

ENVIRONMENTAL PRODUCT DECLARATION

CORAL WELCOME

FORBO FLOORING SYSTEMS
TEXTILE FLOOR COVERING

Coral Welcome, design: 3208 | Matrix



FLOORING SYSTEMS

Forbo Coral Entrance Flooring delivers superior performance in even the toughest environments. Whether facing rain, snow, sand or soil, Coral keeps the outside from getting inside. Coral entrance floors are highly functional and through their design options always form an integral part of the buildings design scheme. Coral is the international market leader in textile entrance flooring for almost 50 years and now offers you more choice than ever before. Each individual range in the collection has been designed to interact with different soiling behavior as every entrance is a unique environment on its own.

Forbo was the first flooring manufacturer to publish a complete Life Cycle Assessment (LCA) report verified by CML in 2000. In addition Forbo is now to publish EPD's for all products including full LCA reports. This EPD is using all recognized flooring Product Category Rules and is including additional information to show the impacts on human health and eco-toxicity.

For more information visit;
www.forbo-flooring.com



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Coral Welcome
Entrance Flooring Systems

According to ISO 14025 and EN 15804

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



PROGRAM OPERATOR	UL Environment 333 Pfingsten Road Northbrook, IL 60611
DECLARATION HOLDER	Forbo Flooring B.V. Industrieweg 12 P.O. Box 13 NL-1560 AA Krommenie
DECLARATION NUMBER	4790857560.113.1
DECLARED PRODUCT	Coral Welcome Entrance Flooring System
REFERENCE PCR	EN 15804+A2: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products EN 16810:2017 Resilient, textile and laminate floor coverings – Environmental product declarations – Product category rules
DATE OF ISSUE	09.01.2021
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CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Description of the product's manufacture Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications
The PCR review was conducted by:	European Standards
	CEN/TC 134
	https://www.en-standard.eu/

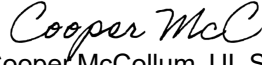

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This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	 Cooper McCollum, UL Solutions
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	 Thomas P. Gloria, Industrial Ecology Consultants

This EPD conforms with EN 15804

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1 Product Definition

1.1 Description of Company/Organization

Forbo Coral Entrance Flooring delivers superior performance in even the toughest environments.

We have been the world leader in textile entrance flooring for over 50 years, so there is nothing we don't know about stopping dirt and moisture coming into your building. First impressions count. When people enter your building they should like what they see. But you also have the practical pressure of keeping your building floors clean and keeping your visitors safe. Our Coral entrance flooring systems do all of this, and more.

Every entrance has its own demand since it depends whether you are in a main street office area or are a primary school. Our Coral collection consists of many different collections each of them with their own focus area like dirt scraping or moisture take up. The icons help you guide through the options. Besides functionality you can also choose different installation options, sheet, tiles, mats. Last but not least the choice for the environment can help you take the final decision. We have several products with regenerated yarns. Whatever collection you choose, you know you have the best quality with the best functionality.

Forbo Coral Entrance Flooring cares about buildings and the environment:

- Virtually zero landfill is achieved by the Coral manufacturing plant.
- All the waste yarn from the Coral production is re-used by the yarn supplier.
- Most of our Coral entrance floors use Econyl® yarn which is made from used and abandoned fishing nets. Using Econyl® is a way to reduce existing waste.
- We use energy from renewable sources. This means our Coral production site is part of an effective environmental management system and has achieved ISO 14001 certification.
- Our entrance floor covering can stop up to 95% of dirt from being walked into the building, cutting down on cleaning and maintenance costs and the use of detergents.
This reduces your building's floor cleaning costs by up to 65% and prolongs the life of your floors.
The average maintenance cost of commercial floors is 86% of the total life cycle cost.
- Coral entrance systems are a textile floor covering complying with all the requirements of the EN1307: Textile Floor Coverings - Classification of Pile Carpets.

1.2 Product Classification and description

This declaration covers Coral Welcome. With its contemporary linear design and rich, deep pile, Coral Welcome packs the style and aesthetic appeal of a luxury carpet. It makes an unequivocal statement in any entrance area. But Coral Welcome is more than just a fabulous looking floor covering – it's an environmentally advanced one as well. The secret lies in its use of ECONYL® 100% regenerated yarn, which is made from regenerated industrial and postconsumer waste. In the creation of ECONYL® products our supplier is waste positive, which means the amount of waste removed from the earth is greater than the amount of waste resulting from production. On top of that, the production has a low environmental impact because we limit the consumption of natural resources and energy to a minimum. Taking the environmental aspect even further, the primary backing of Coral Welcome is made from recycled PET bottles.

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Coral Welcome is produced with green electricity and phthalate free technology. This declaration refers to Coral Welcome rolls and mats.



Important characteristics of Coral Welcome are:

- Made with ECONYL® 100% regenerated yarns
- Primary backing made from recycled PET bottles
- Produced with phthalate free technology
- Keeps out moisture and dirt
- Complies with the highest fire class standard: Bfl-s1
- Suitable for the toughest commercial use
- Ideal for inside entrance and circulation areas

Coral Welcome is built up in 3 layers as illustrated in the following image:



1. **Yarn** : Econyl®, 100%-regenerated recycled yarns from industrial and postconsumer waste for maximum moisture absorption and effective dirt removal.
2. **Primary backing** : Made from a combination of regenerated polyamide and Recycled PET (from bottles).
3. **Backing** : Everfort vinyl

This declaration refers to the declared/functional unit of 1 m² installed flooring product.

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1.3 Range of application

Coral Welcome is classified in accordance with EN1307 to be installed in the following use areas defined in EN-ISO 10874:

Area of application	Coral Welcome
Commercial	Class 33 





Examples of areas of use:



1.4 Product Standard

The product considered in this EPD has the following technical specifications:

- Meets or exceeds all requirements of EN1307: Textile Floor Coverings - Classification of Pile Carpets.

Coral Welcome meets the requirements of EN 14041 and BS EN 14041		
		
EN 13501-1	Reaction to fire	
EN 13893	Slip resistance	
ISO 6356	Body voltage	

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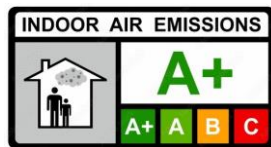


Coral Welcome
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Emission testing :

- AgBB requirements following EN ISO 16000-9 Indoor Air Emissions: TVOC at 28 days
- Indoor Air Quality Standard: Indoor Air Comfort Gold standard
- CHPS section 01350
- French act Grenelle: A+



1.5 Accreditation

- ISO 9001 Quality Management System
- ISO 14001 Environmental Management System
- SA 8000 Social Accountability

1.6 Delivery status

Table 1: Specification of delivered product

Characteristics	Nominal Value	Unit
Product thickness	9	mm
Product Weight	3950	g/m ²
Rolls Mats	Width x Length Width x Length	m cm
	2.05 x 27.5 105 x 55	

2 Material Content

2.1 Material Content of the Product

Table 2: Composition of Coral Welcome

Component	Material	Availability			Amount [%]	Origin
		Renewable	Recycled	Non-Renewable		
Yarn	Nylon 6		X		20	Europe
Primary backing	Nylon 6		X		0.5	Europe
	Polyester		X		2.5	Europe
Backing	PVC			X	16.5	Europe
	DOTP			X	16.5	Europe
	Calcium carbonate			Abundant	30	Europe
	Recycled filler		X		1.5	Europe
	Various chemicals			X	12.5	Europe/Asia

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2.2 Production of Main Materials

- **Nylon 6** : Made from Econyl, made with 100% Regenerated Nylon.
- **Primary backing** : This is made from a combination of Recycled PET and Econyl, made with 100% Regenerated Nylon.
- **PVC**: Polymer which is manufactured by the polymerisation of vinyl chloride monomer.
- **DOTP**: A non-phthalate plasticiser, being the diester of terephthalic acid and the branched-chain 2-ethylhexanol. This colorless viscous liquid used for softening PVC plastics is known for chemical similarity to general purpose phthalates such as DEHP and DINP, but without any negative regulatory pressure.
- **Calcium carbonate**: An abundant mineral found in all parts of the world as the chief substance in rocks (i.e., marble and limestone). It can be ground to varying particle sizes and is widely used as filler.
- **Various chemicals**: Multiple minor components including –pigments, fire retardant, heat stabiliser.

3 Production of the Floor Covering

3.1 Manufacturing

Coral Welcome is a cut pile entrance flooring system.

Yarn is precisely inserted into the primary backing to create a mouline velour top-cloth.

The residual yarn is subsequently rewound and recycled.

The cloth is then backed with Everfort Vinyl to anchor the bottom loop of the pile yarn in the backing.

Finally the tufted and backed entrance flooring system can be cut in any desired dimension, any cutting waste is subsequently recycled and all the waste yarn from Coral production is re-used by the yarn supplier.

3.2 Production Waste

Rejected material and the cuttings of the trimming stage are reused in the manufacturing process. Packaging materials are collected separately and externally recycled and all the waste yarn from Coral production is re-used by the yarn supplier.

4 Delivery and Installation of the Floor Covering

4.1 Delivery

A worldwide distribution by truck and container ship is considered. On average every square meter of Coral Welcome is transported as follows:

- | | |
|--|--------|
| • Transport distance 40 t truck | 412 km |
| • Transport distance 12t truck (Fine distribution) | 189 km |
| • Capacity utilization trucks (including empty runs) | 100% |
| • Transport distance Ocean ship | 518 km |
| • Capacity utilization Ocean ship | 100% |

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4.2 Installation

Because of the specific techniques used during the installation of Coral Welcome approximately 2% of the material is cut off as installation waste. Forbo flooring recommends to use (low) zero emission adhesives for installing Coral Welcome floorcovering.

Cardboard tubes and packaging paper can be collected separately and should be used in a local recycling process. In the calculation model 100% incineration is taken into account for which there is a credit received.

Waste during the installation process may be recycled as floor covering through the manufacturers' facility. Forbo Flooring has a Back to The Floor program in which both post-installation and end of life flooring can be recycled.



BACK TO THE FLOOR
RECYCLING PROGRAM

5 Use stage

The service lifetime of a floor covering for a certain application on a floor is too widespread to give one common number. For this EPD model the reference service lifetime (RSL) is set to one year. This means that all impacts for the use phase are based on the cleaning and maintenance model for one year. Depending on the area of use, the technical lifetime advised by the manufacturer and the estimated time on the floor by the customer, the service lifetime can be determined. The use phase impacts should be calculated with the foreseen service life to arrive at the total environmental impact.

5.1 Cleaning and Maintenance

Level of use	Cleaning Process	Cleaning Frequency	Consumption of energy and resources
Commercial/Residential/Industrial	Vacuuming	Daily	Electricity
	Spot/spill clean	As spill occurs	Spotting agent
	Dry fusion clean	Four times each year	Hot water
	Hot water extraction		Neutral detergent

For the calculations the following cleaning regime is considered:

- Dry cleaning with a 1.5 kW vacuum cleaner for 0.21 min/m² every day. This equates to 1.92 kWh/m²*year.
- Four times a year wet cleaning with 0.062 l/m² water and 0.0008 kg/m² detergent. This result in the use of 0.248 l/m²*year water and 0.0032 kg/m²*year detergent. The wet cleaning takes place without power machine usage. The waste water treatment of the arising waste water from cleaning is considered (Data source from Forbo GaBi model).

The cleaning regime that is recommended in practice will be highly dependent on the use of the premises where the floor covering is installed. In high traffic areas more frequent cleaning will be needed compared to areas where there is low traffic. The use of an entrance mat of at least four steps will reduce the cleaning frequency.

The cleaning regime used in the calculations is suitable for high traffic areas.



5.2 Prevention of Structural Damage

All newly laid floor covering should be covered and protected with a suitable non-staining protective covering if other building activities are still in progress.

6 End of Life

The deconstruction of installed Coral from the floor is done manually. For the end of life stage two scenarios have been calculated assuming that the flooring is either 100% incinerated or 100% landfilled.

7 Life Cycle Assessment

A full Life Cycle Assessment has been carried out according to ISO 14040 and ISO 14044.

- A1-3 : Product Stage (Raw material acquisition, transportation to Manufacturing and Manufacturing)
- A4-5 : Construction process stage (Transport Gate to User, installation flooring)
- B2 : Use Stage (Maintenance of the floor). For floor coverings the modules B1, B3 to B7 are not relevant to the environmental performance of a product.
- C1-4 : End of Life Stage (Deconstruction, transport, waste processing, Disposal). Two different End of Life scenarios are declared and the results are indicated separately in module C. Each scenario is calculated as a 100% scenario:
 - Scenario 1: 100% Municipal Waste Incineration (MWI) with $R_1 > 60\%$
 - Scenario 2: 100% landfill disposal
- D : Benefits and loads beyond the system boundary (Reuse, recovery, recycling potential)

End of life scenario 1: 100% Municipal Waste Incineration (MWI) with $R_1 > 60\%$

- C3-1 (Waste processing): Impact from waste incineration, generated electricity and steam are listed in the result table as exported energy
- C4-1 (Disposal): The product waste leaves the system in module C3-1 and causes no additional impact
- D-1 (Recycling potential): Benefits for generated energy due to incineration of product waste at the end-of-life

End of life scenario 2: 100% landfill disposal

- C3-2 (Waste processing): Landfill disposal needs no waste processing and causes no additional impact
- C4-2 (Disposal): Impact from landfill disposal
- D-2 (Recycling potential): Benefits for generated energy due to landfill disposal of product waste at the end of life

Modules C3-2 and C4-1 cause no additional impact and are therefore not displayed in the result tables.

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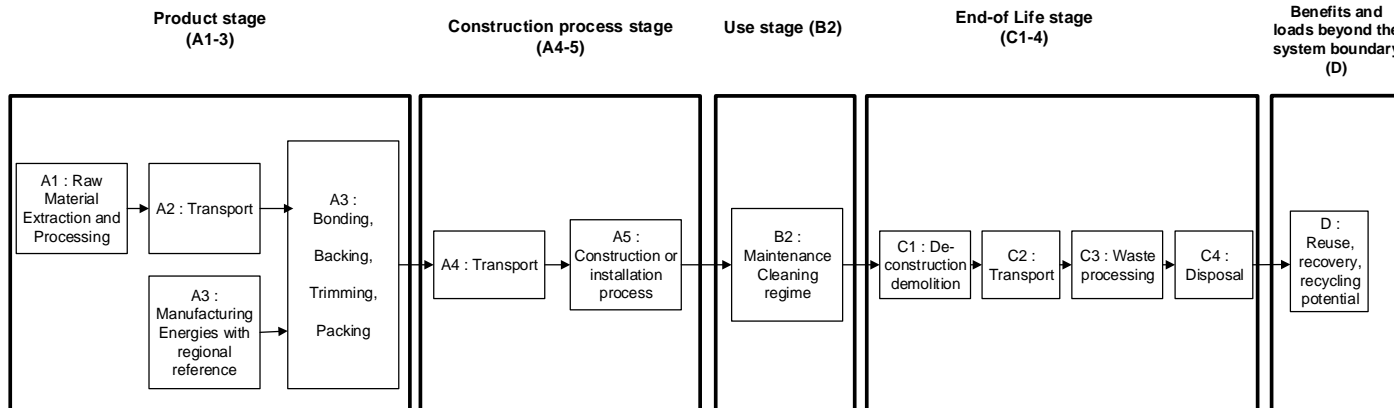


Figure 1: Flow chart of the Life Cycle Assessment

Comparisons of different floor coverings are only allowed, where EN 15804 consistent and/or preverified background data and EN 15804 consistent calculation methods and database versions are used and when the building context is taken into account, i.e. on the basis of the same use-classification (EN ISO 10874), same service life and comparable assumptions for the end of life.

7.1 Description of the Declared Functional Unit

The functional unit is one square meter of installed product and the use stage is considered for one year of service life.

7.2 Cut off Criteria

The cut-off criteria shall be 1% of renewable and non-renewable primary energy usage and 1% of the total mass of the unit process. The total neglected input flows per module shall be a maximum of 5% of energy usage and mass.

In practice, in this assessment, all data from the production data acquisition are considered, i.e. all raw materials used as per formulation, use of water, electricity and other fuels, the required packaging materials, and all direct production waste. Transport data on all considered inputs and output material are also considered.

7.3 Allocations

In the present study some allocations have been made. Detailed explanations can be found in the chapters below.

7.4 Co-product allocation

No co-product allocation occurs in the product system.

7.5 Allocation of multi-input processes

The Production and End of Life stage include incineration plants. In these processes different products are treated together within a process. The allocation procedures followed in these cases are based on a physical classification of the mass flows or calorific values.

Credits from energy substitution are allocated to the production stage, because the gained energy from energy

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substitution is lower than the energy input in this stage. The same quality of energy is considered.

7.6 Allocation procedure of reuse, recycling and recovery

The installation waste and end of life waste is fed into incineration processes. Incineration processes include cogeneration processes which give thermal and power energy as outputs. It is assumed that this recovered energy offsets that produced by the European average grid mix and thermal energy generation from natural gas. The gained energy is declared in module D/1 as avoided environmental burden. Generated electricity and steam due to the incineration of installation and end of life waste are listed in the result table as exported energy.

7.7 Description of the allocation processes in the LCA report

The description of allocation rules in of this LCA report meets the requirements of the PCR.

7.8 LCA Data

As a general rule, specific data derived from specific production processes or average data derived from specific production processes have been used as the first choice as a basis for calculating an EPD.

For life cycle modeling of the considered products, the GaBi 10 Software System for Life Cycle Engineering, developed by Sphera has been used. All relevant LCA datasets are taken from the GaBi 10 software database. The datasets from the database GaBi are documented in the online documentation. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

7.9 Data Quality

The requirements for data quality and LCA data correspond to the specifications of the PCR.

Foreground data are based on 1 year averaged data (year 2023). The reference ages of LCA datasets vary but are given in the table in the Appendix. The time period over which inputs to and outputs from the system is accounted for is 100 years from the year for which the data set is deemed representative. The technological LCA of the collected data reflects the physical reality of the declared product. The datasets are complete, conform to the system boundaries and the criteria for the exclusion of inputs and outputs and are geographical representative for the supply chain of Forbo flooring.

For life cycle modeling of the considered products the GaBi 10 Software System for Life Cycle Engineering, developed by Sphera, is used. All relevant LCA datasets are taken from the GaBi 10 software database. The last revision of the used data sets took place within the last 10 years.

7.10 System Boundaries

Production Stage includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues during the product stage.

Transport and Installation Stage includes provision of all materials, products and energy, as well as waste processing up to the end-of-waste state or disposal of final residues during the construction stage. These information modules

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also include all impacts and aspects related to any losses during this construction stage (i.e. production, transport, and waste processing and disposal of the lost products and materials). For the transportation a worldwide distribution is considered.

Use Stage includes provision and transport of all materials, products and related energy and water use, as well as waste processing up to the end-of-waste state or disposal of final residues during this part of the use stage. These information modules also include all impacts and aspects related to the losses during this part of the use stage (i.e. production, transport, and waste processing and disposal of the lost products and materials).

End of Life Stage includes provision and all transports, provision of all materials, products and related energy and water use. It also includes any declared benefits and loads from net flows leaving the product system that have not been allocated as co-products and that have passed the end-of-waste state in the form of reuse, recovery and/or recycling potentials.

7.11 Power mix

The selection of LCA data for the electricity generation is in line with the PCR.

The products are manufactured in Krommenie, the Netherlands. The GaBi 10 hydropower dataset has therefore been used (reference year 2024). The energy supplier is providing Forbo with a certificate every year.

7.12 CO₂-Certificates

No CO₂-certificates are considered in this study as the Coral Welcome manufacturing is realized without offsetting.

7.13 Life Cycle Inventory Analysis

In table 3 the environmental impacts are presented for all the lifecycle stages with two End of Life scenarios:

- Scenario 1: 100% Municipal Waste Incineration (MWI) with R1 > 60%
- Scenario 2: 100% landfill disposal.

Table 3: Results of the LCA – Environmental impacts one lifecycle (one year) – Coral Welcome

Parameter	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2
GWP - total [kg CO2 eq.]	7,32E+00	2,49E-01	3,96E-01	2,45E-01	0,00E+00	3,23E-02	6,78E+00	6,01E+00	-1,97E+00	0,00E+00
GWP - fossil [kg CO2 eq.]	6,80E+00	2,45E-01	3,90E-01	2,40E-01	0,00E+00	3,25E-02	1,84E+00	5,21E-01	-1,96E+00	0,00E+00
GWP - biogenic [kg CO2 eq.]	5,15E-01	3,70E-03	6,18E-03	4,51E-03	0,00E+00	-4,51E-04	4,94E+00	5,49E+00	-1,11E-02	0,00E+00
GWP - luluc [kg CO2 eq.]	8,92E-04	1,11E-03	3,38E-05	1,99E-05	0,00E+00	2,96E-04	2,02E-05	2,21E-04	-1,27E-04	0,00E+00
ODP [kg CFC-11 eq.]	2,72E-08	1,17E-14	1,28E-12	1,58E-09	0,00E+00	2,79E-15	7,71E-13	4,51E-13	-1,53E-11	0,00E+00
AP [Mole of H+ eq.]	2,85E-02	1,35E-03	8,09E-04	4,95E-04	0,00E+00	1,11E-04	5,55E-03	1,39E-03	-2,43E-03	0,00E+00
EP - freshwater [kg P eq.]	1,49E-05	4,42E-07	6,40E-07	2,75E-06	0,00E+00	1,16E-07	2,10E-07	5,29E-05	-3,15E-06	0,00E+00
EP - marine [kg N eq.]	4,55E-03	4,97E-04	2,35E-04	1,31E-04	0,00E+00	5,10E-05	2,52E-03	2,76E-03	-7,10E-04	0,00E+00
EP - terrestrial [Mole of N eq.]	4,75E-02	5,53E-03	2,59E-03	1,18E-03	0,00E+00	5,74E-04	2,86E-02	5,10E-03	-7,60E-03	0,00E+00
POCP [kg NMVOC eq.]	1,68E-02	1,09E-03	6,38E-04	3,33E-04	0,00E+00	1,01E-04	6,49E-03	3,02E-03	-1,98E-03	0,00E+00
ADPF [MJ]	1,41E+02	1,85E+00	9,77E+00	4,96E+00	0,00E+00	4,34E-01	2,62E+00	4,00E+00	-3,58E+01	0,00E+00
ADPE [kg Sb eq.]	1,79E-06	7,91E-09	1,60E-08	2,76E-08	0,00E+00	2,06E-09	7,09E-09	7,09E-09	-1,40E-07	0,00E+00
WDP [m³ world equiv.]	7,16E-01	1,41E-03	1,70E-02	1,77E-01	0,00E+00	3,68E-04	7,78E-01	1,97E-02	-1,85E-01	0,00E+00

Caption: GWP - total = global warming potential; GWP - fossil = global warming potential (fossil fuel only); GWP - biogenic = global warming potential (biogenic); GWP - luluc = global warming potential (land use only); ODP = ozone depletion; AP = acidification terrestrial and freshwater; EP - freshwater = eutrophication potential (freshwater); EP - marine = eutrophication potential (marine); EP - terrestrial = eutrophication potential (terrestrial); POCP = photochemical ozone formation; ADPE = abiotic depletion potential (element), ADPF = abiotic depletion potential (fossil) WDP = water scarcity

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7.14 Interpretation

The interpretation of the results has been carried out considering the assumptions and limitations declared in the EPD, both methodology- and data-related for a one year usage.

In almost all of the impact categories the production stage (A1-A3) has the main contribution to the overall impact. The raw material manufacturing, in particular PVC, plasticizer and heat stabilizer are the key contributors for these impact categories.

Forbo declares in the EPD a worldwide distribution which has a limited effect on most of the impact categories. Only for GWP-luluc, AP, EP-marine & terrestrial and POCP there is a significant share caused by the ships and trucks used to transport the product.

The installation of Coral Welcome has for all the environmental indicators a minor impact of 0-5% of the total environmental impact, caused by the adhesive and the disposal of the cutting waste.

In the Use stage the electricity needed to vacuum the floor is the main contributor. The cleaning regime used in the calculations is a worst-case scenario which will be in practice almost always be lower.

7.15 Resource use

In table 4 the parameters describing resource use are presented for all the lifecycle stages for a one year usage with two End of Life scenarios:

- Scenario 1: 100% Municipal Waste Incineration (MWI) with R1 > 60%
- Scenario 2: 100% landfill disposal.

Table 4: Results of the LCA – Resource use for Coral Welcome (one year)

	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2
PERE [MJ]	1,16E+01	1,17E-01	6,50E-01	2,25E+00	0,00E+00	3,07E-02	4,66E-01	3,61E-01	-1,04E+01	0,00E+00
PERM [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT [MJ]	1,16E+01	1,17E-01	6,50E-01	2,25E+00	0,00E+00	3,07E-02	4,66E-01	3,61E-01	-1,04E+01	0,00E+00
PENRE [MJ]	1,18E+02	1,86E+00	9,78E+00	4,96E+00	0,00E+00	4,35E-01	2,62E+00	4,01E+00	-3,58E+01	0,00E+00
PENRM [MJ]	3,52E+01	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
PENRT [MJ]	1,53E+02	1,86E+00	9,78E+00	4,96E+00	0,00E+00	4,35E-01	2,62E+00	4,01E+00	-3,58E+01	0,00E+00
SM [kg]	9,34E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW [m3]	1,99E-02	1,29E-04	1,38E-03	1,85E-03	0,00E+00	3,38E-05	1,83E-02	5,87E-04	-8,46E-03	0,00E+00

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

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According to ISO 14025 and EN 15804

7.16 Waste categories and output flows

In table 5 other environmental information describing different waste categories and output flows are presented for all the lifecycle stages with two End of Life scenarios:

- Scenario 1: 100% Municipal Waste Incineration (MWI) with R1 > 60%
- Scenario 2: 100% landfill disposal

Table 5: Results of the LCA – Output flows and Waste categories for Coral Welcome (one year)

	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2
HWD [kg]	1,16E-03	6,75E-12	1,05E-09	-2,93E-10	0,00E+00	1,61E-12	2,09E-10	3,37E-10	-1,90E-09	0,00E+00
NHWD [kg]	3,12E-01	2,56E-04	3,94E-03	6,26E-03	0,00E+00	6,27E-05	8,84E-02	2,83E+00	-1,77E-02	0,00E+00
RWD [kg]	1,87E-03	2,38E-06	6,78E-05	6,19E-04	0,00E+00	5,63E-07	9,72E-05	4,74E-05	-2,77E-03	0,00E+00
CRU [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR [kg]	0,00E+00	0,00E+00	3,90E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER [kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,21E+01	0,00E+00	0,00E+00	0,00E+00
EET [MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,18E+01	0,00E+00	0,00E+00	0,00E+00

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

7.17 Biogenic Carbon content

Table 6: Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit (kg CO ₂ /m ²)
Biogenic carbon content in product	0.06
Biogenic carbon content in accompanying packaging	0.01
Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO ₂	



8 Additional Environmental Impact Indicators

To be fully transparent Forbo Flooring does not only want to declare the environmental impacts required in the PCR, but also the additional environmental impact indicators according to the European Standard EN15804+A2 with two End of Life scenarios:

- Scenario 1: 100% Municipal Waste Incineration (MWI) with R1 > 60%
- Scenario 2: 100% landfill disposal

Table 7: Results of the LCA – Environmental impacts one lifecycle (one year) – Coral Welcome

	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2
PM [Disease incidences]	2,90E-07	1,53E-08	6,26E-09	3,96E-09	0,00E+00	7,17E-10	1,72E-08	1,34E-08	-2,06E-08	0,00E+00
IR [kBq U235 eq.]	1,02E+00	3,43E-04	7,30E-03	1,01E-01	0,00E+00	8,12E-05	1,52E-02	7,01E-03	-4,61E-01	0,00E+00
ETF-fw [CTUe]	4,19E+01	1,29E+00	3,38E+00	1,94E+00	0,00E+00	3,03E-01	8,88E-01	9,47E+00	-7,85E+00	0,00E+00
HTP-c [CTUh]	3,04E-09	2,60E-11	1,62E-10	6,21E-11	0,00E+00	6,16E-12	1,97E-10	1,92E-10	-3,97E-10	0,00E+00
HTP-nc [CTUh]	7,16E-08	1,95E-09	1,20E-08	1,57E-09	0,00E+00	4,20E-10	1,90E-08	2,10E-08	-1,23E-08	0,00E+00
SQP [Pt]	5,37E+00	6,82E-01	5,48E-01	1,47E+00	0,00E+00	1,81E-01	5,30E-01	3,47E-01	-6,87E+00	0,00E+00

Caption: PM = Particulate matter emissions; IR = Ionizing radiation, human health; ETF-fw = Eco-toxicity (freshwater); HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects, SQP = Soil quality potential/ Land use related impacts

8.1 Interpretation

The interpretation of the results has been carried out considering the assumptions and limitations declared in the EPD, both methodology- and data-related for a one year usage.

As with the mandatory environmental impact categories, the production phase is dominant in the contribution of the total lifespan of the additional environmental impact indicators. This is largely due to the production of the raw materials.

A much smaller impact is coming from the thermal energy used to manufacture Coral Welcome, the installation of the product and the cleaning regime used in the calculations.

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8.2 Disclaimers to the declaration of core and additional environmental impact indicators

According to the "ILCD Handbook: Recommendations for Life Cycle Impact Assessment in the European context" the recommended characterization models and associated characterization factors are classified according to their quality into three levels:

- Type 1 (recommended and satisfactory),
- Type 2 (recommended but in need of some improvements)
- Type 3 (recommended, but to be applied with caution).

Table 8: Classification of disclaimers to the declaration of core and additional environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global Warming Potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 2	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user)deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans HTP-c)	2
	Potential Comparative Toxic Unit for humans HTP-nc)	2
	Potential Soil quality index (SQP)	2
Disclaimer 1 – This 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		
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.		

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According to ISO 14025 and EN 15804

9 References

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GABI 10 2012D	GaBi 10: Documentation of GaBi 10: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2017. http://documentation.gabi-software.com/
UL ENVIRONMENT	UL Environment's Program Operator Rules
PE 2012 ILCD Handbook: General guide for Life Cycle Assessment - Detailed guidance	Description of Selected Impact Categories, SPHERA AG, 2012 European Commission-Joint Research Centre - Institute for Environment and Sustainability: International Reference Life Cycle Data System (ILCD) Handbook- Recommendations for Life Cycle Impact Assessment in the European context. First edition November 2011. EUR 24571 EN. Luxemburg. Publications Office of the European Union; 2011
STANDARDS AND LAWS	
DIN EN ISO 14044	Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044:2006); German and English version EN ISO 14044
ISO 14025 2006	DIN EN ISO 14025: Environmental labels and declarations — Type III environmental declarations — Principles and procedures
ISO 14040 2006	Environmental management - Life cycle assessment - Principles and framework (ISO 14040); German and English version EN ISO 14040
CEN/TR 15941	Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data; German version CEN/TR 15941
EN15804:2012+A2:2019+AC:2021	EN 15804: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products
EN16810:2017	Resilient, textile and laminate floor coverings – Environmental product declarations – Product category rules
CPR	REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC
EN-ISO 10874 EN 1307	Resilient, Textile and laminate floor coverings – Classification Textile floor coverings - Specification