^{-3}$	$6.11*10^{-5}$	$5.66*10^{-4}$	0.110

Table 20: *Impact indicators for the system Diathonite Acoustix.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$8.10*10^{-1}$	$3.72*10^{-2}$	$2.29*10^{-2}$	$8.70*10^{-1}$
GWP-fossil	kg CO_2 eq.	$8.09*10^{-1}$	$3.72*10^{-2}$	$2.26*10^{-2}$	$8.69*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$5.20*10^{-4}$	$1.11*10^{-5}$	$1.59*10^{-4}$	$6.90*10^{-4}$
GWP-luluc	kg CO_2 eq.	$3.27*10^{-4}$	$1.32*10^{-5}$	$8.68*10^{-5}$	$4.27*10^{-4}$
ODP	kg CFC 11 eq.	$2.58*10^{-7}$	$6.89*10^{-9}$	$1.69*10^{-9}$	$2.67*10^{-7}$
AP	mol H^+ eq.	$3.17*10^{-3}$	$2.24*10^{-4}$	$1.29*10^{-4}$	$3.52*10^{-3}$
	kgSO_2_eq.	$2.71*10^{-3}$	$1.97*10^{-4}$	$1.11*10^{-4}$	$3.02*10^{-3}$
POCP	kg NMVOC eq.	$1.95*10^{-3}$	$3.22*10^{-4}$	$1.17*10^{-4}$	$2.30*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$1.03*10^{-4}$	$2.70*10^{-6}$	$8.06*10^{-6}$	$1.14*10^{-4}$
	kg_ P_eq.	$3.16*10^{-4}$	$8.29*10^{-6}$	$2.47*10^{-4}$	$3.49*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$7.86*10^{-6}$	$2.29*10^{-7}$	$1.00*10^{-6}$	$9.09*10^{-6}$
Eutrophication Terrestrial	mole N_eq.	$6.55*10^{-3}$	$7.99*10^{-4}$	$3.31*10^{-4}$	$7.68*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$3.83*10^{-6}$	$1.35*10^{-6}$	$2.89*10^{-7}$	$5.00*10^{-6}$
ADP-fossil*	MJ	6.82	0.561	0.404	7.79
Water Use	m^3_world eq. depr	$1.07*10^{-1}$	$1.68*10^{-3}$	$1.98*10^{-2}$	0.128

Table 21: *Impact indicators for the system Diathonite Acoustix$^+$.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$7.71*10^{-1}$	$3.72*10^{-2}$	$2.29*10^{-2}$	$8.31*10^{-1}$
GWP-fossil	kg CO_2 eq.	$7.70*10^{-1}$	$3.72*10^{-2}$	$2.26*10^{-2}$	$8.30*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$5.14*10^{-4}$	$1.11*10^{-5}$	$1.63*10^{-4}$	$6.88*10^{-4}$
GWP-luluc	kg CO_2 eq.	$3.22*10^{-4}$	$1.31*10^{-5}$	$8.68*10^{-5}$	$4.22*10^{-4}$
ODP	kg CFC 11 eq.	$2.39*10^{-7}$	$6.90*10^{-9}$	$1.69*10^{-9}$	$2.48*10^{-7}$
AP	mol H^+ eq.	$2.97*10^{-3}$	$2.26*10^{-4}$	$1.29*10^{-4}$	$3.33*10^{-3}$
	kgSO_2_eq.	$2.50*10^{-3}$	$1.99*10^{-4}$	$1.11*10^{-4}$	$2.81*10^{-3}$
POCP	kg NMVOC eq.	$1.83*10^{-3}$	$2.30*10^{-4}$	$1.17*10^{-4}$	$2.18*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$1.03*10^{-4}$	$3.93*10^{-6}$	$8.06*10^{-6}$	$1.14*10^{-4}$
	kg_ P_eq.	$3.16*10^{-4}$	$8.29*10^{-6}$	$2.47*10^{-6}$	$3.49*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$7.49*10^{-6}$	$2.29*10^{-7}$	$1.00*10^{-6}$	$8.72*10^{-6}$
Eutrophication Terrestrial	mole N_eq.	$6.14*10^{-3}$	$8.05*10^{-4}$	$3.31*10^{-4}$	$7.28*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$3.56*10^{-6}$	$8.73*10^{-7}$	$2.89*10^{-7}$	$4.72*10^{-6}$
ADP-fossil*	MJ	6.52	0.562	0.404	7.49
Water Use	m^3_world eq. depr	$9.98*10^{-2}$	$1.69*10^{-3}$	$1.98*10^{-2}$	0.121

Table 22: *Impact indicators for the system Diathonite Deumix$^+$.*

Results per declared unit – 1.00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$8.61*10^{-1}$	$3.60*10^{-2}$	$2.28*10^{-2}$	$9.20*10^{-1}$
GWP-fossil	kg CO_2 eq.	$8.60*10^{-1}$	$3.60*10^{-2}$	$2.26*10^{-2}$	$9.19*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$5.06*10^{-4}$	$1.08*10^{-5}$	$2.26*10^{-4}$	$7.43*10^{-4}$

GWP-luluc	kg CO_2 eq.	$2.90*10^{-4}$	$1.27*10^{-5}$	$8.69*10^{-5}$	$3.90*10^{-4}$
ODP	kg CFC 11 eq.	$2.60*10^{-7}$	$6.68*10^{-9}$	$1.69*10^{-9}$	$2.68*10^{-7}$
AP	mol H^+ eq.	$3.23*10^{-3}$	$2.16*10^{-4}$	$1.29*10^{-4}$	$3.58*10^{-3}$
	kgSO_2_eq.	$2.76*10^{-3}$	$1.91*10^{-4}$	$1.11*10^{-4}$	$2.76*10^{-3}$
POCP	kg NMVOC eq.	$2.00*10^{-3}$	$2.21*10^{-4}$	$1.17*10^{-4}$	$2.34*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$1.03*10^{-4}$	$2.61*10^{-6}$	$8.06*10^{-6}$	$1.14*10^{-4}$
	kg_ P_eq.	$3.16*10^{-4}$	$8.01*10^{-6}$	$2.47*10^{-5}$	$3.49*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$7.79*10^{-6}$	$2.22*10^{-7}$	$9.83*10^{-7}$	$9.00*10^{-6}$
Eutrophication Terrestrial	mole N_eq.	$6.68*10^{-3}$	$7.73*10^{-4}$	$3.32*10^{-4}$	$7.80*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$3.85*10^{-6}$	$8.55*10^{-7}$	$2.90*10^{-7}$	$5.00*10^{-6}$
ADP-fossil*	MJ	6.98	0.543	0.404	7.93
Water Use	m^3_world eq. depr	$1.08*10^{-1}$	$1.63*10^{-3}$	$1.99*10^{-2}$	0.130

Table 23: *Impact indicators for the system Diathonite Massetto.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$6.53*10^{-1}$	$2.91*10^{-2}$	$1.94*10^{-2}$	$7.02*10^{-1}$
GWP-fossil	kg CO_2 eq.	$6.53*10^{-1}$	$2.91*10^{-2}$	$1.92*10^{-2}$	$7.01*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$3.68*10^{-4}$	$8.73*10^{-6}$	$1.05*10^{-4}$	$4.82*10^{-4}$
GWP-luluc	kg CO_2 eq.	$2.03*10^{-4}$	$9.96*10^{-6}$	$7.33*10^{-5}$	$2.86*10^{-4}$
ODP	kg CFC 11 eq.	$1.17*10^{-7}$	$5.46*10^{-9}$	$1.45*10^{-9}$	$1.24*10^{-7}$
AP	mol H^+ eq.	$2.01*10^{-3}$	$1.77*10^{-4}$	$1.11*10^{-4}$	$2.30*10^{-3}$
	kgSO_2_eq.	$1.72*10^{-3}$	$1.41*10^{-4}$	$9.55*10^{-5}$	$1.96*10^{-3}$
POCP	kg NMVOC eq.	$1.28*10^{-3}$	$1.83*10^{-4}$	$1.02*10^{-4}$	$1.57*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$6.56*10^{-5}$	$2.08*10^{-6}$	$6.82*10^{-6}$	$7.45*10^{-5}$
	kg_ P_eq.	$2.01*10^{-4}$	$6.39*10^{-6}$	$2.09*10^{-5}$	$2.29*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$4.97*10^{-6}$	$1.73*10^{-7}$	$8.23*10^{-7}$	$5.97*10^{-6}$
Eutrophication Terrestrial	mole N_eq.	$4.15*10^{-3}$	$6.31*10^{-4}$	$2.87*10^{-4}$	$5.07*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$2.57*10^{-6}$	$5.71*10^{-7}$	$2.52*10^{-7}$	$3.39*10^{-6}$
ADP-fossil*	MJ	4.86	0.444	0.344	5.65
Water Use	m^3_world eq. depr	$5.57*10^{-2}$	$1.41*10^{-3}$	$1.64*10^{-2}$	0.074

Table 24: *Impact indicators for the system Diathonite Thermactive.037.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$8.18*10^{-1}$	$4.66*10^{-2}$	$3.08*10^{-2}$	$8.95*10^{-1}$
GWP-fossil	kg CO_2 eq.	$8.17*10^{-1}$	$4.66*10^{-2}$	$3.05*10^{-2}$	$8.94*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$6.75*10^{-4}$	$1.34*10^{-5}$	$1.80*10^{-4}$	$8.68*10^{-4}$
GWP-luluc	kg CO_2 eq.	$3.02*10^{-4}$	$1.58*10^{-5}$	$1.19*10^{-4}$	$4.37*10^{-4}$
ODP	kg CFC 11 eq.	$2.44*10^{-7}$	$8.26*10^{-9}$	$2.26*10^{-9}$	$2.55*10^{-7}$
AP	mol H^+ eq.	$3.43*10^{-3}$	$2.63*10^{-4}$	$1.75*10^{-4}$	$3.87*10^{-3}$
	kgSO_2_eq.	$2.92*10^{-3}$	$2.32*10^{-4}$	$1.51*10^{-4}$	$3.30*10^{-3}$
POCP	kg NMVOC eq.	$1.99*10^{-3}$	$2.70*10^{-4}$	$1.59*10^{-4}$	$2.42*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$1.15*10^{-4}$	$3.25*10^{-6}$	$1.10*10^{-5}$	$1.29*10^{-4}$
	kg_ P_eq.	$3.53*10^{-4}$	$9.98*10^{-6}$	$3.38*10^{-5}$	$3.97*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$8.61*10^{-6}$	$2.76*10^{-7}$	$1.35*10^{-6}$	$1.02*10^{-5}$
Eutrophication Terrestrial	mole N_eq.	$6.64*10^{-3}$	$9.45*10^{-4}$	$4.50*10^{-4}$	$8.04*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$3.18*10^{-6}$	$1.08*10^{-6}$	$3.94*10^{-7}$	$4.65*10^{-6}$
ADP-fossil*	MJ	6.93	0.673	0.548	8.15
Water Use	m^3_world eq. depr	$1.21*10^{-2}$	$2.01*10^{-3}$	$2.73*10^{-2}$	0.15

Table 25: *Impact indicators for the system Diathonite Simactive.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. (A1-A3)**
GWP-total	kg CO_2 eq.	$7.94*10^{-1}$	$3.77*10^{-2}$	$1.94*10^{-2}$	$8.51*10^{-1}$
GWP-fossil	kg CO_2 eq.	$7.93*10^{-1}$	$3.77*10^{-2}$	$1.92*10^{-2}$	$8.50*10^{-1}$
GWP-biogenic	kg CO_2 eq.	$4.94*10^{-4}$	$1.13*10^{-5}$	$1.53*10^{-4}$	$6.58*10^{-4}$
GWP-luluc	kg CO_2 eq.	$2.78*10^{-4}$	$1.33*10^{-5}$	$7.32*10^{-5}$	$3.65*10^{-4}$
ODP	kg CFC 11 eq.	$2.40*10^{-7}$	$6.98*10^{-9}$	$1.10*10^{-9}$	$2.48*10^{-7}$
AP	mol H^+ eq.	$3.00*10^{-3}$	$2.25*10^{-4}$	$1.75*10^{-4}$	$3.34*10^{-3}$
	kgSO_2_eq.	$2.57*10^{-4}$	$1.98*10^{-4}$	$9.53*10^{-5}$	$2.86*10^{-3}$
POCP	kg NMVOC eq.	$1.86*10^{-3}$	$2.30*10^{-4}$	$1.02*10^{-4}$	$2.19*10^{-3}$
Eutroph. Aq. Freshwater	kg PO_4^3 eq.	$9.73*10^{-5}$	$2.74*10^{-6}$	$6.81*10^{-6}$	$1.07*10^{-4}$

	kg_ P_eq.	$9.73*10^{-5}$	$8.41*10^{-6}$	$6.81*10^{-6}$	$3.28*10^{-4}$
Eutroph. Aq. Marine	kg_ N_eq.	$7.37*10^{-6}$	$2.32*10^{-7}$	$8.43*10^{-7}$	$8.45*10^{-6}$
Eutrophication Terrestrial	mole N_eq.	$6.21*10^{-3}$	$8.05*10^{-4}$	$2.86*10^{-4}$	$7.30*10^{-3}$
ADP-minerals& metals	kg Sb eq.	$3.61*10^{-6}$	$9.00*10^{-7}$	$2.52*10^{-7}$	$4.76*10^{-6}$
ADP-fossil*	MJ	6.56	0.568	0.343	7.47
Water Use	m^3_world eq. depr	$1.00*10^{-1}$	$1.70*10^{-3}$	$1.63*10^{-2}$	0.118

Use of resources

Table 26: *Use of resources for the system Diathonite Evolution.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	7.73	$8.05*10^{-3}$	0.826	8.56
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.39	0	0	1.39
Total use of renewable primary energy resources - PERT	**MJ**	**9.12**	**$8.05*10^{-3}$**	**0.83**	**9.95**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	6.92	0.61	0.523	8.05
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	**MJ**	**6.92**	**0.61**	**0.523**	**8.05**
Use of secondary materials - SM	kg	0.47	0	0	0.47
Use of non-renewable secondary fuels - NRSF	MJ	0	0	0	0
Use of renewable secondary fuels - RSF	MJ	0	0	0	0
Net Use of Fresh Water - FW	m^3	$2.40*10^{-3}$	$6.11*10^{-5}$	$5.66*10^{-4}$	$3.03*10^{-3}$

Table 27: *Use of resources for the system Diathonite Acoustix.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	7.94	$8.03*10^{-3}$	0.74	8.69
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.39	0	0	1.39
Total use of renewable primary energy resources - PERT	**MJ**	**9.33**	**$8.03*10^{-3}$**	**0.74**	**10.08**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	7.82	0.607	0.47	8.90
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	**MJ**	**7.82**	**0.607**	**0.47**	**8.90**
Use of secondary materials - SM	kg	0.47	0	0	0.47
Use of non-renewable secondary fuels - NRSF	MJ	0	0	0	0
Use of renewable secondary fuels - RSF	MJ	0	0	0	0
Net Use of Fresh Water - FW	m^3	$2.92*10^{-3}$	$6.10*10^{-5}$	$5.07*10^{-4}$	$3.49*10^{-3}$

Table 28: *Use of resources for the system Diathonite Acoustix$^+$.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	8.31	$7.67*10^{-3}$	0.74	9.06
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.48	0	0	1.48

Total use of renewable primary energy resources - PERT	**MJ**	**9.79**	**$7.67*10^{-3}$**	**0.74**	**10.54**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	7.50	0.608	0.47	8.57
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	**MJ**	**7.50**	**0.608**	**0.47**	**8.57**
Use of secondary materials - SM	kg	0.50	0	0	0.50
Use of non-renewable secondary fuels - NRSF	MJ	0	0	0	0
Use of renewable secondary fuels - RSF	MJ	0	0	0	0
Net Use of Fresh Water - FW	m^3	$2.73*10^{-3}$	$6.12*10^{-5}$	$5.07*10^{-4}$	$3.00*10^{-3}$

Table 29: *Use of resources for the system Diathonite Deumix$^+$.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	7.66	$7.44*10^{-3}$	0.742	8.41
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.33	0	0	1.33
Total use of renewable primary energy resources - PERT	MJ	**8.99**	**$7.44*10^{-3}$**	**0.742**	**9.74**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	7.97	0.59	0.47	9.30
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	MJ	**7.97**	**0.59**	**0.47**	**9.30**
Use of secondary materials - SM	kg	0.45	0	0	0.45
Use of non-renewable secondary fuels - NRSF	MJ	8.99	$1.11*10^{-2}$	0.742	0
Use of renewable secondary fuels - RSF	MJ	$2.55*10^{-4}$	$1.67*10^{-5}$	$9.24*10^{-5}$	0
Net Use of Fresh Water - FW	m^3	$2.96*10^{-3}$	$5.91*10^{-5}$	$5.10*10^{-4}$	$3.53*10^{-3}$

Table 30: *Use of resources for the system Diathonite Massetto.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	6.42	$8.43*10^{-3}$	0.685	7.10
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.18	0	0	1.18
Total use of renewable primary energy resources - PERT	**MJ**	**7.60**	**$8.43*10^{-3}$**	**0.685**	**8.28**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	5.53	0.69	0.40	6.41
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	**MJ**	**5.53**	**0.69**	**0.40**	6.41
Use of secondary materials - SM	kg	0.40	0	0	0.40
Use of non-renewable secondary fuels - NRSF	MJ	0	0	0	0
Use of renewable secondary fuels - RSF	MJ	0	0	0	0
Net Use of Fresh Water - FW	m^3	$1.70*10^{-3}$	$4.51*10^{-5}$	$4.20*10^{-4}$	$2.17*10^{-3}$

Table 31: *Use of resources for the system Diathonite Thermactive.037.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	8.09	$9.30*10^{-2}$	1.00	9.10
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.43	0	0	1.43

Total use of renewable primary energy resources - PERT	**MJ**	9.52	$9.30*10^{-2}$	1.00	**10.53**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	7.95	0.728	0.638	9.31
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	**MJ**	7.95	0.728	0.638	9.31
Use of secondary materials - SM	kg	0.485	0	0	0.485
Use of non-renewable secondary fuels - NRSF	MJ	0	0	0	0
Use of renewable secondary fuels - RSF	MJ	0	0	0	0
Net Use of Fresh Water - FW	m^3	$3.19*10^{-3}$	$7.31*10^{-5}$	$6.98*10^{-4}$	$3.96*10^{-3}$

Table 32: *Use of resources for the system Diathonite Sismactive.*

Results per declared unit – 1,00 kg					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Use of renewable primary energy excluding resources used as a raw materials - PERE	MJ	7.58	$7.81*10^{-3}$	0.67	8.26
Use of renewable primary energy resources used as raw materials - PERM	MJ	1.33	0	0	1.33
Total use of renewable primary energy resources - PERT	**MJ**	8.91	$7.81*10^{-3}$	0.67	**9.59**
Use of non-renewable primary energy excluding resources used as a raw materials - PENRE	MJ	7.52	0.615	0.40	8.53
Use of non-renewable primary energy resources used as raw materials PENRM	MJ.	0	0	0	0
Total use of non-renewable primary energy resources - PENRT	**MJ**	7.52	0.615	0.40	8.53
Use of secondary materials - SM	kg	0.45	0	0	0.450
Use of non-renewable secondary fuels - NRSF	MJ	0	0	0	0
Use of renewable secondary fuels - RSF	MJ	0	0	0	0
Net Use of Fresh Water - FW	m^3	$2.75*10^{-3}$	$6.18*10^{-5}$	$4.17*10^{-4}$	$3.23*10^{-3}$

Additional Impact Indicators

Table 33: *Additional Impact Indicators for the system Diathonite Evolution.*

Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**
Particulate matter emission	kg_PM2.5_eq.	$3.64*10^{-4}$	$1.85*10^{-5}$	$9.48*10^{-4}$	$1.33*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$3.25*10^{-2}$	$2.93*10^{-3}$	$2.52*10^{-2}$	$3.80*10^{-2}$
Eco-toxicity (freshwater)	CTUe	3.19	0.30	0.306	3.80
Human Toxicity, carcinogenic effects	CTUh	$1.55*10^{-8}$	$1.09*10^{-9}$	$1.70*10^{-9}$	$1.83*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$7.50*10^{-8}$	$8.48*10^{-9}$	$1.23*10^{-8}$	$9.58*10^{-8}$
Land Use	Kg_C_Deficit	3.03	0.152	0.42	3.60

Table 34: *Additional Impact Indicators for the system Diathonite Acoustix.*

Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**
Particulate matter emission	kg_PM2.5_eq.	$4.50*10^{-4}$	$1.85*10^{-5}$	$9.44*10^{-4}$	$1.41*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$3.41*10^{-2}$	$2.93*10^{-3}$	$2.27*10^{-3}$	$3.93*10^{-2}$
Eco-toxicity (freshwater)	CTUe	3.90	0.30	0.274	4.47
Human Toxicity, carcinogenic effects	CTUh	$1.86*10^{-8}$	$8.47*10^{-10}$	$1.52*10^{-9}$	$2.10*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$9.02*10^{-8}$	$1.24*10^{-8}$	$1.10*10^{-8}$	$1.14*10^{-7}$
Land Use	Kg_C_Deficit	3.15	0.152	0.375	3.68

Table 35: *Additional Impact Indicators for the system Diathonite Acoustix+.*

Indicator	Unit	A1	A2	A3	Tot. A1-A3
Particulate matter emission	kg_PM2.5_eq.	$4.20*10^{-4}$	$1.86*10^{-5}$	$9.44*10^{-4}$	$1.38*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$3.40*10^{-2}$	$2.93*10^{-3}$	$2.27*10^{-3}$	$3.92*10^{-2}$
Eco-toxicity (freshwater)	CTUe	3.64	0.299	0.274	4.21
Human Toxicity, carcinogenic effects	CTUh	$1.75*10^{-8}$	$1.09*10^{-9}$	$1.52*10^{-9}$	$2.01*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$8.44*10^{-8}$	$8.48*10^{-9}$	$1.10*10^{-8}$	$1.04*10^{-7}$
Land Use	Kg_C_Deficit	3.24	0.153	0.375	3.77

Table 36: *Additional Impact Indicators for the system Diathonite Deumix+.*

Indicator	Unit	A1	A2	A3	Tot. A1-A3
Particulate matter emission	kg_PM2.5_eq.	$4.52*10^{-4}$	$1.78*10^{-5}$	$9.44*10^{-4}$	$1.41*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$3.44*10^{-2}$	$2.84*10^{-3}$	$2.27*10^{-3}$	$3.95*10^{-2}$
Eco-toxicity (freshwater)	CTUe	3.93	0.29	0.27	4.50
Human Toxicity, carcinogenic effects	CTUh	$1.87*10^{-8}$	$1.06*10^{-9}$	$1.52*10^{-9}$	$2.13*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$9.09*10^{-8}$	$8.21*10^{-9}$	$1.10*10^{-8}$	$1.10*10^{-7}$
Land Use	Kg_C_Deficit	3.09	0.21	0.38	3.68

Table 37: *Additional Impact Indicators for the system Diathonite Massetto.*

Indicator	Unit	A1	A2	A3	Tot. A1-A3
Particulate matter emission	kg_PM2.5_eq.	$2,.40*10^{-4}$	$1.55*10^{-5}$	$9.41*10^{-4}$	$1.20*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$2.77*10^{-2}$	$2.30*10^{-3}$	$1.91*10^{-3}$	$3.19*10^{-2}$
Eco-toxicity (freshwater)	CTUe	2.25	0.227	0.24	2.72
Human Toxicity, carcinogenic effects	CTUh	$1.15*10^{-8}$	$8.12*10^{-10}$	$1.34*10^{-9}$	$1.37*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$5.53*10^{-8}$	$6.75*10^{-9}$	$9.20*10^{-9}$	$7.13*10^{-8}$
Land Use	Kg_C_Deficit	2.57	0.132	0.35	3.05

Table 38: *Additional Impact Indicators for the system DiathoniteThermactive.037.*

Indicator	Unit	A1	A2	A3	Tot. A1-A3
Particulate matter emission	kg_PM2.5_eq.	$5,21*10^{-4}$	$2,18*10^{-5}$	$9,55*10^{-4}$	$1,50*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$3,36*10^{-2}$	$3,51*10^{-3}$	$3,06*10^{-3}$	$4,02*10^{-2}$
Eco-toxicity (freshwater)	CTUe	3,87	0,362	0,372	4,60
Human Toxicity, carcinogenic effects	CTUh	$1,89*10^{-8}$	$1,32*10^{-9}$	$2,06*10^{-9}$	$2,23*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$9,59*10^{-8}$	$1,02*10^{-8}$	$1,51*10^{-8}$	$1,21*10^{-7}$
Land Use	Kg_C_Deficit	3,24	0,180	0,507	3,93

Table 39: *Additional Impact Indicators for the system Diathonite Sismactive.*

Indicator	Unit	A1	A2	A3	Tot. A1-A3
Particulate matter emission	kg_PM2.5_eq.	$1.86*10^{-4}$	$2.65*10^{-5}$	$9.41*10^{-4}$	$1.38*10^{-3}$
Ionizing radiation, human health	kBq_U235_eq.	$3.32*10^{-2}$	$2.97*10^{-3}$	$1.91*10^{-3}$	$3.81*10^{-2}$
Eco-toxicity (freshwater)	CTUe	3.66	0.304	0.238	4.20
Human Toxicity, carcinogenic effects	CTUh	$1.75*10^{-8}$	$1.11*10^{-9}$	$1.34*10^{-9}$	$2.00*10^{-8}$
Human Toxicity, non-carcinogenic effects	CTUh	$8.50*10^{-8}$	$8.59*10^{-9}$	$9.20*10^{-9}$	$1.03*10^{-7}$
Land Use	Kg_C_Deficit	3.02	0.153	0.343	3.52

Waste production and output flows

Waste production

Table 40: *Flows in final products for Diathonite Evolution.*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	$1.01*10^{-4}$	$1.01*10^{-4}$
Radioactive waste disposed	kg	0	0	0	0

Table 41: *Flows in final products for Diathonite Acoustix.*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	$1.09*10^{-4}$	$1.09*10^{-4}$
Radioactive waste disposed	kg	0	0	0	0

Table 42: *Flows in final products for Diathonite Acoustix^{+} and Sismactive.*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	$1.14*10^{-4}$	$1.14*10^{-4}$
Radioactive waste disposed	kg	0	0	0	0

Table 43: *Flows in final products for Diathonite Deumix^{+}.*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	$5.66*10^{-5}$	$5.66*10^{-5}$
Radioactive waste disposed	kg	0	0	0	0

Table 44: *Flows in final products for Diathonite Massetto.*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	$5.62*10^{-5}$	$5.62*10^{-5}$
Radioactive waste disposed	kg	0	0	0	0

Table 45: *Flows in final products for Diathonite Thermactive.037.*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**
Hazardous waste disposed	kg	0	0	0	0
Non-hazardous waste disposed	kg	0	0	$1.14*10^{-4}$	$1.14*10^{-4}$
Radioactive waste disposed	kg	0	0	0	0

Output flows

Table 46: *Use of resources for the systems of the Diathonite Family (Evolution, Acoustix, Acoustix^{+}, Deumix^{+}, Massetto, Thermactive.037 and Sismactive).*

Results per declared unit					
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot. A1-A3**
Components for re-use	kg	0	0	0	0
Material for recycling	kg	0	0	0	0
Materials for energy recovery	kg	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

NOTE: It has to be specified that Diasen claimed: at the end of the service life of any product dealt with in this document, the products themselves can potentially recycled as inert materials;

Information on biogenic carbon content

According to the document “pcr2019-14 – PCR Construction Products v1.1”, EPDs of type “d” [approach “cradle to gate” (A1-A3)] and type “e” [approach “cradle to gate” (A1-A3) with options of additional modules (A4-A5)] are only possible if the following three conditions are valid:

- the product or material is physically integrated with other products during installation so they cannot be physically separated from them at end of life;
- the product or material is no longer identifiable at end of life as a result of a physical or chemical transformation process;
- the product or material does not contain biogenic carbon;

For this reason the content of “biogenic carbon” hasn’t been determined in the investigated Diasen products. In any case, it has been determined both for the products and the related packaging.

Table 47:*Biogenic carbon content for the products Diathonite Evolution, Acoustix ed Acoustix*$^{+}$*.*

Biogenic Carbon	Unit	Diathonite Evolution	Diathonite Acoustix	Diathonite Acoustix^{+}
Biogenic carbon in the product	Kg C	$2.37*10^{-3}$	$2.53*10^{-3}$	$2.54*10^{-3}$
Biogenic carbon in the packaging	Kg C	$5.87*10^{-4}$	$5.83*10^{-4}$	$5.98*10^{-4}$

Table 48*: Biogenic carbon content for the products Diathonite Deumix*$^{+}$*, Massetto, Thermactive.037 e Sismactive.*

Biogenic Carbon	Unit	Diathonite Deumix^{+}	Diathonite Massetto	Diathonite Thermactive.037	Diathonite Sismactive
Biogenic carbon in the product	Kg C	$2.72*10^{-3}$	$1.77*10^{-3}$	$3.18*10^{-3}$	$2.24*10^{-3}$
Biogenic carbon in the packaging	Kg C	$8.29*10^{-4}$	$3.85*10^{-4}$	$6.60*10^{-4}$	$5.61*10^{-4}$

Additional information

- The company Diasen is certificated ISO 9001, ISO 14001. Moreover a wide amount of its product obtained other specific certification, as Avis Technique (French lab CSTB) and ITF for Sport Flooring system. It is associated to A.N.I.T (Associazione Nazionale Isolamento Termo-Acustico), to the Green Building Council Italia and N.R.C.A - National Roofing Contractors Association.
- The Product of the Diathonite family contains recycled pre-consumer materials (table 17). At the end of their life these ones can be recycled as inert materials.

References

[1] General Programme Instructions For The International EPD® System - Version 3.01 2019-09-18;
[2] Product Category Rules (PCR) - Construction Products PCR 2019:14 - Version 1.1;
[3] ISO 14025:2010 - Environmental labels and declarations - Type III environmental declarations – Principles and procedures;
[4] ISO 14040:2006 - Environmental Management – Life cycle assessment – Principles and framework;
[5] ISO 14044:2006 - Environmental Management – Life cycle assessment – Requirements and guidelines;
[6] ISO 15804:2019 - Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products;
[7] ISO 15942:2011 - Sustainability of construction works — Environmental product declarations — Communication format business-to-business;
[8] ISO 14020:2000 - Environmental labels and declarations — General principles;
[9] Website: https://www.enel.it/content/dam/enel-it/documenti-supporto/mercato libero-luce/Tabella%20Mix%20Energetico%20Enel%20Energia.pdf;
[10] Association of Issuing Bodies, *“European Residual Mixes Results of the calculation of Residual Mixes for the calendar year 2019”.*Version 1.0, 2020-05-29;
[11] L. Dalhgren, H. Stripple, *“A comparative Study of Various Concept for Shopping Bags and Cements Sacks”.* Study commissioned by BillerudKorsnäs AB. IVL Swedish Environmental Research Institute 2016. Report Number: U5732;
[12] Ullmann's Encyclopaedia of Industrial Chemistry (2010). John Wiley & Sons, Inc., Hoboken, USA;

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