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EPD
ENVIRONMENTAL PRODUCT DECLARATION

ECO PLATFORM
EPD
VERIFIED

Environmental Product Declaration

for Epoxy Coatings by ISOMAT

Programme	Programme operator	EPD registration Number
The International EPD® System, www.environdec.com	EPD International AB	EPD-IES-0016840

Publication date	Valid until	Geographical scope
2024-10-18	2029-10-17	Global

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

DUROFLOOR-11
DUROFLOOR-SLF

EPD of multiple products, based on the worst-case results of the product group

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.

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Accredited by	The International EPD® system	

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification

Procedure for follow-up of data during EPD validity involves third party verifier:
☐Yes ☒ No

Product category rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR).

Product category rules (PCR): PCR 2019:14 Construction products, version 1.3.4. Published on 2024.04.30, valid until: 2025.06.20.

CPC CODE: 351, Paints ,varnishes and other related products.

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

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

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

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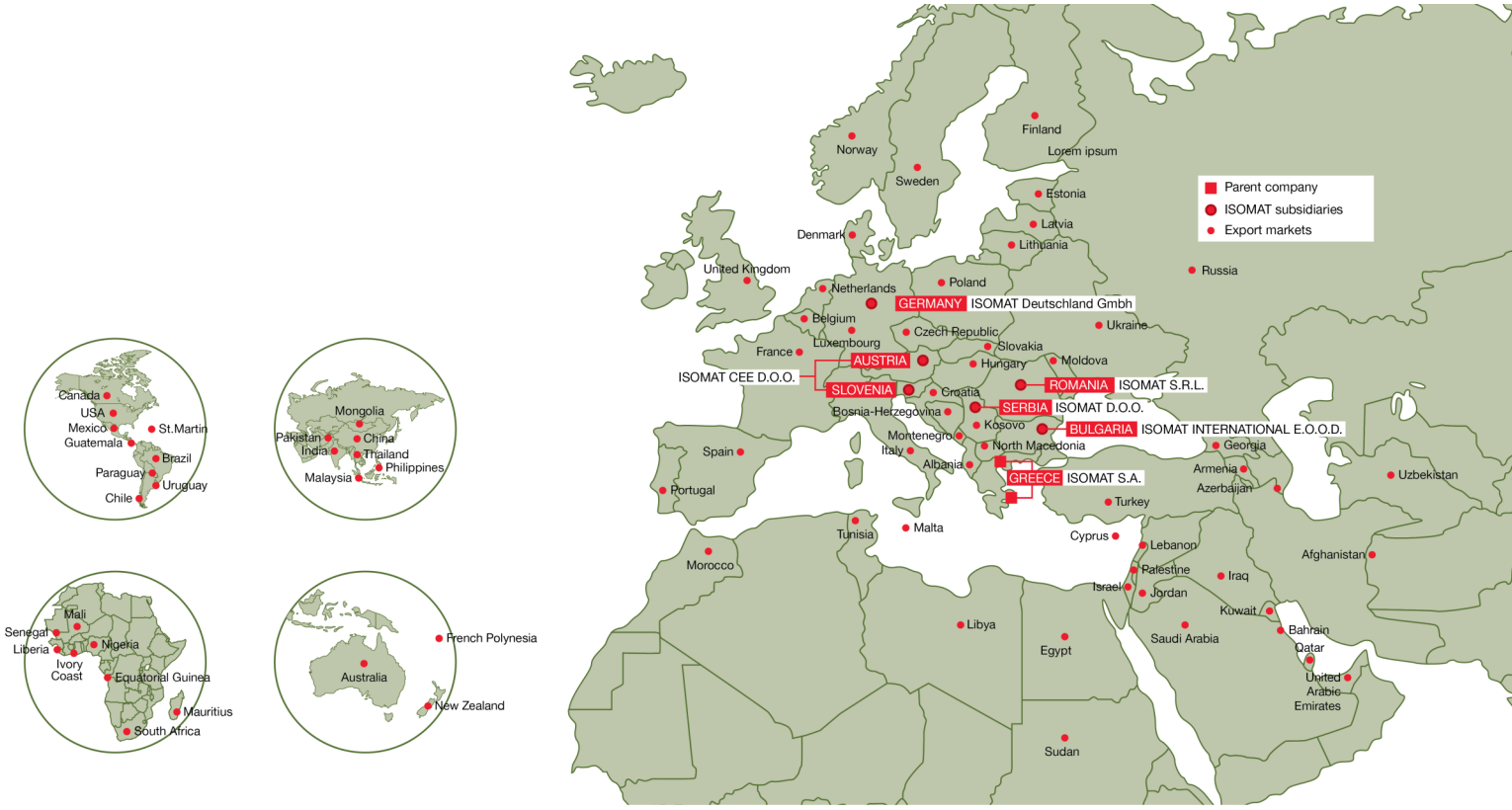
Company Info

ISOMAT is a multinational Group specializing in the development and manufacture of building chemicals, mortars and paints. For 45 years, **ISOMAT** has been making a history of quality, reliability, deep expertise and continuous business growth. It has 3 production plants; one in the parent company in Greece and two in its subsidiaries in Romania and Serbia. In addition, it has 3 commercial subsidiaries in Germany, Slovenia, and Bulgaria and exports to over 80 countries worldwide.



The **ISOMAT** Group produces and distributes an extensive range of high-quality products falling into the following 8 categories:

- Waterproofing
- External Thermal Insulation
- Paints & Surface Protection
- Tile & Natural Stone Installation
- Concrete Admixtures & Repair Products
- Masonry Construction & Repair
- Industrial Floorings
- Microcement Coatings & Decorative Floorings

Staying true to its vision of being a leading partner to the global construction industry by providing reliable and innovative integrated solutions, **ISOMAT** invests in Research and Development with sustainability at the core of new product development and existing product improvement. Drawing on scientific knowledge, its dedicated team of experts at 7 R&D centers and 3 Quality Control labs (in Greece and its subsidiaries in Serbia and Romania) develops numerous pioneering products each year, while optimizing existing ones to align with the ever-evolving market demands and the latest technological advancements in the construction industry.

Energy, Quality and Social Responsibility Policies

For **ISOMAT**, its people are the most valuable asset, and investing in them is a key factor in its continuous evolution. The primary focus areas include ensuring safe and healthy working conditions and offering ongoing training through technical and educational seminars. Furthermore, **ISOMAT** actively engages in corporate social responsibility, supporting socially vulnerable groups, public benefit foundations, hospitals, educational institutions, and public services. Moreover, with a strong customer-centric approach, **ISOMAT** adeptly addresses its customers' ever-changing needs while delivering an exceptional service experience.

ISOMAT adheres to legislative requirements, the ISO 9001 standard, and other international standards, which underpin its product certifications. The effectiveness of the Quality Management System is consistently improved, with measurable quality targets set and reviewed on an annual basis. These objectives are outlined in the annual quality review.

Sustainability is a strategic priority for the **ISOMAT** Group. **ISOMAT** implements Energy and Environmental Management systems, certified according to ISO 50001 and ISO 14001, to reduce the consumption of available natural resources, including water, and save energy and associated emissions during the production process. **ISOMAT** has incorporated the processes of both the Energy and the Environmental Management systems into its standard operating procedures by investing in high energy efficiency equipment which enable producing its products with minimal impact on the environment and ensure compliance with the National and European environmental legislation. Staying true to its commitment to reducing its carbon footprint, **ISOMAT** installed a 1MW rooftop solar PV power system at its headquarters in Thessaloniki, Greece. In addition, **ISOMAT**'s new EPS (expanded polystyrene) production unit, is the first in Greece and currently the only one of its kind operating with zero direct carbon dioxide emissions. The unit also features a zero waste EPS recycling system. Moving towards a circular economy, **ISOMAT** joined the "In the Loop" environment-driven platform in May 2022, systematically separating and collecting its plastic waste so that new, sustainable products can be produced. Last but not least, aiming towards a more sustainable future, **ISOMAT** is continuously developing and producing premium-quality products that contribute to a healthy living and working environment. These products have received internationally recognized certifications for both their technical characteristics and their friendliness towards applicators, end-users, and the environment.

PREMISES

Product Info

In this EPD, worst-case results of two epoxy products (DUROFLOOR-11, DUROFLOOR-SLF) will be presented. The products are manufactured in ISOMAT premises in Agios Athanasios, Greece.

Epoxy Coatings
DUROFLOOR-11
DUROFLOOR-SLF

DUROFLOOR-11

DUROFLOOR-11 is a two-component, colored epoxy system offering high strength and abrasion resistance. It is resistant to organic and inorganic acids, alkalis, petroleum products, waste, water, seawater, and numerous solvents. It is resistant to temperatures from -30°C to +100°C in dry loading and up to +60°C in wet loading. DUROFLOOR-11 is used as a roller-applied coating on cement-based, steel or iron surfaces requiring high mechanical strength or chemical resistance. It can also be used as a self-leveling epoxy flooring on cement-based floors with the addition of quartz sand with a particle size of 0.1-0.4 mm (or M32 sand). Suitable for industrial facilities, warehouses, shopping malls, supermarkets, hotels, parking garages, heavy-traffic areas, gas stations, auto repair shops, slaughterhouses, laboratories, hospitals, wineries, canning factories, etc.

Certified according to EN 1504-2 and classified as coating for surface protection of concrete. Also certified according to EN 13813 and classified as SR-B2.0-AR0.5-IR4. CE marked.

DUROFLOOR-SLF

DUROFLOOR-SLF is a two-component, colored, self-leveling epoxy system offering high strength and abrasion resistance. It is resistant to organic and inorganic acids, alkalis, petroleum products, waste, water, seawater and numerous solvents. s. It is resistant to temperatures ranging from -30°C to +100°C in dry loading and up to +60°C in wet loading. DUROFLOOR-SLF is used as a pourable, self-leveling floor coating on cement-based floors requiring high mechanical strength or chemical resistance. Suitable for industrial facilities, warehouses, shopping malls, supermarkets, hotels, parking garages, heavy-traffic areas, gas stations, auto repair shops, slaughterhouses, laboratories, hospitals, wineries, canning factories, etc.

Certified according to EN 1504-2 and classified as coating for surface protection of concrete. Also certified according to EN 13813 and classified as SR-B2,0-AR0,5-IR4. CE marked.

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Technical Specifications		
Specification	**DUROFLOOR-11**	**DUROFLOOR-SLF**
Form	Two-component epoxy resin	Two-component epoxy resin
Color	3 RAL colors and other upon order	3 RAL colors and other upon order
Density (A+B)	1,40 kg/l	1,40 kg/l
Viscosity	1.400 mPa*s	1.400 mPa*s
Mixing ratio (A:B)	100:24 per weight	100:24 per weight
Abrasion resistance (EN 13892-4)	< 50 μm	< 50 μm
Compressive strength (EN 13892-2)	≥ 45 N/mm^2	≥ 45 N/mm^2
Flexural strength (EN 13892-2)	≥ 30 N/mm^2	≥ 20 N/mm^2
Adhesion strength	≥ 3 N/mm^2	≥ 3 N/mm^2
Reaction to fire (EN 13501-1)	B_{fl}– s1	B_{fl}– s1
Hardness (SHORE D)	80	80

According to the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation, the product does not contain any substance included in the Candidate List of Substances of Very High Concern (SVHCs) for authorization with concentrations higher than 0.1% weight by weight (w/w).

DUROFLOOR- 11/DUROFLOOR-SLF			Composition (kg per kg of product/ component)	Biogenic carbon content (kg C per kg of product)
Raw materials	component A	Bisphenol	0,30-0,60	-
		Benzyl alcohol	0,01-0,08	-
		Titanium dioxide	0,01-0,10	-
		Quartz sand	0,35-0,60	-
		Other organic compounds	<0,02	-
	component B	Polyamine adduct hardeners	1	-
Packaging materials		Steel drums	7,43E-02	-

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System Boundaries

	Product stage			Construction stage		Use stage							End-of-life stage				Resource recovery stage
	Raw Materials Supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction and demolition	Transport	Waste processing for re-use, recovery and/or recycling	Disposal	Re-use-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**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Geography	**EU**	**EU**	**GR**	**GR**	**GR**	**GLO**	**GLO**	**GLO**	**GLO**	**GLO**	**GLO**	**GLO**	**EU**	**EU**	**EU**	**EU**	**EU**
GWP-GHG share of Specific data used	**12,6%**			—	—	—	—	—	—	—	—	—	—	—	—	—	—
Variation-products	**Deviation up to 1,97%, in GWP-GHG**			—	—	—	—	—	—	—	—	—	—	—	—	—	—
Variation-sites	**0%**			—	—	—	—	—	—	—	—	—	—	—	—	—	—

Product stage (A1-A3)

Product stage (modules A1-A3) includes raw material supply, transportation, and manufacturing.

A1: Raw Material Supply

Production starts with the material supply. This module includes the mining and pretreatment processes before production (processing of raw materials, generation of electricity and fuels required for the manufacturing). Bisphenol, benzyl alcohol, quartz sand and other hardeners and additives are the main raw materials. Furthermore, electricity production and transmission is included in this module.

A2: Transportation of raw materials to manufacturer

Transportation is relevant to the delivery of raw materials from the supplier to the gate of manufacturing plant. Raw materials are transported to the manufacturing site of ISOMAT in Agios Athanasios, Greece from suppliers located mainly in Central Europe. A EURO5 lorry 16-32 metric ton was assumed for road transportation and a bulk carrier for dry goods for sea transportation.

A3: Manufacturing

This module incorporates all impacts related to the manufacturing stage of products. Electricity production and transmission, waste management and direct emissions (if any) are included here. Personnel-related activities, such as transportation of employees to and from work, and production of infrastructure and capital goods are not included in the scope of this study.
The manufacturing process includes the following steps:

- **Quality Control:** The raw materials undergo rigorous testing to ensure they meet the company's quality standards.
- **Storage:** Materials are stored in controlled environments to prevent contamination or degradation before use.
- **Batch Preparation:** Raw materials are weighed and measured according to precise formulations.
- **Mixing:** The materials are then mixed in industrial mixers to achieve a homogeneous blend.
- **Packaging:** The final product is packaged into steel drums.

Construction/Installation stage (A4-A5)

Modules A4 & A5 are also included in the study. The scenarios included are currently in use and are representative for one of the most probable alternatives. Additional declaration of representative mixes for the relevant region is permissible.

A4 : Transport

This stage incorporates all impacts related to the transportation of final products to the construction/installation stage. It is assumed that the final products cover an average distance of 500 km from the manufacturing site of Agios Athanasios to the construction site. ISOMAT takes on projects from all over Greece (and mainly Athens), so this assumption is quite representative.

Scenario information	Unit (expressed per functional unit or per declared unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat etc.	EURO 5 truck, diesel
Distance	500 km
Capacity utilisation (including empty returns)	100%
Bulk density of transported products	Not applicable
Volume capacity utilisation factor (factor: =1 or <1 or ~1 for compressed or nestedpackaged products)	Not applicable

A5: Construction installation

This module in general includes the impacts during the installation of epoxy products and polyurea membranes into the building (from electricity required), as well as the treatment of packaging materials (steel drums) after the installation. In epoxy products, energy is consumed when mixing and homogenizing the components before their application. The energy consumed is 0.075 kWh/kg, since it is a 1500-Watt power drill that is used for about 3 minutes for homogenization.

Finally, for waste packaging treatment, it is assumed that 85% of steel packaging is going to be recycled and 15% is going to be landfilled, according to the 7th Global study of World Steel Association. (https://worldsteel.org/wp-content/uploads/Life-cycle-inventory-LCI-study-2020-data-release.pdf)

Scenario information	Unit (expressed per functional unit or per declared unit)
Ancillary materials for installation (specified by material);	Not applicable
Water use	Not applicable
Other resource use	Not applicable
Quantitative description of energy type and consumption during the installation process	Greek electricity grid mix: 0,075 kWh
Waste materials on the building site before waste processing, generated by the product's installation (specified by type)	Not applicable
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	Waste packaging materials (steel drums):): 7,43E-02 kg
Direct emissions to ambient air, soil and water	Not applicable

Use stage (B)

Modules B (B1-B7) incorporate all possible emissions during the use stage, including operation energy and water use during the product's life span, refurbishment, replacement, repair and maintenance. In this project, although these modules are taken into account, it is assumed that they have zero environmental impact.

End of life stage (C1-C4)

The end-of-life stages begin with the deconstruction and demolition from the installation site and then the waste is transferred for disposal of the product. The scenarios included are currently in use and are representative for one of the most probable alternatives. Additional declaration of representative mixes for the relevant region is permissible.

C1: De-construction and demolition

This stage concerns the impact arising from energy required during demolition process. It is assumed that the energy needed for the de-construction of final products is the same as module A5.

C2: Transportation to waste processing

This module includes the transportation of the discarded product to landfills for final disposal. A distance of 50 km by lorry 16-32 tonnes from construction/demolition sites to scrap dealers and disposal sites has been chosen as a conservative assumption.

C3: Waste processing for reuse, recovery and/or recycling

This module includes the impacts arising from potential recycling/reuse of final products after their life cycle. As an assumption and worst-case scenario, final products are going to be 100% disposed after their life cycle. Thus, environmental impacts in C3 module are considered to be zero.

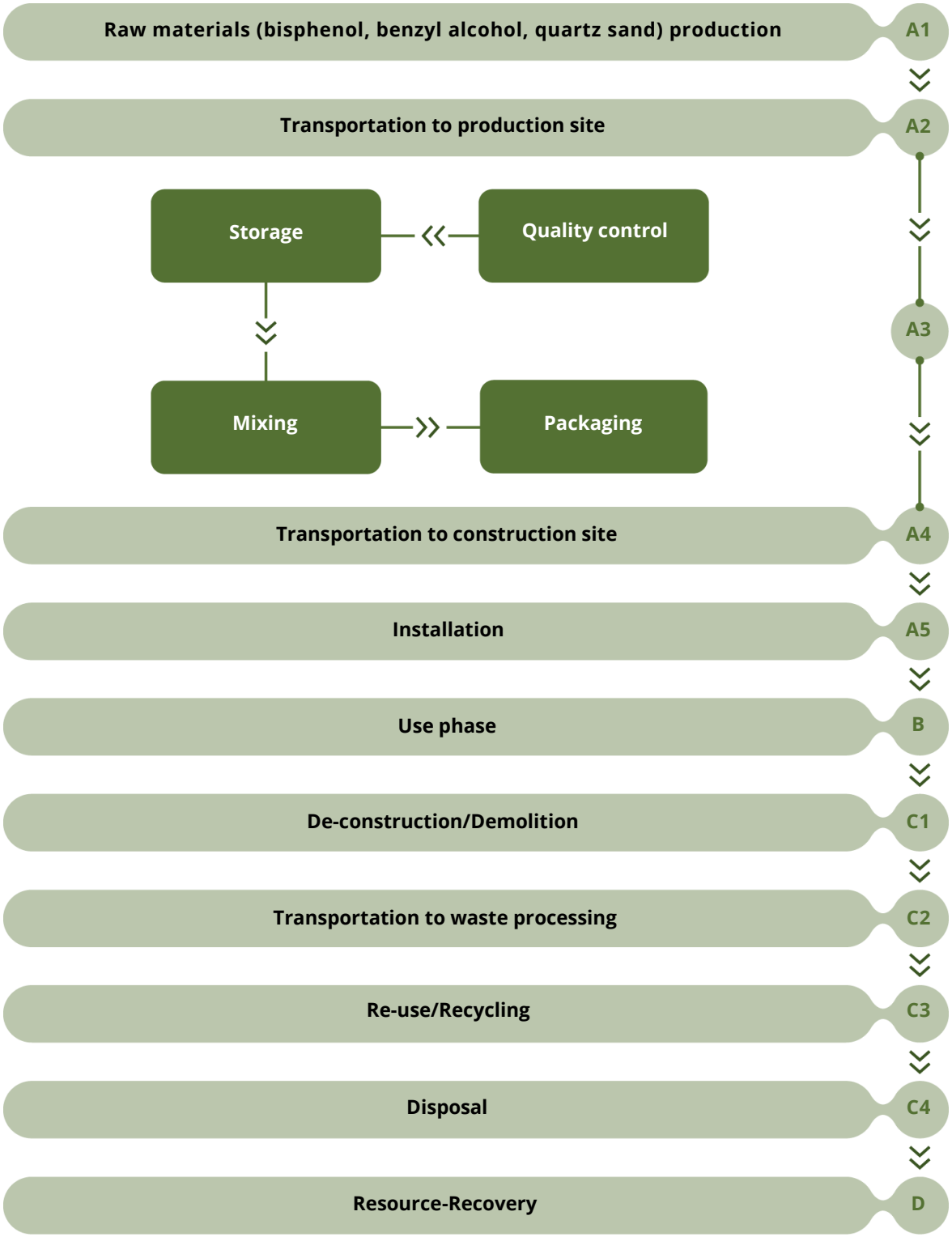
C4: Disposal

This module includes the impacts arising from potential disposal of final products after their life cycle. As an assumption and worst-case scenario, final products are going to be 100% disposed after their life cycle.

Resource and recovery stage (D)

D: Reuse-Recovery-Recycling-potential

Module D generally includes potential avoided burdens related to the potential reuse and/or recycling of the product after its end-of-life stage. In this case, since the product is assumed to be 100% landfilled, only the environmental benefits from the reuse of the part of steel drums (for packaging) that is recycled is taken into account.


Raw materials (bisphenol, benzyl alcohol, quartz sand) production
A1
Transportation to production site
A2
Storage
Quality control
A3
Mixing
Packaging
Transportation to construction site
A4
Installation
A5
Use phase
B
De-construction/Demolition
C1
Transportation to waste processing
C2
Re-use/Recycling
C3
Disposal
C4
Resource-Recovery
D

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LCA Information

Declared unit:

The declared unit is 1 kg of DUROFLOOR-11 & DUROFLOOR-SLF epoxy products, based on worst-case results. The case is that each of the two epoxy products are composed of two components, (A) & (B), with a certain mixing ratio. The components (A) and (B) are not standalone products.

DUROFLOOR-11:

Mixing ratio (A:B): 100 : 24. So, the declared unit of DUROFLOOR-11 means 0,81 kg of component (A) and 0,19 kg of component (B).

DUROFLOOR-SLF:

Mixing ratio (A:B): 100 : 24. So, the declared unit of DUROFLOOR-SLF means 0,81 kg of component (A) and 0,19 kg of component (B).

Goal and Scope:

This EPD evaluates the environmental impacts of the production of 1 kg DUROFLOOR-11 & DUROFLOOR-SLF epoxy products from cradle to gate (modules A1-A3) with options (A4 -A5, B1-B7, C1-C4 and modules D)-Type b EPD.

System Boundary:

The system boundaries are set to be cradle to gate (modules A1-A3) with options (A4 -A5, B1-B7, C1-C4 and modules D).

Cut-off:

The cut-off criteria adopted is as stated in "EN 15804:2012+A2:2019". Where there is insufficient data for a unit process, the cut-off criteria are 1% of the total mass of input of that process. The total of neglected input flows per module is a maximum of 5% of energy usage and mass. In this case, no cut-off was applied to any stream.

Allocations:

Allocation rules have been performed in accordance with the requirements of ISO 14044:2006. Where allocation cannot be avoided, the inputs and outputs of the system were partitioned between its different products or functions in a way that reflects the underlying physical or economic relationships between them. Mass allocation is applied to energy carriers (electricity) and waste produced during the manufacturing process, based on the mass of the final epoxy products studied and total quantities of epoxy production line.

Data quality:

ISO 14044 was applied in terms of data collection and quality requirements. The impact of the production of raw materials recovered from Ecoinvent database v.3.9.1+EN 15804 add-on. The data concerning the modules A2 (Transportation) and A3 (Product manufacturing) were provided by ISOMAT and concerns the full year 2023. These data were the quantities of all input and output materials extracted from the company's SAP system and products recipes, the consumed utilities (energy) and the distances and means of transport for each input stream. Regarding electricity mix, the latest (2023) national residual electricity mix as published in DAPEEP SA was utilized. In 2023, ISOMAT consumed both electricity derived from grid and electricity from solar panels. The climate impact of electricity from grid is 0,4987 kg CO_2 eq./kWh according to DAPEEP, while impact for the production of solar energy is 0,046 kg CO_2 eq./kWh, according to a representative dataset from Ecoinvent. The end-of-life are based on the most representative scenarios for this product. Background data for this stage are retrieved from Ecoinvent v.3.9.1+EN 15804 add-on.

Geographical Scope:

Worldwide

Time representativeness:

Data obtained refer to the year 2023

Software used:

OpenLCA v.2.1

Reference package (JRC):

Based on characterization factors from EF 3.1.

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Environmental Performance

The results of life cycle assessment for 1 kg of the worst-case product of DUROFLOOR-11 & DUROFLOOR-SLF are presented below. The deviations of each product from the declared are presented in Appendix. The use of the results of modules A1-A3 is discouraged without considering the results of module C. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

IMPACTS	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	2.45E+00	9.43E-02	5.47E-02	0.00E+00	5.30E-02	1.89E-02	0.00E+00	1.03E-01	-3.52E-02
GWP-fossil	kg CO_2 eq	2.44E+00	9.41E-02	5.47E-02	0.00E+00	5.30E-02	1.88E-02	0.00E+00	1.03E-01	-3.47E-02
GWP-biogenic	kg CO_2 eq	6.38E-03	8.23E-05	0.00E+00	0.00E+00	-2.43E-05	1.65E-05	0.00E+00	7.30E-05	-4.91E-04
GWP-luluc	kg CO_2 eq	1.17E-03	4.57E-05	6.68E-06	0.00E+00	4.24E-06	9.14E-06	0.00E+00	8.65E-06	-4.42E-05
GWP-GHG[1]	kg CO_2 eq	2.44E+00	9.42E-02	5.47E-02	0.00E+00	5.30E-02	1.88E-02	0.00E+00	1.03E-01	-3.47E-02
ODP	kg CFC-11 eq	5.49E-08	2.05E-09	2.13E-09	0.00E+00	2.11E-09	4.10E-10	0.00E+00	2.78E-10	-4.65E-10
AP	mol H+ eq	1.29E-02	3.07E-04	2.36E-04	0.00E+00	2.17E-04	6.14E-05	0.00E+00	8.37E-05	-1.56E-04
EP-freshwater	kg P eq	6.50E-04	6.59E-06	5.03E-05	0.00E+00	4.93E-05	1.32E-06	0.00E+00	1.53E-06	-1.92E-05
EP-marine	kg N eq	1.98E-03	1.06E-04	4.58E-05	0.00E+00	4.13E-05	2.11E-05	0.00E+00	3.13E-05	-3.43E-05
EP-terrestrial	mol N eq	2.03E-02	1.11E-03	3.95E-04	0.00E+00	3.45E-04	2.23E-04	0.00E+00	3.34E-04	-3.52E-04
POCP	kg NMVOC eq	1.03E-02	4.59E-04	1.48E-04	0.00E+00	1.33E-04	9.17E-05	0.00E+00	1.38E-04	-1.14E-04
ADPe	kg Sb eq	1.42E-05	3.09E-07	1.29E-07	0.00E+00	2.76E-08	6.19E-08	0.00E+00	2.52E-08	-1.99E-07
ADPf	MJ	5.69E+01	1.34E+00	7.72E-01	0.00E+00	7.48E-01	2.69E-01	0.00E+00	2.57E-01	-5.05E-01
WDP	m3 eq	1.43E+00	6.59E-03	4.36E-03	0.00E+00	3.98E-03	1.32E-03	0.00E+00	1.44E-03	-1.84E-02

[1] GWP-GHG indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product, with characterization factors (CFs) based on IPCC (2013).

[2] The results of this environmental impact indicators of ADPf, ADPe and WDP shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

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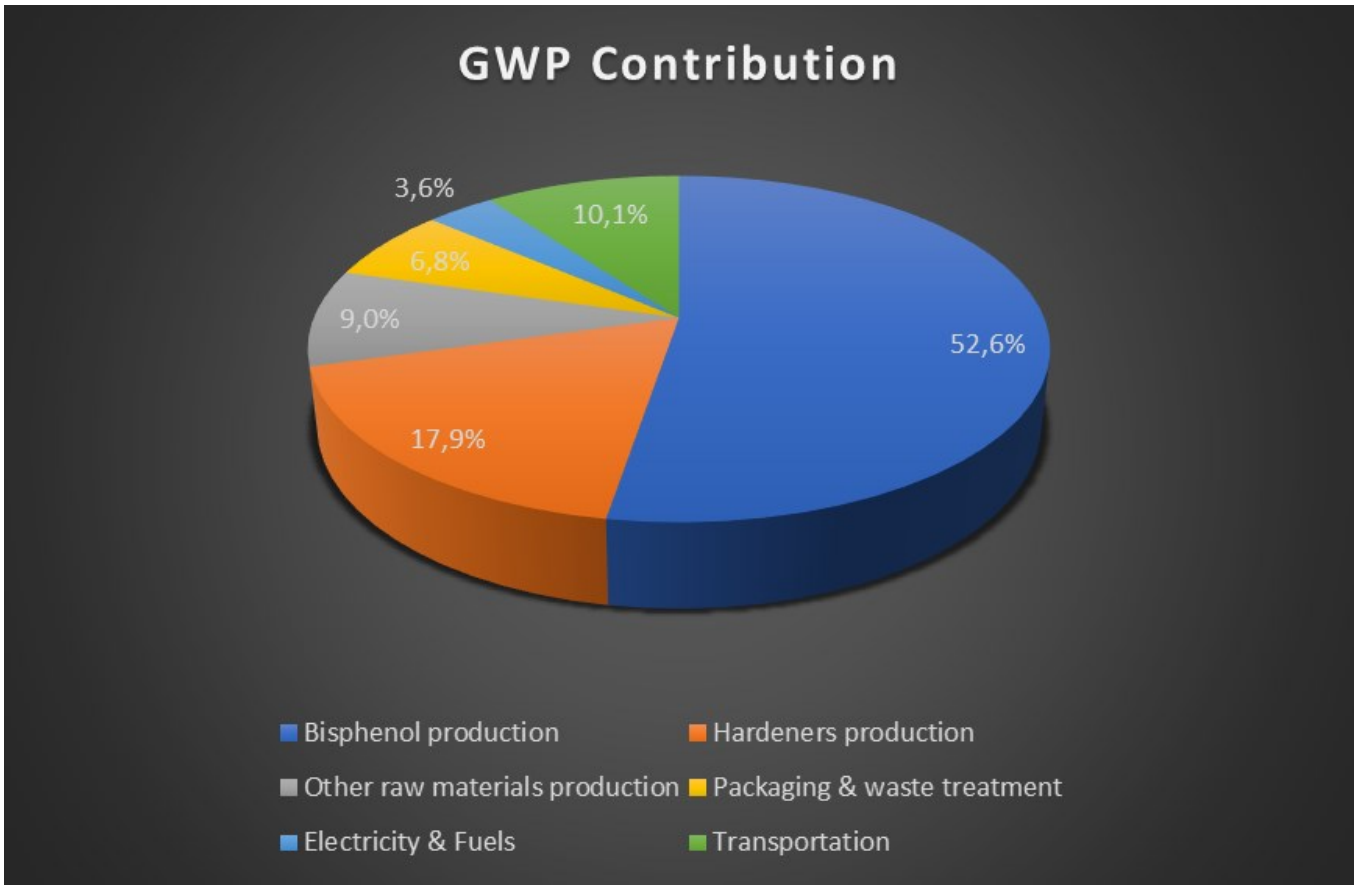
RESOURCE USE	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	1.62E+00	2.07E-02	3.40E-02	0.00E+00	3.06E-02	4,14E-03	0.00E+00	4.60E-03	-7.11E-02
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.62E+00	2.07E-02	3.40E-02	0.00E+00	3.06E-02	4,14E-03	0.00E+00	4.60E-03	-7.11E-02
PENRE	MJ	5.21E+01	1.23E+00	7.47E-01	0.00E+00	7.25E-01	2.46E-01	0.00E+00	2.35E-01	-4.91E-01
PENRM	MJ	4.76E+00	1.17E-01	2.46E-02	0.00E+00	2.32E-02	2.33E-02	0.00E+00	2.19E-02	-1.36E-02
PENRT	MJ	5.69E+01	1.34E+00	7.72E-01	0.00E+00	7.48E-01	2.69E-01	0.00E+00	2.57E-01	-5.05E-01
SM	kg	1.06E-01	1.46E-03	6.35E-02	0.00E+00	2.02E-04	2.91E-04	0.00E+00	2.40E-04	-7.61E-02
RSF	MJ	3.33E-02	3.93E-04	9.49E-05	0.00E+00	4.97E-05	7.86E-05	0.00E+00	5.46E-05	-2.45E-03
NRSF	MJ	1.44E-01	7.72E-04	1.50E-04	0.00E+00	9.83E-05	1.54E-04	0.00E+00	1.35E-04	-2.69E-03
FW	m^3	3.26E-02	1.60E-04	1.02E-04	0.00E+00	8.95E-05	3.21E-05	0.00E+00	2.58E-04	-5.89E-04

OUTPUT FLOWS AND WASTE	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
HWD	kg	1.51E-01	1.25E-03	8.72E-04	0.00E+00	7.75E-04	2.49E-04	0.00E+00	3.42E-04	-2.39E-02
NHWD	kg	3.73E-01	6.40E-02	1.29E-02	0.00E+00	1.15E-03	1.28E-02	0.00E+00	1.00E+00	-3.62E-03
RWD	kg	3.45E-05	4.34E-07	2.84E-07	0.00E+00	2.38E-07	8.67E-08	0.00E+00	8.83E-08	-2.37E-06
CRU	kg	-1.76E-21	-5.36E-23	-5.03E-23	0.00E+00	-5.11E-23	-1.07E-23	0.00E+00	2.95E-23	1.72E-22
MFR	kg	8.19E-02	1.32E-03	2.87E-04	0.00E+00	1.93E-04	2.64E-04	0.00E+00	1.73E-04	-4.85E-03
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

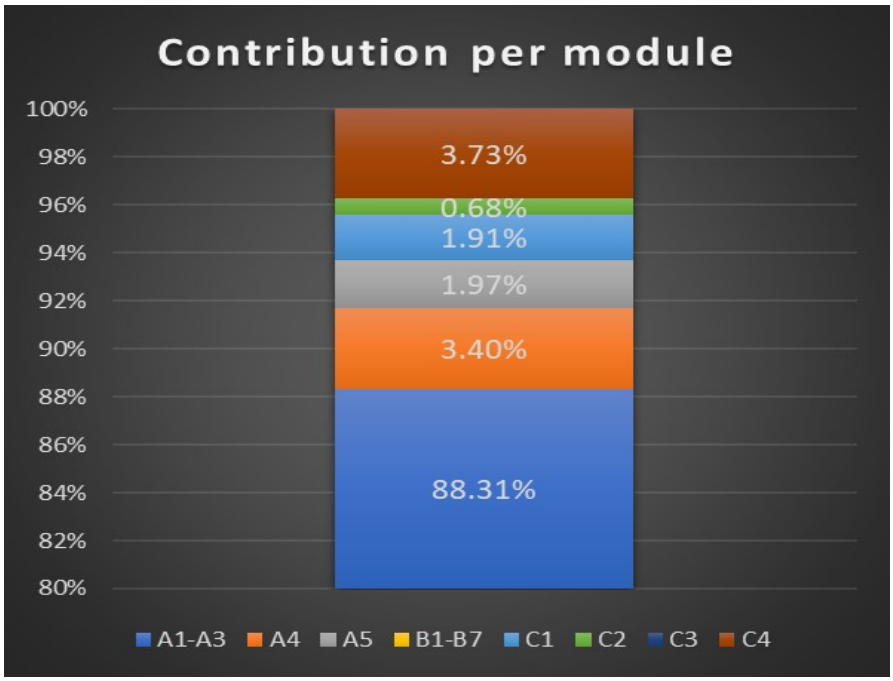
ADDITIONAL IMPACTS	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PM	Disease incidence	1.24E-07	7.49E-09	6.27E-10	0.00E+00	3.63E-10	1,50E-09	0.00E+00	1.80E-09	-3.53E-09
IRP[3]	kBq U235 eq	1.36E-01	1.79E-03	1.17E-03	0.00E+00	9.94E-04	3,57E-04	0.00E+00	3.64E-04	-9.26E-03
ETP-FW	CTUe	3.26E-02	6.59E-01	1.41E-01	0.00E+00	1.23E-01	1,32E-01	0.00E+00	1.33E-01	-3.56E-01
HTP-c	CTUh	5.31E-09	4.29E-11	1.41E-11	0.00E+00	1.16E-11	8,58E-12	0.00E+00	1.32E-11	-1.71E-09
HTP-nc	CTUh	2.31E-08	9.47E-10	4.86E-10	0.00E+00	3.73E-10	1,89E-10	0.00E+00	2.30E-10	-8.74E-10
SQP	dimension less	7.15E+00	7.94E-01	8.71E-02	0.00E+00	4.44E-02	1,59E-01	0.00E+00	5.80E-01	-1.64E-01

[3] Ionizing radiation potential (IRP) impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Interpretation



As it is presented above, bisphenols and hardeners production (module A1) contribute the most for the production of epoxy products, accounting for 52,6% and 17,9% respectively. Next most important stream is transportation of raw and packaging materials to ISOMAT manufacturing site (module A2), accounting for 10,1%. Production of the rest components (module A1) accounts for 9%, while packaging and waste treatment (module A3) is responsible for 6,8%. Production of electricity (module A1) is less important, with a contribution of 3,6%.



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List of abbreviations

LCA	Life Cycle assessment
EPD	Environmental Product Declaration
PCR	Product category rules
GLO	Global
RER	Europe
RoW	Rest of the world
GWP-total	Global Warming Potential total
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Ozone Depletion Potential
AP	Acidification Potential
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 photochemical oxidants
ADPe	Abiotic depletion potential for non-fossil resources
ADPf	Abiotic depletion potential for fossil resources
WDP	Water use
PERE	Use of renewable primary energy excluding 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 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
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
EE	Exported Energy
PM	Particulate matter emissions
IRP	Ionizing radiation, human health
ETP-FW	Ecotoxicity, freshwater
HTP-c	Human toxicity, cancer
HTP-nc	Human toxicity, non-cancer
SQP	Land use related impacts/Soil quality

References

General Programme Instructions of the International EPD® System. Version 5.0

PCR 2019:14 v.1.3.4 Construction products. EPD System.

EN 15804:2012+A2:2019/AC, Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14020:2000 Environmental labels and declarations — General principles.

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines

Ecoinvent / Ecoinvent Centre, www.Eco-invent.org

Residual Energy Mix 2023 from Renewable Energy Sources Operator & Guarantees of Origin (DAPEEP SA)

TACKLING RECYCLING ASPECTS IN EN15804 -Christian Leroy, Jean-Sebastien Thomas, Nick Avery, Jan Bollen, Ladji Tikana

World Steel Association, 7th Global study (https://worldsteel.org/wp-content/uploads/Life-cycle-inventory-LCI-study-2020-data-release.pdf)

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Appendix

Deviations of each product from the declared worst case			
		DUROFLOOR-11	DUROFLOOR-SLF
GWP-total	kg CO2 eq	-1.97%	0.00%
GWP-fossil	kg CO2 eq	-1.97%	0.00%
GWP-biogenic	kg CO2 eq	-2.56%	0.00%
GWP-luluc	kg CO2 eq	-2.00%	0.00%
GWP-GHG	kg CO2 eq	-1.97%	0.00%
ODP	kg CFC-11 eq	-1.05%	0.00%
AP	mol H+ eq	-1.51%	0.00%
EP-freshwater	kg P eq	-2.00%	0.00%
EP-marine	kg N eq	-1.51%	0.00%
EP-terrestrial	mol N eq	-1.53%	0.00%
POCP	kg NMVOC eq	-1.86%	0.00%
ADPe	kg Sb eq	-2.53%	0.00%
ADPf	MJ	-2.40%	0.00%
WDP	m3 eq	-2.28%	0.00%

Deviations from declared worst-case (1)

RESOURCE USE	Unit	DUROFLOOR-11	DUROFLOOR-SLF
PERE	MJ	-2.32%	0.00%
PERM	MJ	0.00%	0.00%
PERT	MJ	-2.32%	0.00%
PENRE	MJ	-2.38%	0.00%
PENRM	MJ	-2.55%	0.00%
PENRT	MJ	-2.40%	0.00%
SM	kg	-1.72%	0.00%
RSF	MJ	-3.05%	0.00%
NRSF	MJ	-0.85%	0.00%
FW	m3	-2.37%	0.00%

Deviations declared worst-case (2)

OUTPUT FLOWS AND WASTE CATEGORIES	Unit	DUROFLOOR-11	DUROFLOOR-SLF
HWD	kg	-0.70%	0.00%
NHWD	kg	0.00%	-0.64%
RWD	kg	-2.92%	0.00%
CRU	kg	0.00%	-2.06%
MFR	kg	-2.14%	0.00%
MER	kg	0.00%	0.00%
EE	MJ	0.00%	0.00%

Deviations from declared worst-case (3)

ADDITIONAL IMPACTS	Unit	DUROFLOOR-11	DUROFLOOR-SLF
PM	Disease incidence	-1.26%	0.00%
IRP	kBq U235 eq	-2.90%	0.00%
ETP-FW	CTUe	-2.37%	0.00%
HTP-c	CTUh	-2.12%	0.00%
HTP-nc	CTUh	-1.77%	0.00%
SQP	dimensionless	-0.31%	0.00%

Deviations from declared worst-case (4)

Additional information

The EPD does not give information on release of dangerous substances to soil, water and indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.